

Numerical Control (CNC)
DRIVE SYSTEM

DATA BOOK

MDS-D2 Series

MDS-DH2 Series

MDS-DM2 Series

MDS-DJ Series

本製品の取扱いについて

(日本語 /Japanese)

本製品は工業用 (クラス A) 電磁環境適合機器です。販売者あるいは使用者はこの点に注意し、住商業環境以外での使用をお願いいたします。

Handling of our product

(English)

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

본 제품의 취급에 대해서

(한국어 /Korean)

이 기기는 업무용 (A 급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며 가정외의 지역에서 사용하는 것을 목적으로 합니다 .

Contents

200V System Servo/spindle Drive System	1
System Configuration	2
Explanation of Type	6
1. Servo motor type	6
2. Direct-drive motor type	7
3. Linear servo motor type	8
4. Servo drive unit type	9
5. Multi axis unit	10
6. Spindle motor type	11
7. Built-in spindle motor type	12
8. Tool spindle motor type	13
9. Spindle drive unit type	15
10. Power supply unit type	16
11. AC reactor type	16
12. Peripheral devices type	16
Servo Motor	17
HF75	18
HF105	20
HF54	22
HF104	24
HF154	26
HF224	28
HF204	30
HF354	32
HF123	34
HF223	36
HF303	38
HF453	40
HF703	42
HF903	44
HF142	46
HF302	48
HP54	50
HP104	52
HP154	54
HP224	56
HP204	58
HP354	60
HP454	62
HP704	64
HP903	66
HP1103	68
HF-KP13	70
HF-KP23	72
HF-KP43	74
HF-KP73	76
Direct Drive Motor	79
TM-RBP012C20	80
TM-RBP036E20	82
TM-RBP048G20	84
TM-RBP105G10	86

TM-RBP105G20	88
TM-RBP150G20	90
TM-RBP340J20	92
TM-RBP500J20	94
Linear Motor	97
LM-FP2A-03M.....	98
LM-FP2B-06M.....	100
LM-FP2D-12M	102
LM-FP2F-18M.....	104
LM-FP4B-12M.....	106
LM-FP4D-24M	108
LM-FP4F-36M.....	110
LM-FP4H-48M	112
Spindle Motor	115
SJ-D3.7/100-01	116
SJ-D5.5/100-01	117
SJ-D5.5/120-01	118
SJ-D5.5/120-02	119
SJ-D7.5/100-01	120
SJ-D7.5/120-01	121
SJ-D11/100-01	122
SJ-D5.5/120-02T-S	123
SJ-DG3.7/120-03T	124
SJ-DG5.5/120-04T	125
SJ-DG7.5/120-05T	126
SJ-DG11/100-03T	127
SJ-DJ5.5/100-01	128
SJ-DJ5.5/120-01	129
SJ-DJ7.5/100-01	130
SJ-DJ7.5/120-01	131
SJ-DJ11/100-01	132
SJ-DJ15/80-01	133
SJ-DL0.75/100-01	134
SJ-DL1.5/100-01	135
SJ-DL5.5/150-01T	136
SJ-DL5.5/200-01T	137
SJ-DL7.5/150-01T	138
SJ-DL5.5/200-01T-S	139
SJ-V2.2-01T	140
SJ-V3.7-02ZT.....	141
SJ-V7.5-03ZT.....	142
SJ-V11-08ZT.....	143
SJ-V11-13ZT.....	144
SJ-V15-01ZT.....	145
SJ-V15-09ZT.....	146
SJ-V18.5-01ZT.....	147
SJ-V18.5-04ZT.....	148
SJ-V22-01ZT.....	149
SJ-V22-04ZT.....	150
SJ-V22-06ZT.....	151
SJ-V26-01ZT.....	152
SJ-V37-01ZT.....	153

SJ-V45-01ZT.....	154
SJ-V55-01ZT.....	155
SJ-V11-01T.....	156
SJ-V11-09T.....	157
SJ-V15-03T.....	158
SJ-V18.5-03T.....	159
SJ-V22-05T.....	160
SJ-V22-09T.....	161
SJ-VK22-19ZT.....	162
SJ-VL2.2-02ZT.....	163
SJ-VL11-02FZT.....	164
SJ-VL11-05FZT-S01.....	165
SJ-VL18.5-05FZT.....	166
Built-in Spindle Motor.....	167
SJ-2B4002T.....	168
SJ-2B4004T.....	169
SJ-2B4003T.....	170
SJ-2B4B03T.....	171
SJ-2B4112T.....	172
SJ-2B4111T.....	173
SJ-2B4105T.....	174
SJ-2B4102T.....	175
SJ-2B4310T.....	176
SJ-2B4301T.....	177
SJ-2B4327T.....	178
SJ-2B4340T.....	179
SJ-2B4313TK.....	180
SJ-2B4323TK.....	181
SJ-2B4325TK.....	182
SJ-2B4303TK.....	183
SJ-2B4326TK.....	184
SJ-2B4304TK.....	185
SJ-2B4318TK.....	186
SJ-2B4412T.....	187
SJ-2B4501TK.....	188
SJ-2B6611TK.....	189
SJ-2B4502TK.....	190
SJ-2B4601TK.....	191
SJ-2B6605TK.....	192
SJ-2B4503TK.....	193
SJ-2B6603TK.....	194
SJ-2B4602TK.....	195
SJ-2B4511TK.....	196
SJ-2B6720TK.....	197
SJ-2B6705TK.....	198
SJ-2B6711TK.....	199
SJ-2B6706TK.....	200
SJ-2B6716TK.....	201
SJ-2B6721TK.....	202
SJ-2B6704TK.....	203
SJ-2B6709TK.....	204
SJ-2B6905TK.....	205

SJ-2B6908TK.....	206
SJ-2B6906TK.....	207
SJ-2B6914TK.....	208
SJ-PMB02215T-02	209
SJ-PMB04412T-B0	210
SJ-PMB14007T-01	211
Tool Spindle Motor	213
HF-KP46	214
HF-KP56	215
HF-KP96	216
HF-SP226	217
HF-SP406	218
HF75	219
HF105	220
HF54	221
HF104	222
HF154	223
HF224	224
HF204	225
HF354	226
HF453	227
HF703	228
HF903	229
Servo Drive Unit	231
MDS-D2-V1-20	232
MDS-D2-V1-40	233
MDS-D2-V1-80	234
MDS-D2-V1-160	235
MDS-D2-V1-160W	236
MDS-D2-V1-320	237
MDS-D2-V1-320W	238
MDS-D2-V2-2020	239
MDS-D2-V2-4020	240
MDS-D2-V2-4040	241
MDS-D2-V2-8040	242
MDS-D2-V2-8080	243
MDS-D2-V2-16080	244
MDS-D2-V2-160160	245
MDS-D2-V2-160160W	246
MDS-D2-V3-202020	247
MDS-D2-V3-404040	248
MDS-DJ-V1-10.....	249
MDS-DJ-V1-15.....	250
MDS-DJ-V1-30.....	251
MDS-DJ-V1-40.....	252
MDS-DJ-V1-80.....	253
MDS-DJ-V1-100.....	254
MDS-DJ-V2-3030.....	255
Multi Axis Unit	257
MDS-DM2-SPV2-10080.....	258
MDS-DM2-SPV2-16080.....	259

MDS-DM2-SPV2-20080.....	260
MDS-DM2-SPV3-10080.....	261
MDS-DM2-SPV3-16080.....	262
MDS-DM2-SPV3-20080.....	263
MDS-DM2-SPV3-200120.....	264
MDS-DM2-SPHV3-20080.....	265
Spindle Drive Unit	267
MDS-D2-SP-20.....	268
MDS-D2-SP-40.....	269
MDS-D2-SP-80.....	270
MDS-D2-SP-160.....	271
MDS-D2-SP-200.....	272
MDS-D2-SP-240.....	273
MDS-D2-SP-320.....	274
MDS-D2-SP-400.....	275
MDS-D2-SP-640.....	276
MDS-D2-SP2-2020.....	277
MDS-D2-SP2-4020.....	278
MDS-D2-SP2-4040S.....	279
MDS-D2-SP2-4040.....	280
MDS-D2-SP2-8040.....	281
MDS-D2-SP2-16080S.....	282
MDS-D2-SP2-8080.....	283
MDS-D2-SP2-16080.....	284
MDS-DJ-SP-20.....	285
MDS-DJ-SP-40.....	286
MDS-DJ-SP-80.....	287
MDS-DJ-SP-100.....	288
MDS-DJ-SP-120.....	289
MDS-DJ-SP-160.....	290
MDS-DJ-SP2-2020.....	291
Power Supply Unit.....	293
MDS-D2-CV-37.....	294
MDS-D2-CV-75.....	295
MDS-D2-CV-110.....	296
MDS-D2-CV-185.....	297
MDS-D2-CV-300.....	298
MDS-D2-CV-370.....	299
MDS-D2-CV-450.....	300
MDS-D2-CV-550.....	301
Dynamic Brake Unit (MDS-D-DBU)	302
Battery (ER6V-C119B, A6BAT, MDS-BTBOX-36, MR-BAT6V1SET).....	304
Ball Screw Side Encoder (OSA105ET2A, OSA166ET2NA)	318
Twin-head Magnetic Encoder (MBA Series).....	320
Regenerative Option	324
Encoder for Spindle Motor	333
Spindle Side ABZ Pulse Output Encoder (OSE-1024 Series)	334
Spindle Side PLG Serial Output Encoder (TS5690, MU1606 Series).....	336
Twin-head Magnetic Encoder (MBE Series).....	340
Serial Output Interface Unit for ABZ Analog Encoder MDS-B-HR.....	344

Serial Signal Division Unit MDS-B-SD	349
Optical Communication Repeater Unit (FCU7-EX022)	351
DC Connection Bar	354
Power Backup Unit (MDS-D-PFU)	355
Regenerative Resistor for Power Backup Unit (R-UNIT-7)	359
Capacitor Unit for Power Backup Unit (MDS-D-CU)	361

400V System Servo/spindle Drive System 363

System Configuration	364
Explanation of Type	365
1. Servo motor type	365
2. Linear servo motor type	366
3. Servo drive unit type	367
4. Spindle motor type	368
5. Spindle drive unit type	368
6. Power supply unit type	369
7. AC reactor type	369
8. Peripheral devices type	369
Servo Motor	371
HF-H75	372
HF-H105	374
HF-H54	376
HF-H104	378
HF-H154	380
HF-H204	382
HF-H354	384
HF-H453	386
HF-H703	388
HF-H903	390
HP-H54	392
HP-H104	394
HP-H154	396
HP-H224	398
HP-H204	400
HP-H354	402
HP-H454	404
HP-H704	406
HP-H903	408
HP-H1103	410
HC-H1502S-S10	412
Linear Motor	415
LM-FP5H-60M	416
Spindle Motor	419
SJ-4-V2.2-03T	420
SJ-4-V3.7-03T	421
SJ-4-V5.5-07T	422
SJ-4-V7.5-12T	423
SJ-4-V7.5-13ZT	424

SJ-4-V11-18T.....	425
SJ-4-V18.5-14T.....	426
SJ-4-V22-18ZT.....	427
SJ-4-V22-15T.....	428
SJ-4-V26-08ZT.....	429
SJ-4-V37-04ZT.....	430
SJ-4-V45-02T.....	431
SJ-4-V55-03T.....	432
SJ-4-V15-20T.....	433
SJ-4-V22-16T.....	434
Servo Drive Unit.....	435
MDS-DH2-V1-10.....	436
MDS-DH2-V1-20.....	437
MDS-DH2-V1-40.....	438
MDS-DH2-V1-80.....	439
MDS-DH2-V1-80W.....	440
MDS-DH2-V1-160.....	441
MDS-DH2-V1-160W.....	442
MDS-DH2-V1-200.....	443
MDS-DH2-V2-1010.....	444
MDS-DH2-V2-2010.....	445
MDS-DH2-V2-2020.....	446
MDS-DH2-V2-4020.....	447
MDS-DH2-V2-4040.....	448
MDS-DH2-V2-8040.....	449
MDS-DH2-V2-8080.....	450
MDS-DH2-V2-8080W.....	451
Spindle Drive Unit.....	453
MDS-DH2-SP-20.....	454
MDS-DH2-SP-40.....	455
MDS-DH2-SP-80.....	456
MDS-DH2-SP-100.....	457
MDS-DH2-SP-160.....	458
MDS-DH2-SP-200.....	459
MDS-DH2-SP-320.....	460
MDS-DH2-SP-480.....	461
Power Supply Unit.....	463
MDS-DH2-CV-37.....	464
MDS-DH2-CV-75.....	465
MDS-DH2-CV-110.....	466
MDS-DH2-CV-185.....	467
MDS-DH2-CV-300.....	468
MDS-DH2-CV-370.....	469
MDS-DH2-CV-450.....	470
MDS-DH2-CV-550.....	471
MDS-DH2-CV-750.....	472
Dynamic Brake Unit (MDS-D-DBU).....	473
Battery (ER6V-C119B, A6BAT, MDS-BTBOX-36).....	475
Ball Screw Side Encoder (OSA105ET2A, OSA166ET2NA).....	484
Twin-head Magnetic Encoder (MBA Series).....	486
Encoder for Spindle Motor.....	490

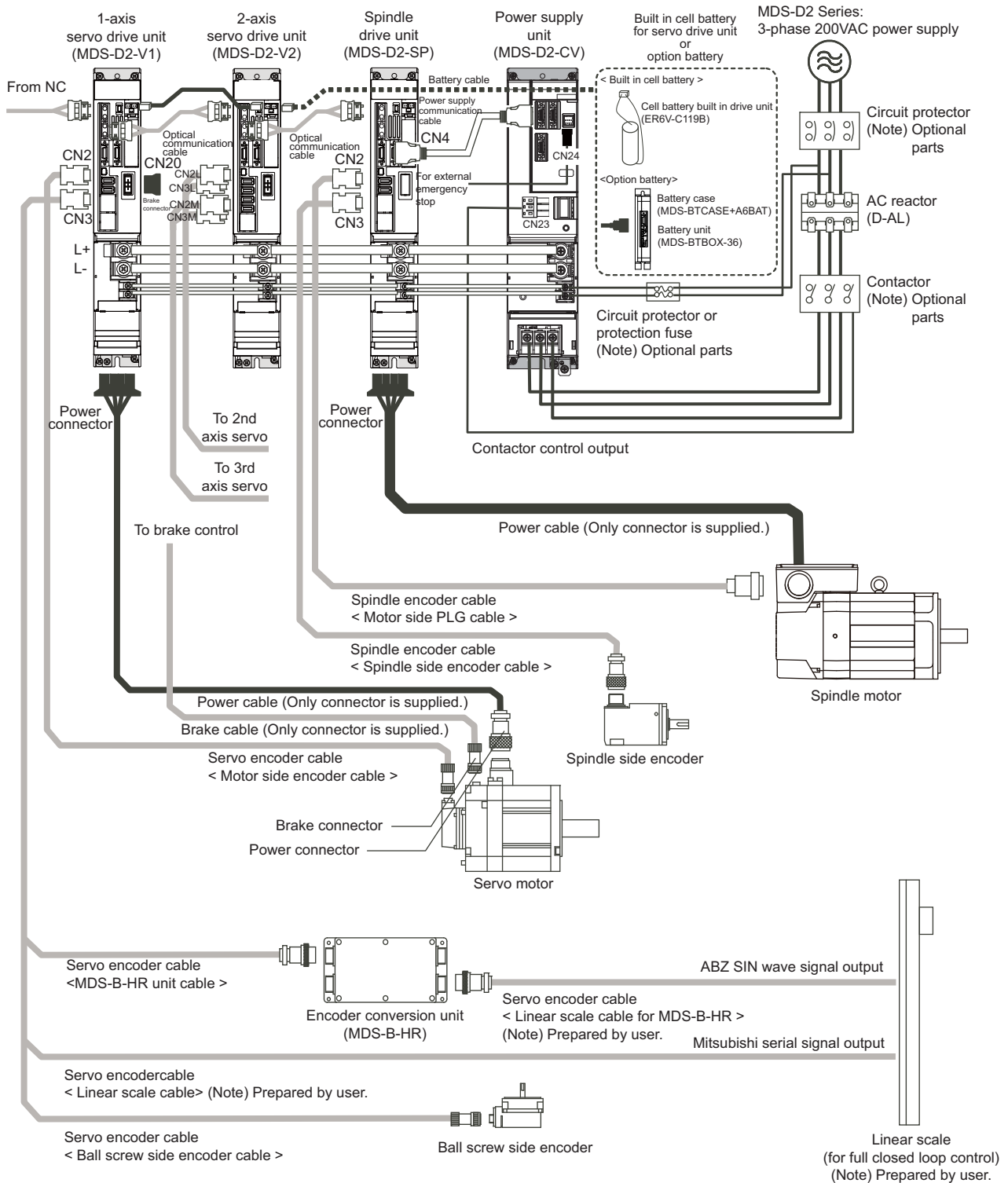
Spindle Side ABZ Pulse Output Encoder (OSE-1024 Series)	491
Spindle Side PLG Serial Output Encoder (TS5690, MU1606 Series).....	493
Twin-head Magnetic Encoder (MBE Series)	497
Serial Output Interface Unit for ABZ Analog Encoder MDS-B-HR.....	501
Serial Signal Division Unit MDS-B-SD	504
Optical Communication Repeater Unit (FCU7-EX022)	506
DC Connection Bar	509
Power Backup Unit (MDS-DH-PFU)	510
Regenerative Resistor for Power Backup Unit (R-UNIT-6).....	514
Capacitor Unit for Power Backup Unit (MDS-DH-CU)	516

(Note) The characteristic values and numerical values without tolerances mentioned in this manual are representative values.

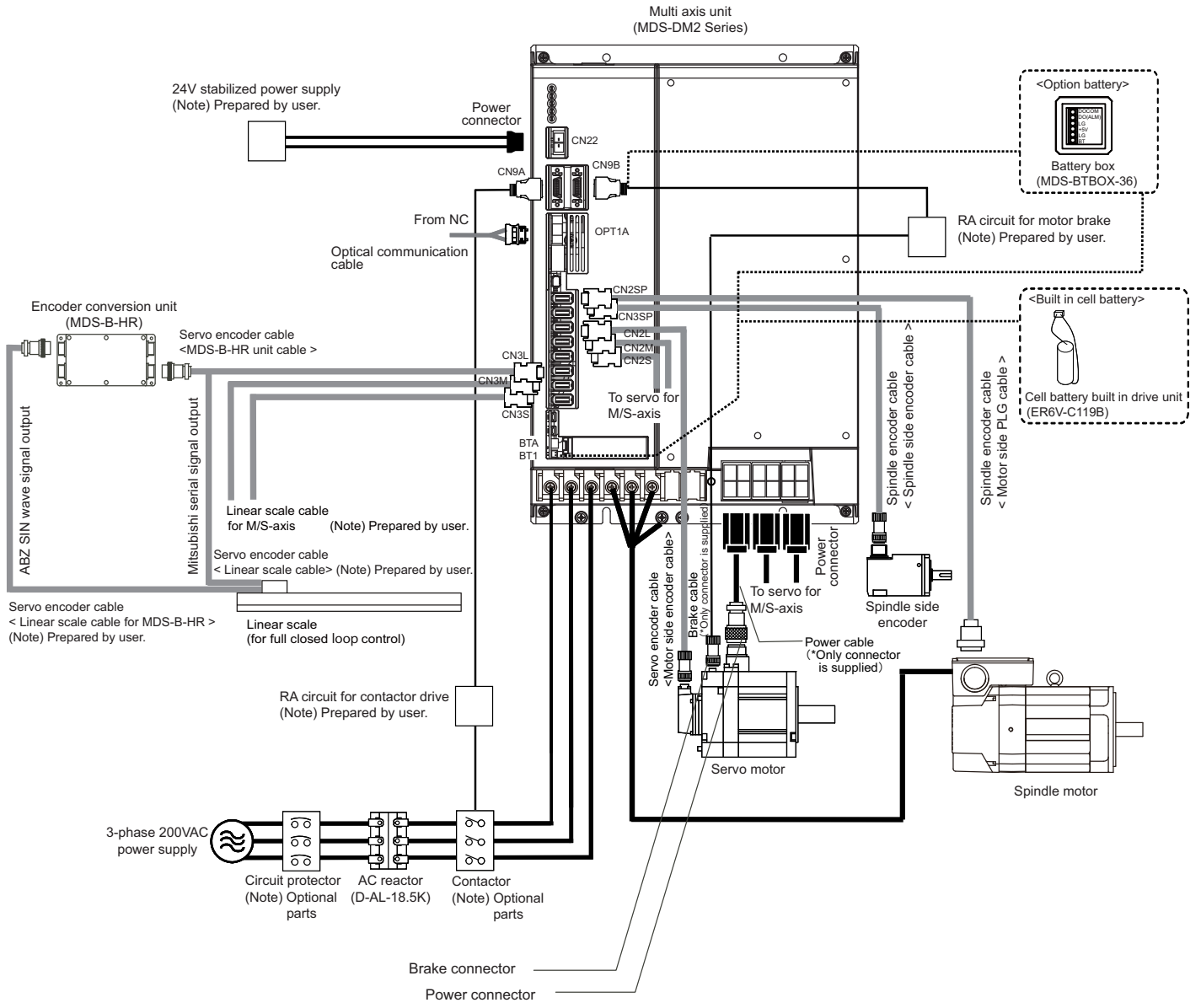
200V System Servo/spindle Drive System

System Configuration

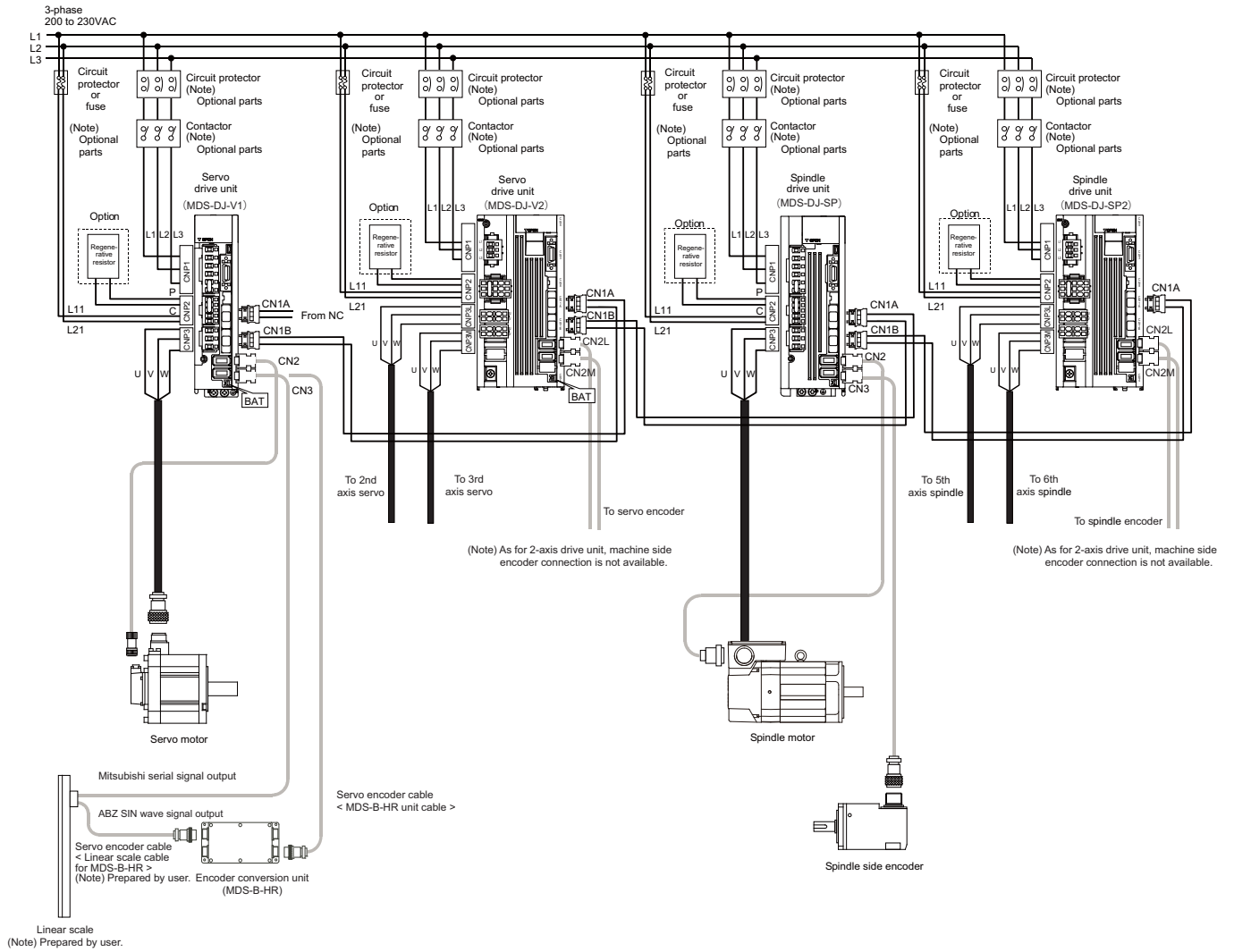
< MDS-D2 Series >



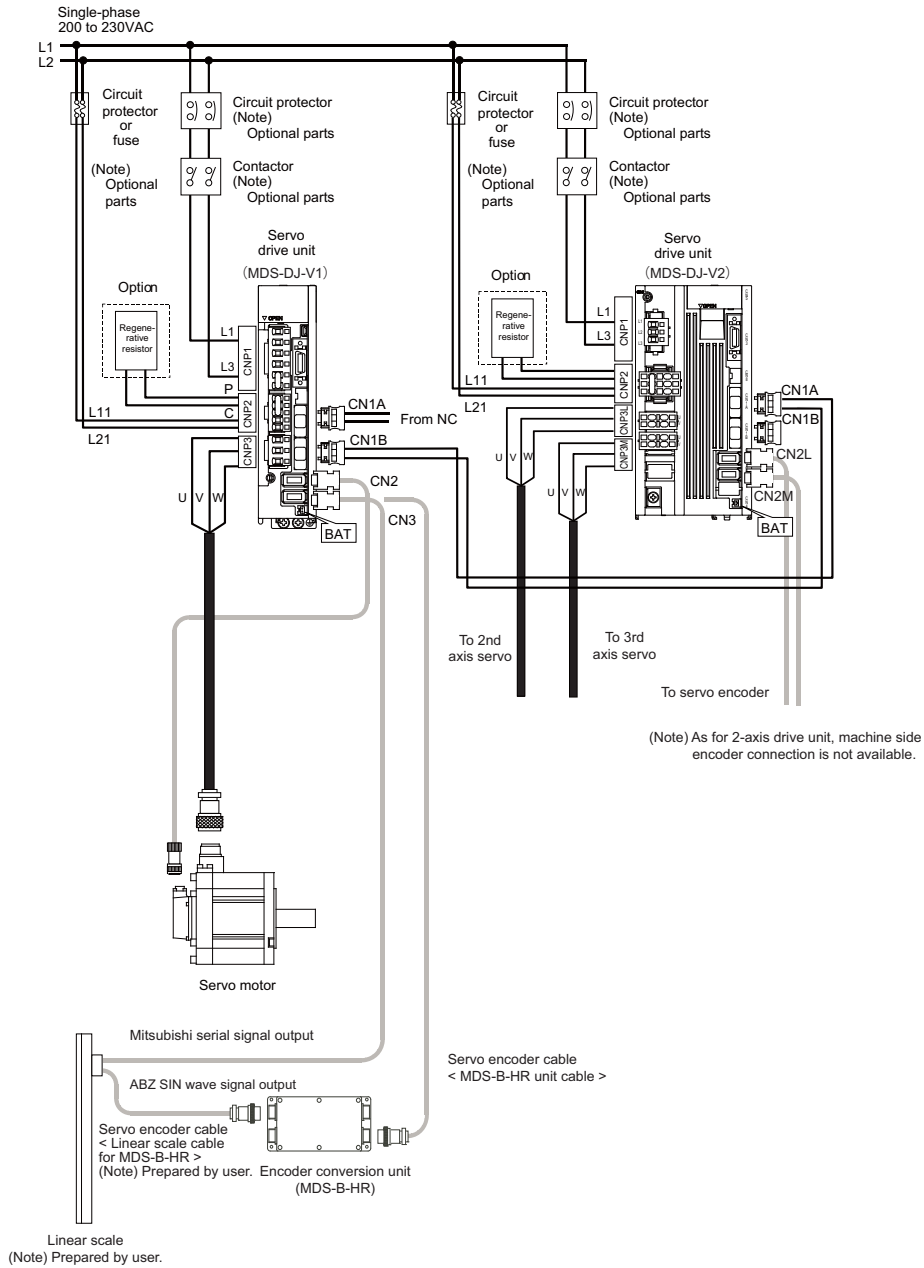
< MDS-DM2-SPV2/SPV3 Series >



< MDS-DJ-V1/SP Series >



< For single-phase 200 to 230VAC >



⚠ CAUTION

1. Connect single-phase 200 to 230VAC power supply to L1 and L3 but do not connect anything to L2.
2. Use the servo drive unit under an Overvoltage Category III as stipulated in IEC/EN60664-1 for a star-connected power supply with the neutral point grounded.

Explanation of Type

1. Servo motor type

< HF Series >

HF (1) (2) (3) - (4)

(1) Rated output · Maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
75	0.75 kW	5000 r/min	90 SQ.
105	1.0 kW	5000 r/min	90 SQ.
54	0.5 kW	4000 r/min	130 SQ.
104	1.0 kW	4000 r/min	130 SQ.
154	1.5 kW	4000 r/min	130 SQ.
224	2.2 kW	4000 r/min	130 SQ.
204	2.0 kW	4000 r/min	176 SQ.
354	3.5 kW	4000 r/min	176 SQ.
123	1.2 kW	3000 r/min	130 SQ.
223	2.2 kW	3000 r/min	130 SQ.
303	3.0 kW	3000 r/min	176 SQ.
453	4.5 kW	3500 r/min	176 SQ.
703	7.0 kW	3000 r/min	176 SQ.
903	9.0 kW	3000 r/min	204 SQ.
142	1.4 kW	2000 r/min	130 SQ.
302	3.0 kW	2000 r/min	176 SQ.

(3) Shaft end structure

Symbol	Shaft end structure
S	Straight
T	Taper

(Note) "Taper" is available for the motor whose flange size is 90 SQ. mm or 130 SQ. mm.

(4) Encoder

Symbol	Type	Detection method	Resolution
A48	OSA18-100	Absolute position	260,000 p/rev
A51	OSA105S5A		1,000,000 p/rev
A74N	OSA166S5NA		16,000,000 p/rev

(2) Magnetic brake

Symbol	Magnetic brake
None	None
B	With magnetic brakes

< HP Series >

HP (1) (2) (3) - (4)

(1) Rated output · Maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
54	0.5 kW	4000 r/min	130 SQ.
104	1.0 kW	4000 r/min	130 SQ.
154	1.5 kW	4000 r/min	130 SQ.
224	2.2 kW	4000 r/min	130 SQ.
204	2.0 kW	4000 r/min	180 SQ.
354	3.5 kW	4000 r/min	180 SQ.
454	4.5 kW	4000 r/min	180 SQ.
704	7.0 kW	4000 r/min	180 SQ.
903	9.0 kW	3000 r/min	220 SQ.
1103	11.0 kW	3000 r/min	220 SQ.

(3) Shaft end structure

Symbol	Shaft end structure
S	Straight
T	Taper

(Note) "Taper" is available for the motor whose flange size is 130 SQ. mm.

(4) Encoder

Symbol	Type	Detection method	Resolution
A48	OSA18-100	Absolute position	260,000 p/rev
A51	OSA105S5A		1,000,000 p/rev
A74N	OSA166S5NA		16,000,000 p/rev

(2) Magnetic brake

Symbol	Magnetic brake
None	None
B	With magnetic brake

< HF-KP Series >

HF-KP 13 (1) J-S17

Rated output · Maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
13	0.1 kW	6000 r/min	40 SQ.

(1) Magnetic brake

Symbol	Magnetic brake
None	None
B	With magnetic brakes

(Note) The motor-end encoder has absolute position specifications, but is not equipped with the capacitor for data backup. Thus, absolute position is lost immediately after disconnection of the encoder cable.

HF-KP (1) (2) JW04-S6

(1) Rated output · Maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
23	0.2 kW	6000 r/min	60 SQ.
43	0.4 kW	6000 r/min	60 SQ.
73	0.75 kW	6000 r/min	80 SQ.

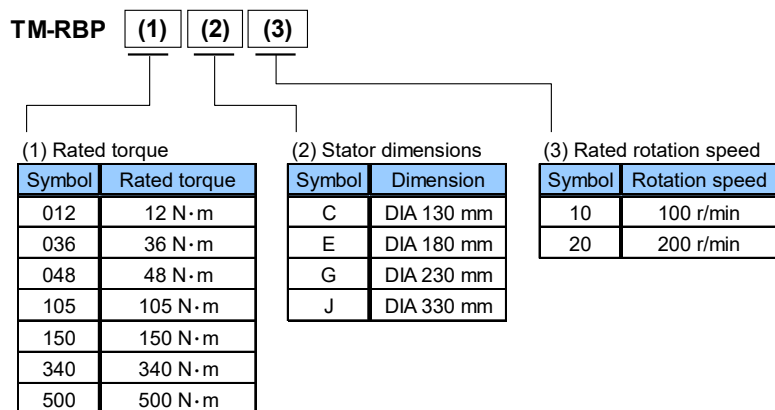
(2) Magnetic brake

Symbol	Magnetic brake
None	None
B	With magnetic brake

2. Direct-drive motor type

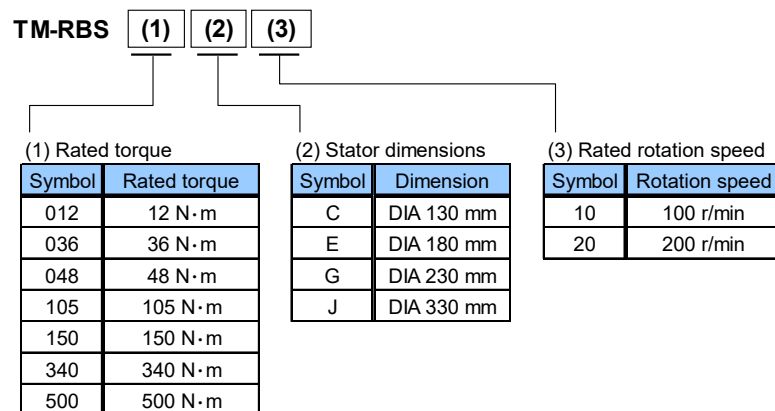
TM-RB Series

< Primary side (coil side) >



(Note 1) This explains the model name system of direct-drive motors, but does not mean all the combinations are available.
 (Note 2) The primary and secondary sides having the same variable part of the name are combined to form a direct-drive motor.

< Secondary side (magnet side) >

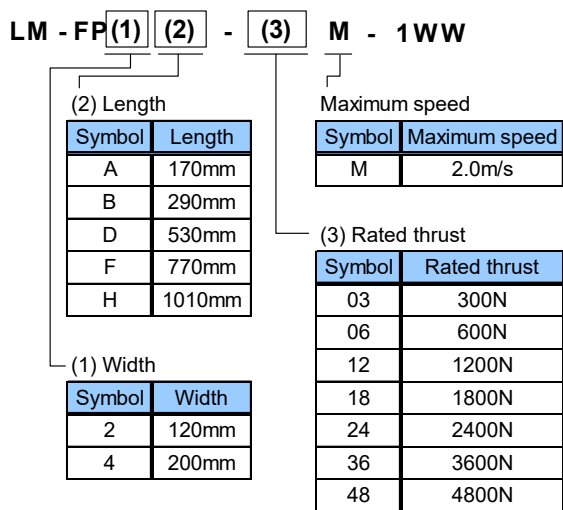


(Note 1) This explains the model name system of direct-drive motors, but does not mean all the combinations are available.
 (Note 2) The primary and secondary sides having the same variable part of the name are combined to form a direct-drive motor.

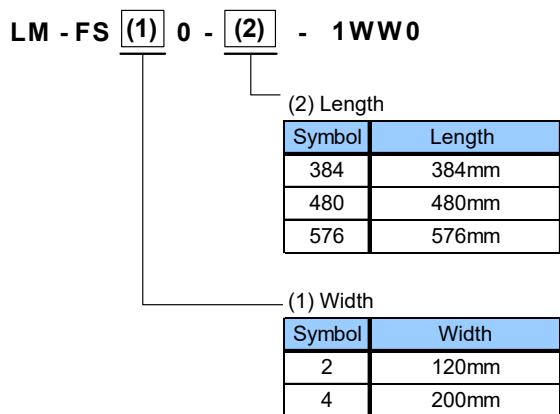
3. Linear servo motor type

LM-F Series

< Primary side: Coil >



< Secondary side: Magnet >



(Note 1) The linear dimension of 384mm is available for LM-FS20 only.

(Note 2) This explains the model name system of linear motors, but does not mean all the combinations are available.

4. Servo drive unit type

< 1-axis servo drive unit >

MDS-D2- (1)

(1) Unit Type MDS-D2-	Compatible motor type		HF□														HP□							HF-KP□								
			75	105	54	104	154	224	204	354	123	223	303	453	703	903	142	302	54	104	154	224	204	354	454	704	903	1103	23	43	73	
Unit width	Unit nominal maximum current	Stall torque (N·m)	2.0	3.0	2.9	5.9	9.0	12.0	13.7	22.5	7.0	12.0	22.5	37.2	49.0	58.8	11.0	20.0	3.0	5.9	9.0	12.0	13.7	22.5	31.9	49.0	70.0	110.0	0.64	1.3	2.4	
V1-20	60mm	20A	●	●								●																	●	●	●	
V1-40		40A			●	●							●							●	●	●										
V1-80		80A					●	●	●					●								●	●	●								
V1-160		160A										●			●									●	●							
V1-160W	90mm	160A													●											●						
V1-320	120mm	320A																										●				
V1-320W	150mm	320A																											●			

● Indicates the compatible motor for each servo drive unit.

CAUTION

The dynamic brake unit (MDS-D-DBU) is required for the MDS-D2-V1-320W.

MDS-DJ-V1- (1)

(1) Unit Type MDS-DJ-V1-	Compatible motor type		HF□														HF-KP□															
			75	105	54	104	154	224	204	354	123	223	303	142	302	13	23	43	73													
Unit width	Unit nominal maximum current	Stall torque (N·m)	2.0	3.0	2.9	5.9	9.0	12.0	13.7	22.5	7.0	12.0	22.5	11.0	20.0	0.32	0.64	1.3	2.4													
10	40mm	10A																														
15	40mm	15A																														
30	60mm	30A	●	●	●																											
40	90mm	40A				●							●	●		●	●															●
80	90mm	80A					●	●	●					●																		
100	90mm	100A									●																					

● Indicates the compatible motor for each servo drive unit.

< 2-axis servo drive unit >

MDS-D2- (1)

(1) Unit Type MDS-D2-	Compatible motor type		HF□														HP□							HF-KP□										
			75	105	54	104	154	224	204	354	123	223	303	453	703	903	142	302	54	104	154	224	204	354	454	704	903	1103	23	43	73			
Unit width	Unit nominal maximum current	Stall torque (N·m)	2.0	3.0	2.9	5.9	9.0	12.0	13.7	22.5	7.0	12.0	22.5	37.2	49.0	58.8	11.0	20.0	3.0	5.9	9.0	12.0	13.7	22.5	31.9	49.0	70.0	110.0	0.64	1.3	2.4			
V2-2020	60mm	20+20A	LM	●	●									●																		●	●	●
V2-4020		40+20A	L				●	●							●																			
V2-4040		40+40A	M	●	●										●																			
V2-8040		80+40A	LM				●	●							●																			
V2-8080	90mm	80+80A	L																															
V2-16080		160+80A	M																															
V2-160160		160+160A	LM																															
V2-160160W		120mm	160+160A	LM																														

● Indicates the compatible motor for each servo drive unit.

MDS-DJ-V2- (1)

(1) Unit Type MDS-DJ-V2-	Compatible motor type		HF□														HF-KP□																
			75	105	54	104	154	224	204	354	123	223	303	142	302	13	23	43	73														
Unit width	Unit nominal maximum current	Stall torque (N·m)	2.0	3.0	2.9	5.9	9.0	12.0	13.7	22.5	7.0	12.0	22.5	11.0	20.0	0.32	0.64	1.3	2.4														
3030	85mm	30+30A	LM	●	●	●																											

● Indicates the compatible motor for each servo drive unit.

< 3-axis servo drive unit >

MDS-D2- (1)

(1) Unit Type MDS-D2-			Compatible motor type	HF□										HF-KP□		
				75	105	54	104	154	123	223	142	302	23	43	73	
Unit width	Unit nominal maximum current	Stall torque (N·m)	Axis	2.0	3.0	2.9	5.9	7.0	7.0	12 (10.0)	11.0	20 (15.6)	0.64	1.3	5.1	
				V3-202020	60mm	20+20+20A	L	●	●				●		●	
	M	●	●						●		●		●	●	●	
	S	●	●						●		●		●	●	●	
V3-404040	60mm	40+40+40A	L	●	●	●	●	□	●	●	●	●				
			M	●	●	●	●	□	●	○	●	○				
			S	●	●	●	●	□	●	○	●	○				

● Indicates the compatible motor for each servo drive unit.
 ○ Indicates the motor that can be combine with the drive unit although the stall torque is limited.
 □ Indicates the motor that can be combine with the drive unit although the stall torque and maximum torque are limited.
 (Note) The values in the parentheses are specifications when connecting with the M/S-axis of the MDS-D2-V3-404040.

5. Multi axis unit

MDS-DM2- (1)

(1) Unit Type MDS-DM2-			Compatible motor type	HF□										
				54	104	154	224	204	354	223	303	453	302	
Unit width	Unit nominal maximum current	Stall torque (N·m)	Axis	2.9	5.9	9.0	12.0	13.7	22.5	12.0	22.5	37.2	20.0	
				SPV3-10080	260mm	80+80+80A	LMS	●	●	●	●	●		●
SPV3-16080	80+80+80A	LMS	●	●		●	●	●		●	●		●	
SPV3-20080	80+80+80A	LMS	●	●		●	●	●		●	●		●	
SPV3-200120	120+120+120A	LMS				●	●	●	●		●	●		
SPV2-10080	80+80A	LM	●	●		●	●	●		●	●		●	
SPV2-16080	80+80A	LM	●	●		●	●	●		●	●		●	
SPV2-20080	80+80A	LM	●	●		●	●	●		●	●		●	

● Indicates the compatible motor for each servo drive unit.

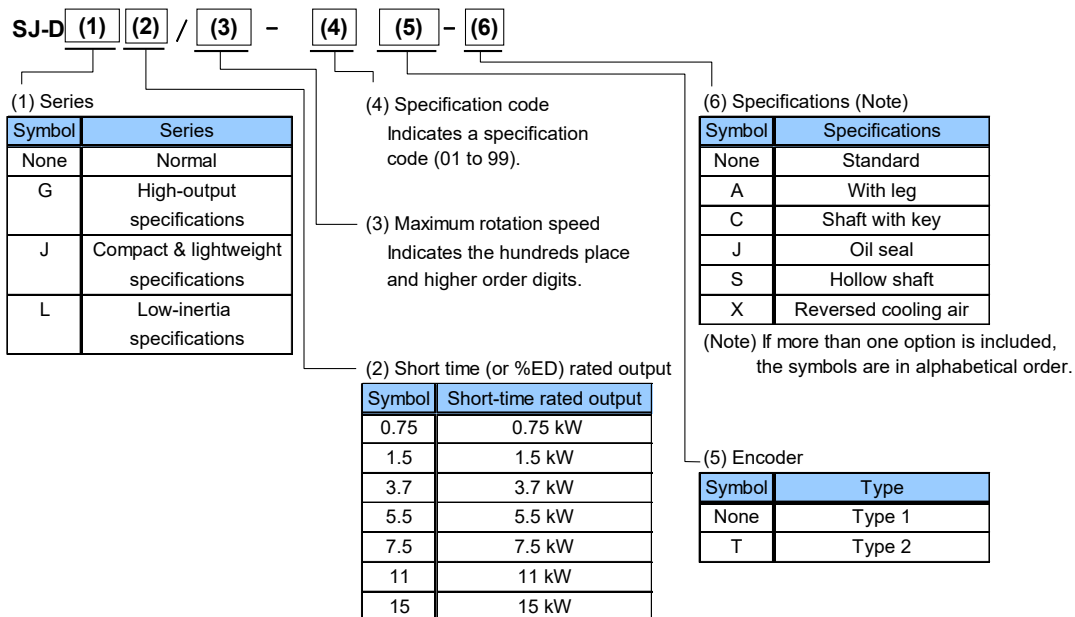
MDS-DM2- (1)

(1) Unit Type MDS-DM2-			Compatible motor type	HF□									
				54	104	154	224	204	354	223	303	453	302
Unit width	Unit nominal maximum current	Stall torque (N·m)	Axis	2.9	5.9	9.0	12.0	13.7	22.5	12.0	22.5	37.2	20.0
				SPHV3-20080	260mm	80+80+80A	LMS	●	●	●	●	●	

● Indicates the compatible motor for each servo drive unit.

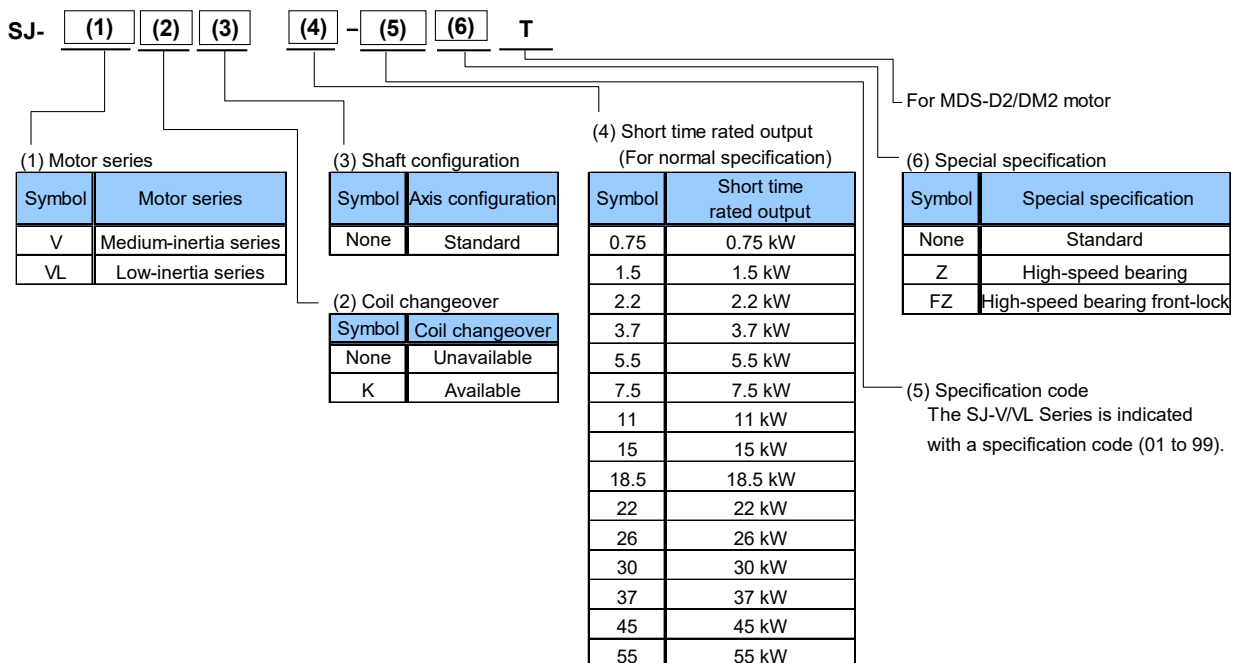
6. Spindle motor type

< SJ-D Series >



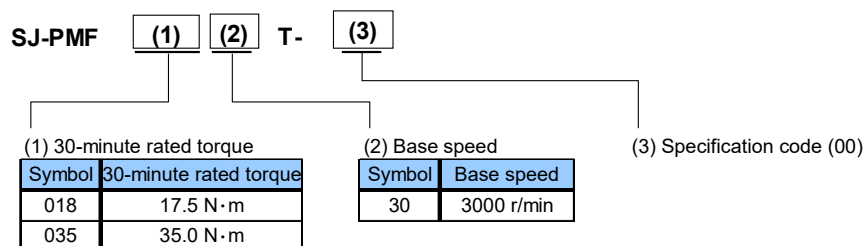
(Note) This explains the model name system of spindle motors, but does not mean all the combinations are available.

< SJ-V/VL Series >



(Note) This explains the model name system of spindle motors, but does not mean all the combinations are available.

< IPM spindle motor series >

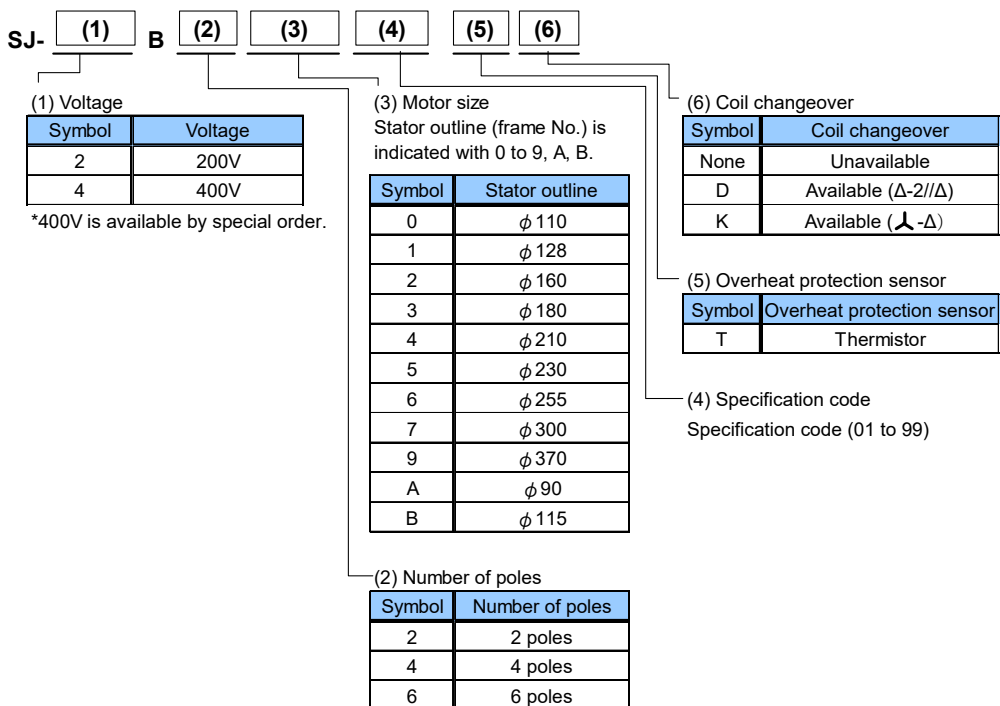


(Note 1) The built-in IPM spindle motor is available by special order.

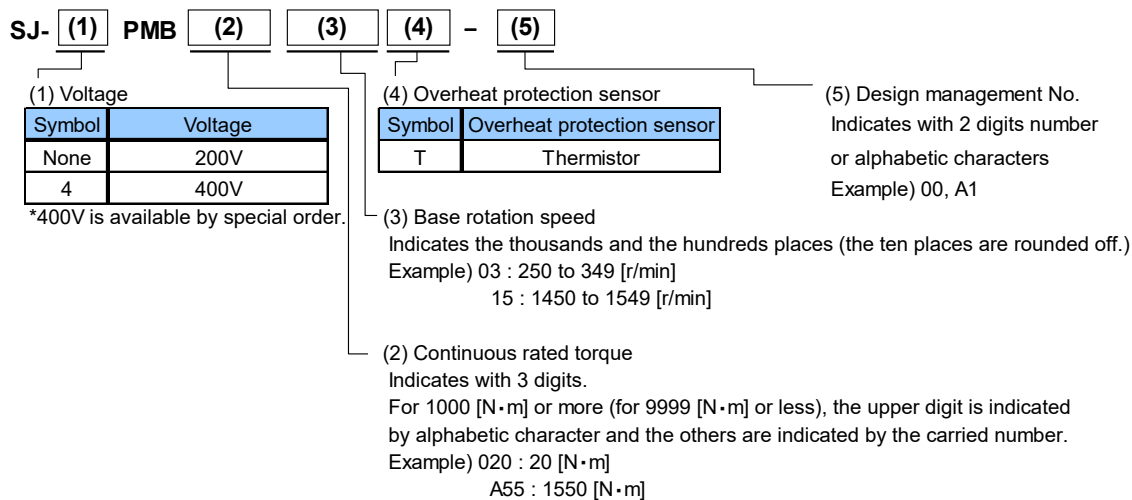
(Note 2) This explains the model name system of a spindle motor, and all combinations of motor types listed above do not exist.

7. Built-in spindle motor type

(1) Built-in IM spindle motor
< SJ-B Series >



(2) Built-in IPM spindle motor
< SJ-PMB Series >



CAUTION

1. Check the rating table to see whether the coil changeover specification (Y-Δ connection, Δ-2//Δconnection) is included or not.
2. This explains the model name system of spindle motors, but does not mean all the combinations are available.

8. Tool spindle motor type

< HF-KP Series >

HF-KP (1) J (2) W09

(1) Rated output and maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
46	0.4 kW	6000 r/min	60 SQ.
56	0.5 kW	6000 r/min	60 SQ.
96	0.9 kW	6000 r/min	80 SQ.

(2) Option

Symbol	Option
None	Without keyway
K	With keyway (with

< HF-SP Series >

HF-SP (1) J (2) W09

(1) Rated output and maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
226	2.2kW	6000 r/min	130 SQ.
406	4.0kW	6000 r/min	130 SQ.

(2) Option

Symbol	Option
None	Without keyway
K	With keyway (without

< HF Series >

HF (1) (2) - (3)

(1) Rated output · Maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
75	0.75 kW	4000 r/min	90 SQ.
105	1.0 kW	4000 r/min	90 SQ.
54	0.5 kW	3000 r/min	130 SQ.
104	1.0 kW	3000 r/min	130 SQ.
154	1.5 kW	3000 r/min	130 SQ.
224	2.2 kW	3000 r/min	130 SQ.
204	2.0 kW	3000 r/min	176 SQ.
354	3.5 kW	3000 r/min	176 SQ.
453	4.5 kW	3000 r/min	176 SQ.
703	7.0 kW	3000 r/min	176 SQ.
903	9.0 kW	3000 r/min	204 SQ.

(2) Shaft end structure

Symbol	Shaft end structure
S	Straight

(3) Encoder

Symbol	Type	Resolution
A48	OSA18-100	260,000 p/rev

(Note) Encoder A51 and A74N can not be used with the tool spindle motor.

< Combination with spindle drive unit >

(a) 1-axis spindle drive unit

Unit Type MDS-D2-	Compatible motor type		HF□											HF-KP□			HF-SP□	
			75	105	54	104	154	224	204	354	453	703	903	46	56	96	226	406
			Rated torque (N·m)	1.8	2.4	1.6	3.2	4.8	7.0	6.4	11.1	14.3	22.3	28.6	0.64	0.8	1.43	3.5
Unit width	Rated output																	
SP-20	60mm	20 A	●	●										●	●	●		
SP-40		40 A			●	●												
SP-80		80 A					●	●	●								●	
SP-160	90mm	160 A								●	●	●						●
SP-200		200 A																
SP-240	150mm	240 A																
SP-320		320 A												●				
SP-400		400 A																
SP-640	300mm	640 A																

● Indicates the compatible motor for each spindle drive unit.

Unit Type MDS-DJ-SP-	Compatible motor type		HF□							HF-KP□		
			75	105	54	104	154	224	204	46	56	96
			Rated torque (N·m)	1.8	2.4	1.6	3.2	4.8	7.0	6.4	0.64	0.8
Unit width	Unit nominal maximum current											
20	60mm	20A	●	●	●					●	●	●
40		40A				●						
80	90mm	80A					●	●	●			
100		100A										
120	105mm	120A										
160		160A										

● Indicates the compatible motor for each spindle drive unit.

(b) 2-axis spindle drive unit

Unit Type MDS-D2-	Compatible motor type		HF□											HF-KP□			HF-SP□		
			75	105	54	104	154	224	204	354	453	703	46	56	96	226	406		
			Rated torque (N·m)	1.8	2.4	1.6	3.2	4.8	7.0	6.4	11.1	14.3	22.3	0.6	0.8	1.4	3.5	6.4	
Unit width	Rated output	Axis																	
SP2-2020	60mm	20+20A	LM	●	●										●	●	●		
SP2-4020		40+20A	L			●	●												
		M	●	●											●	●	●		
SP2-4040S	90mm	40+40A	LM			●	●												
SP2-4040		40+40A	LM			●	●												
SP2-8040		80+40A	L					●	●	●									●
	M					●	●												
SP2-16080S	120mm	160+80A	L							●	●	●							●
		M							●	●	●								●
SP2-8080	120mm	80+80A	LM						●	●	●								●
SP2-16080		160+80A	L							●	●	●							●
	M							●	●	●									●

● Indicates the compatible motor for each spindle drive unit.

Unit Type MDS-DJ-SP2-	Compatible motor type		HF□							HF-KP□				
			75	105	54	104	154	224	204	46	56	96		
			Rated torque (N·m)	1.8	2.4	1.6	3.2	4.8	7.0	6.4	0.64	0.8	1.43	
Unit width	Unit nominal maximum current													
2020	85mm	20+20A	●	●	●							●	●	●

● Indicates the compatible motor for each spindle drive unit.

9. Spindle drive unit type

< 1-axis spindle drive unit >

MDS-D2- (1)

(1) Capacity

Symbol	Nominal maximum current	Unit width
SP-20	20 A	60mm
SP-40	40 A	
SP-80	80 A	
SP-160	160 A	90mm
SP-200	200 A	120mm
SP-240	240 A	150mm
SP-320	320 A	
SP-400	400 A	240mm (Note)
SP-640	640 A	300mm (Note)

(Note) DC connection bar is required. Always install a large capacity drive unit (MDS-D2-SP-400,640) in the left side of power supply unit, and connect with DC connection bar.

MDS-DJ-SP- (1)

(1) Capacity

Symbol	Unit nominal maximum current	Unit width
20	20A	60mm
40	40A	90mm
80	80A	
100	100A	105mm
120	120A	
160	160A	172mm

< 2-axis spindle drive unit >

MDS-D2- (1)

(1) Capacity

Symbol	Nominal maximum current	Unit width
SP2-2020	20+20 A	60mm
SP2-4020	40+20 A	
SP2-4040S	40+40 A	
SP2-4040	40+40 A	90mm
SP2-8040	80+40 A	
SP2-16080S	160+80 A	120mm
SP2-8080	80+80 A	
SP2-16080	160+80 A	

MDS-DJ-SP2- (1)

(1) Capacity

Symbol	Unit nominal maximum current	Unit width
2020	20+20A	85mm

10. Power supply unit type

MDS-D2- (1)

Power supply unit				Compatible AC reactor	Compatible contactor (Mitsubishi) (Note 1)	Compatible circuit protector (Mitsubishi) (Note 1)	
(1) Type MDS-D2-	30-minute rated output	Continuous rated output	Unit width				
CV-37	3.7kW	2.2kW	60mm	D-AL-7.5K	S-T12-AC200V	NF63-CW3P-20A	
CV-75	7.5kW	5.5kW				NF63-CW3P-40A	
CV-110	11.0kW	7.5kW	90mm	D-AL-11K	S-T35-AC200V	NF63-CW3P-50A	
CV-185	18.5kW	15.0kW				NF125-CW3P-100A	
CV-300	30.0kW	26.0kW	150mm (Note 2)	D-AL-30K	S-T80-AC200V	NF250-CW3P-125A	
CV-370	37.0kW	30.0kW				S-N150-AC200V	NF250-CW3P-175A
CV-450	45.0kW	37.0kW					NF250-CW3P-200A
CV-550	55.0kW	45.0kW	300mm (Note 2)	D-AL-55K	S-N180-AC200V	NF250-CW3P-225A	

(Note 1) This is an optional part that is not included with the parts provided in the NC system.

(Note 2) When connecting with a large capacity drive unit, DC connection bar is required.

Always install a large capacity drive unit in the left side of power supply unit, and connect with DC connection bar.

11. AC reactor type

D-AL- (1)

AC reactor		Compatible power supply unit
(1) Type D-AL-	Capacity	
7.5K	7.5kW	MDS-D2-CV-37 MDS-D2-CV-75
11K	11.0kW	MDS-D2-CV-110
18.5K	18.5kW	MDS-D2-CV-185
30K	30.0kW	MDS-D2-CV-300
37K	37.0kW	MDS-D2-CV-370
45K	45.0kW	MDS-D2-CV-450
55K	55.0kW	MDS-D2-CV-550

12. Peripheral devices type

MDS-B-HR- (1) (2)

(1) Signal division function class

Symbol	Scale output voltage class
11	Output number 1
12	Output number 2 (with division)

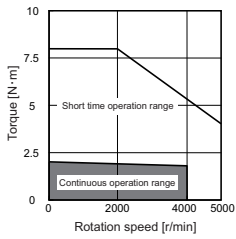
(2) Degree of protection

Symbol	Degree of protection
None	IP65
P	IP67

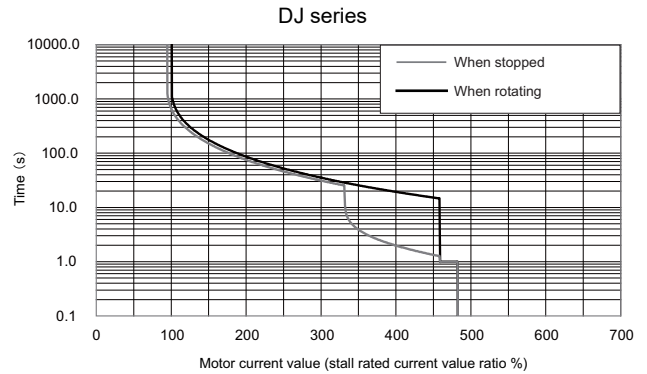
Servo Motor

Stall torque 2.0N·m	Rated rotation speed 4000r/min	Servo motor type HF75 □□-XXX (1)(2) (3)	Explanation of type	
			(1) Magnetic brake	B with brake None without brake
			(2) Shaft end	S Straight T Taper
			(3) Encoder	XXX Type

Torque characteristics

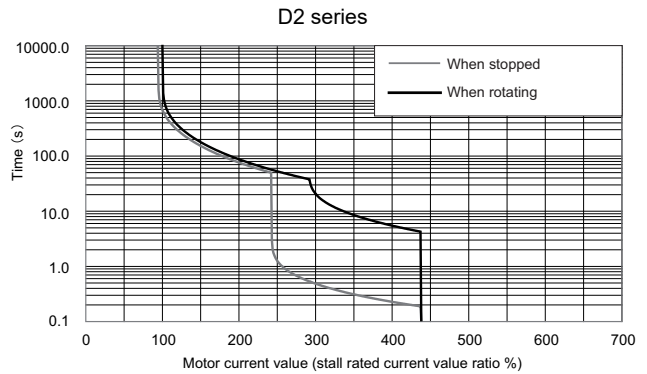


Servo overload protection characteristics



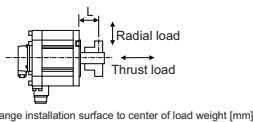
Specifications

Item	Specifications		
Compatible drive unit (*1)	1-axis type	-	MDS-D2-V1-20
	2-axis type	-	MDS-D2-V2-2020 (L,M) MDS-D2-V2-4020 (M)
	3-axis type	-	MDS-D2-V3-202020 (L,M,S) MDS-D2-V3-404040 (L,M,S)
	Multi axis integrated type	-	-
	Regenerative resistor type	MDS-DJ-V1-30 MDS-DJ-V2-3030 (L,M)	-
Continuous characteristics	Rated output[kW]	0.75	0.75
	Rated current[A]	3.1	3.1
	Rated torque[N·m]	1.8	1.8
	Stall current[A]	3.2	3.2
	Stall torque[N·m]	2.0	2.0
	Maximum momentary output (For power supply selection)[kW]	2.6	2.6
Rated rotation speed[r/min]	4000	4000	
Maximum rotation speed[r/min]	5000	5000	
Maximum current[A]	14.0	14.0	
Maximum torque[N·m]	8.0	8.0	
Power rate at continuous rated torque[kW/s]	12.3	12.3	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	2.71	5.43	
Motor inertia[×10 ⁻⁴ kg·m ²]	2.6	2.6	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	2.8	2.8	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	7.86	7.86
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	13.1	13.1
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	18.34	18.34
Mass	(Without) [kg]	2.5	2.5
	(With brake)[kg]	3.9	3.9
Heat-resistant class	155(F)	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	245 (L=33)	245 (L=33)
	Thrust load[N]	147	147
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	245 (L=33)	245 (L=33)
	Thrust load[N]	147	147
Oil level (*3)[mm]	15	15	
Absolute position encoder	16,000,000 p/rev (A74N)	-	MDS-D2-V1/V2/V3
	1,000,000 p/rev (A51)	MDS-DJ-V1/V2	MDS-D2-V1/V2/V3 MDS-DM2
	260,000 p/rev (A48)	MDS-DJ-V1/V2	MDS-D2-V1/V2/V3 MDS-DM2

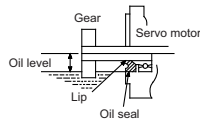


(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation:80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

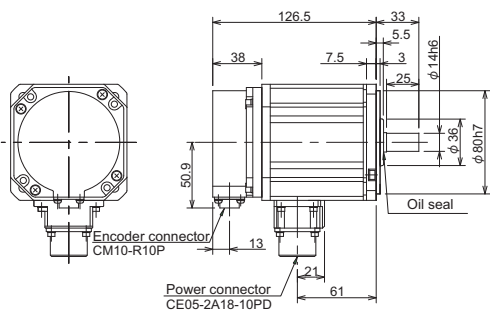
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.38
Static friction torque[N·m]	2.4
Release delay time (*1)[s]	0.03
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

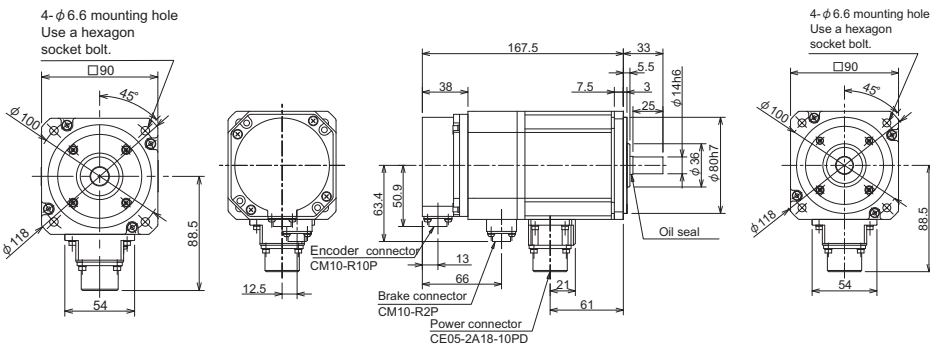
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

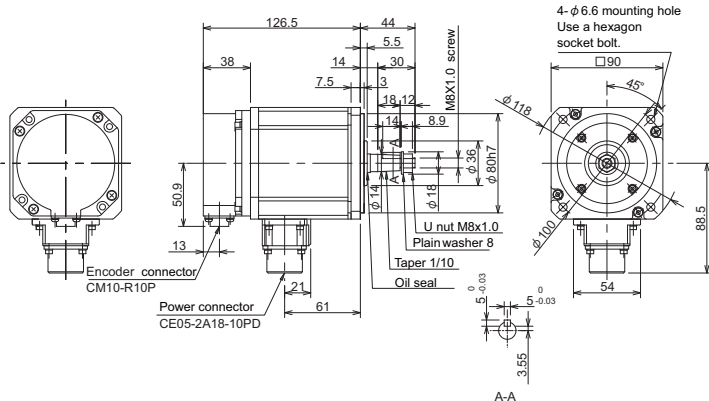
HF75S-A48



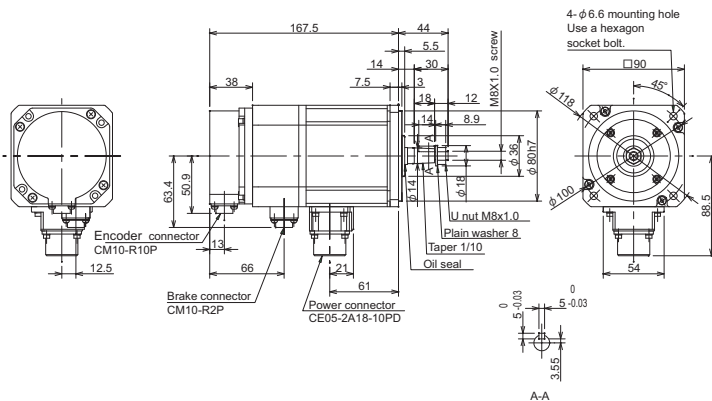
HF75BS-A48



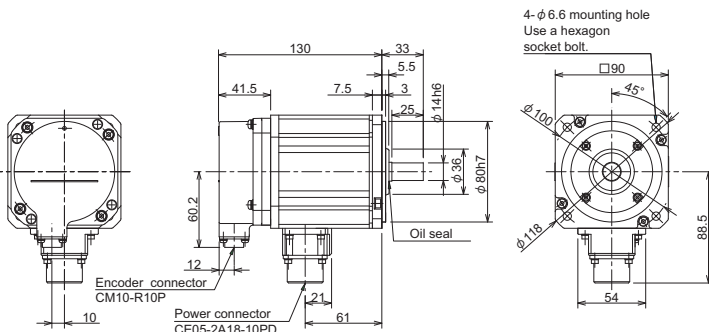
HF75T-A48



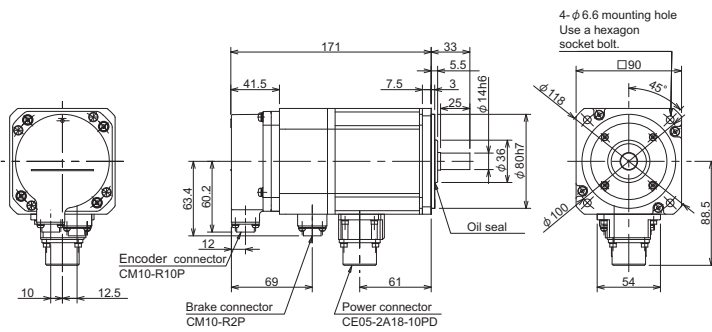
HF75BT-A48



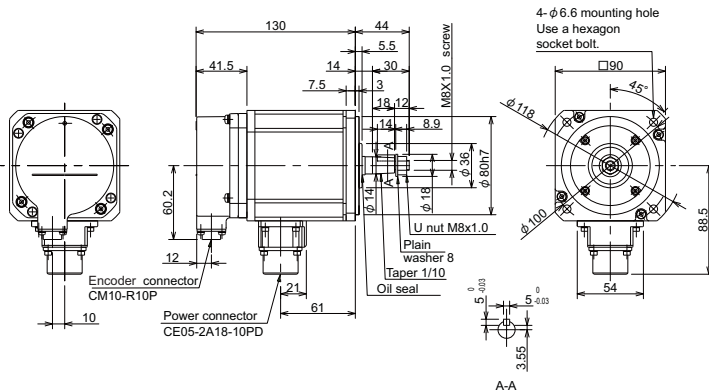
HF75S-A51,-A74N



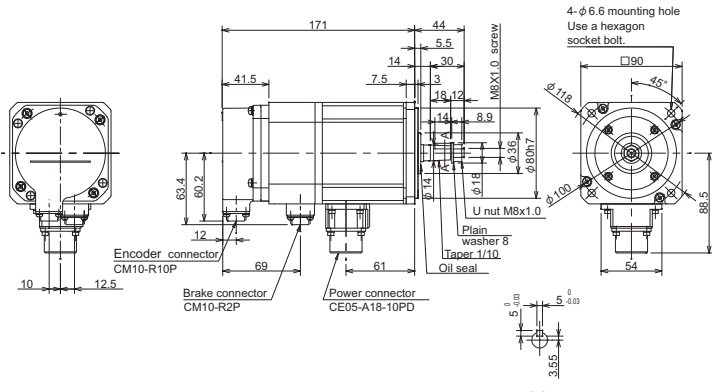
HF75BS-A51,-A74N



HF75T-A51,-A74N



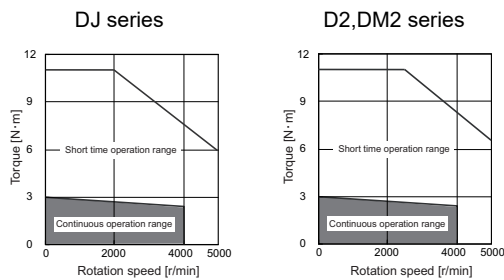
HF75BT-A51,-A74N



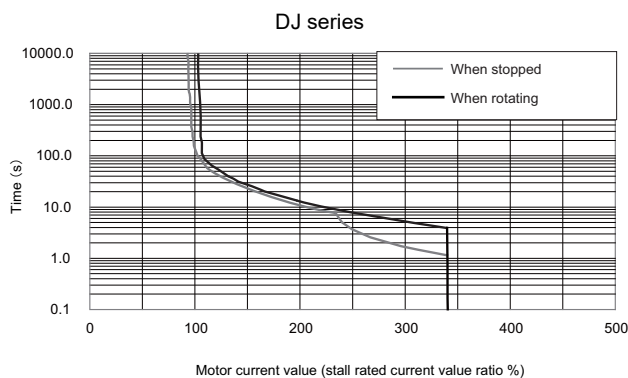
D48				D51/D74			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
162.3±1.5 (84.5)	142.3±1.5 (76)	162.3±1.5 (107)	142.3±1.5 (88.5)	162.3±1.5 (103.8)	142.3±1.5 (86.3)	162.3±1.5 (107)	142.2±1.5 (85.3)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque 3.0N·m	Rated rotation speed 4000r/min	Servo motor type HF105 □□-XXX (1)(2) (3)	Explanation of type	
			(1) Magnetic brake	B with brake None without brake
			(2) Shaft end	S Straight T Taper
			(3) Encoder	XXX Type

Torque characteristics



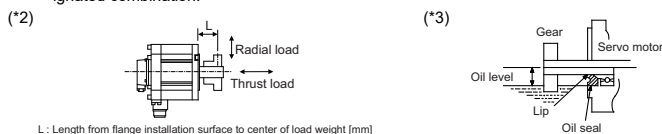
Servo overload protection characteristics



Specifications

Item	Specifications		
Compatible drive unit (*1)	1-axis type	-	MDS-D2-V1-20
	2-axis type	-	MDS-D2-V2-2020 (L,M) MDS-D2-V2-4020 (M)
	3-axis type	-	MDS-D2-V3-202020 (L,M,S) MDS-D2-V3-404040 (L,M,S)
	Multi axis integrated type	-	-
	Regenerative resistor type	MDS-DJ-V1-30 MDS-DJ-V2-3030 (L,M)	-
Continuous characteristics	Rated output[kW]	1.0	1.0
	Rated current[A]	3.7	3.7
	Rated torque[N·m]	2.4	2.4
	Stall current[A]	4.6	4.6
	Stall torque[N·m]	3.0	3.0
	Maximum momentary output (For power supply selection)[kW]	3.6	3.6
Rated rotation speed[r/min]	4000	4000	
Maximum rotation speed[r/min]	5000	5000	
Maximum current[A]	15.5	15.5	
Maximum torque[N·m]	11.0	11.0	
Power rate at continuous rated torque[kW/s]	11.2	11.2	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	5.10	10.21	
Motor inertia[×10 ⁻⁴ kg·m ²]	5.1	5.1	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	5.3	5.3	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	15.36	15.36
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	25.6	25.6
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	35.84	35.84
Mass	(Without) [kg]	4.3	4.3
	(With brake)[kg]	5.7	5.7
Heat-resistant class	155(F)	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	245 (L=33)	245 (L=33)
	Thrust load[N]	147	147
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	245 (L=33)	245 (L=33)
	Thrust load[N]	147	147
Oil level (*3)[mm]	15	15	
Absolute position encoder	16,000,000 p/rev (A74N)	-	MDS-D2-V1/V2/V3
	1,000,000 p/rev (A51)	MDS-DJ-V1/V2	MDS-D2-V1/V2/V3 MDS-DM2
	260,000 p/rev (A48)	MDS-DJ-V1/V2	MDS-D2-V1/V2/V3 MDS-DM2

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation:80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

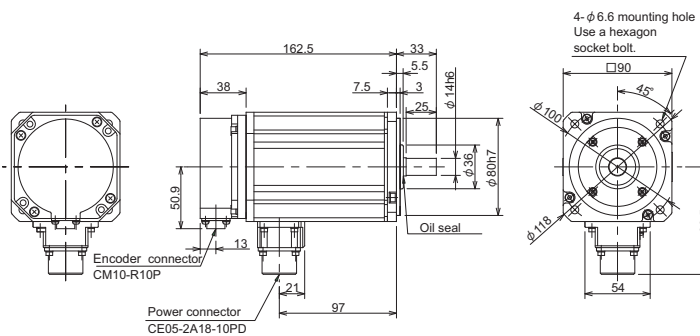
Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.38
Static friction torque[N·m]	2.4
Release delay time (*1)[s]	0.03
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

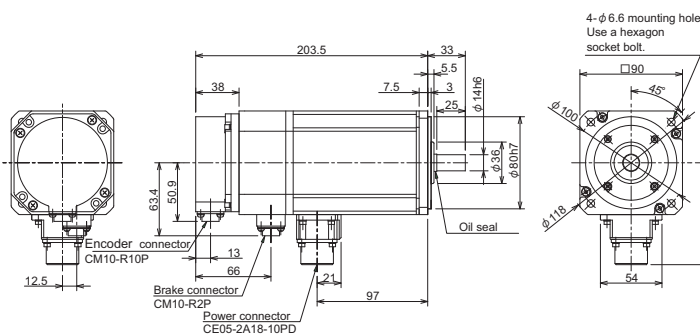
(*1) This is the representative value for the initial attraction gap at 20°C.
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

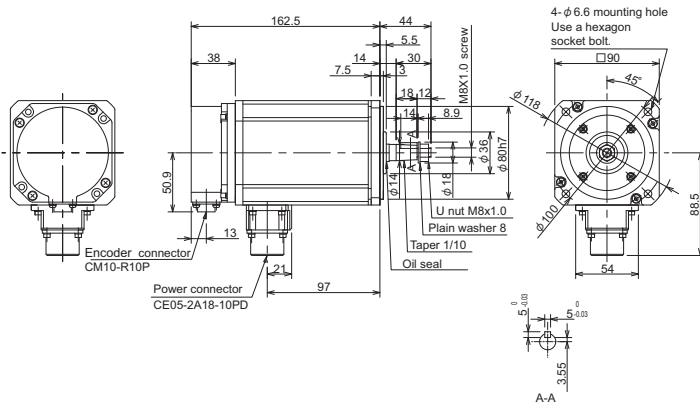
HF105S-A48



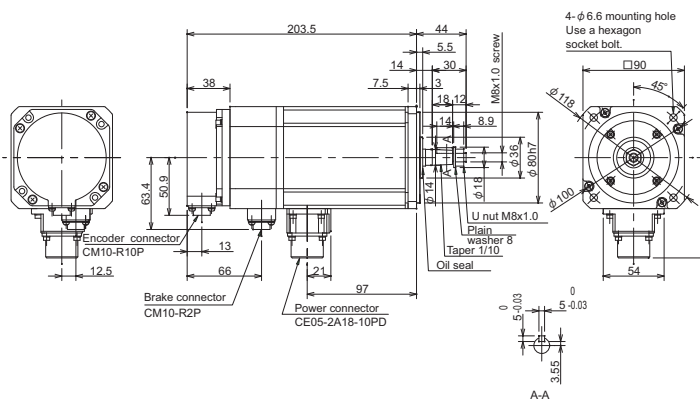
HF105BS-A48



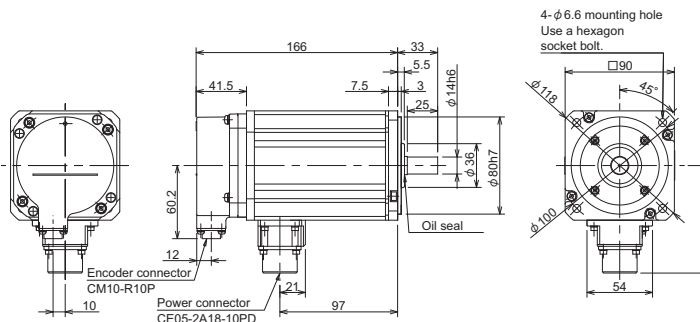
HF105T-A48



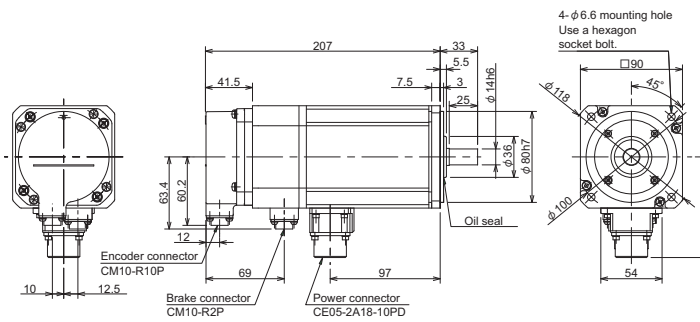
HF105BT-A48



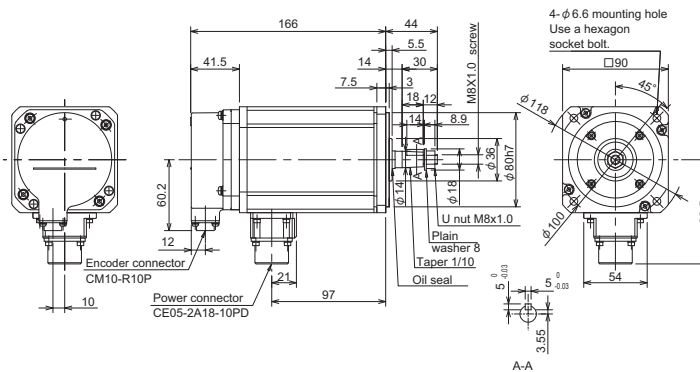
HF105S-A51,-A74N



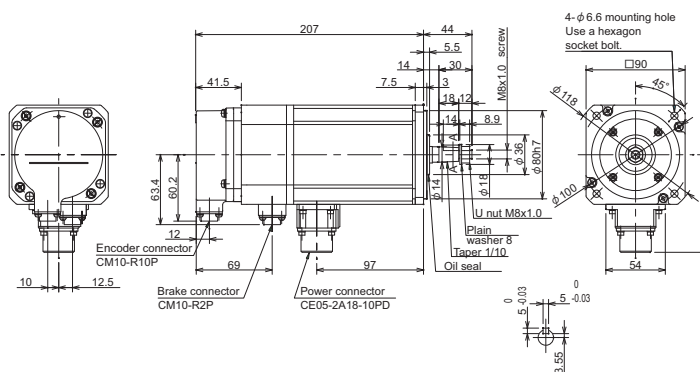
HF105BS-A51,-A74N



HF105T-A51,-A74N



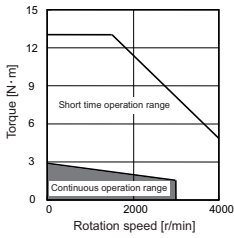
HF105BT-A51,-A74N



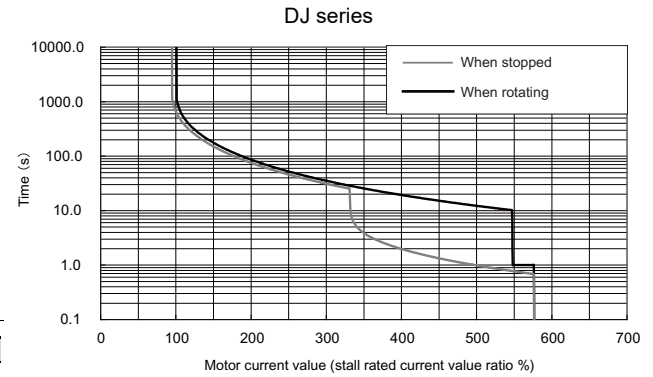
D48				D51/D74			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
162.3±1.5 (84.5)	142.3±1.5 (76)	162.3±1.5 (107)	142.3±1.5 (88.5)	162.3±1.5 (103.8)	142.3±1.5 (86.3)	162.3±1.5 (107)	142.2±1.5 (88.5)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type
2.9N·m	3000r/min	HF54 □□-XXX	(1) Magnetic brake
			B with brake
			None without brake
(2) Shaft end			
S Straight			
T Taper			
(3) Encoder			
XXX Type			

Torque characteristics



Servo overload protection characteristics

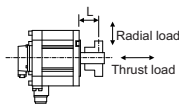


Specifications

Item	Specifications		
Compatible drive unit (*1)	1-axis type	-	MDS-D2-V1-40
	2-axis type	-	MDS-D2-V2-4020 (L) MDS-D2-V2-4040 (L,M) MDS-D2-V2-8040 (M)
	3-axis type	-	MDS-D2-V3-404040 (L,M,S)
	Multi axis integrated type	-	MDS-DM2-SPV2-xxx80 (L,M) MDS-DM2-SPV3-xxx80 (L,M,S) MDS-DM2-SPHV3-20080 (L,M,S)
	Regenerative resistor type	MDS-DJ-V1-30 MDS-DJ-V2-3030 (L,M)	-
Continuous characteristics	Rated output[kW]	0.5	0.5
	Rated current[A]	2.0	2.0
	Rated torque[N·m]	1.6	1.6
	Stall current[A]	3.2	3.2
	Stall torque[N·m]	2.9	2.9
	Maximum momentary output (For power supply selection)[kW]	2.3	2.3
Rated rotation speed[r/min]	3000	3000	
Maximum rotation speed[r/min]	4000	4000	
Maximum current[A]	16.8	16.8	
Maximum torque[N·m]	13.0	13.0	
Power rate at continuous rated torque[kW/s]	4.1	4.1	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	1.98	3.96	
Motor inertia[×10 ⁻⁴ kg·m ²]	6.1	6.1	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	8.3	8.3	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	18.39	18.39
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	30.65	30.65
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	42.91	42.91
Mass	(Without) [kg]	4.8	4.8
	(With brake)[kg]	6.7	6.7
Heat-resistant class	155(F)	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=58)	392 (L=58)
	Thrust load[N]	490	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=55)	980 (L=55)
	Thrust load[N]	490	490
Oil level (*3)[mm]	22.5	22.5	
Absolute position encoder	16,000,000 p/rev (A74N)	-	MDS-D2-V1/V2/V3
	1,000,000 p/rev (A51)	MDS-DJ-V1/V2	MDS-D2-V1/V2/V3, MDS-DM2
	260,000 p/rev (A48)	MDS-DJ-V1/V2	MDS-D2-V1/V2/V3, MDS-DM2

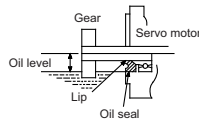
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

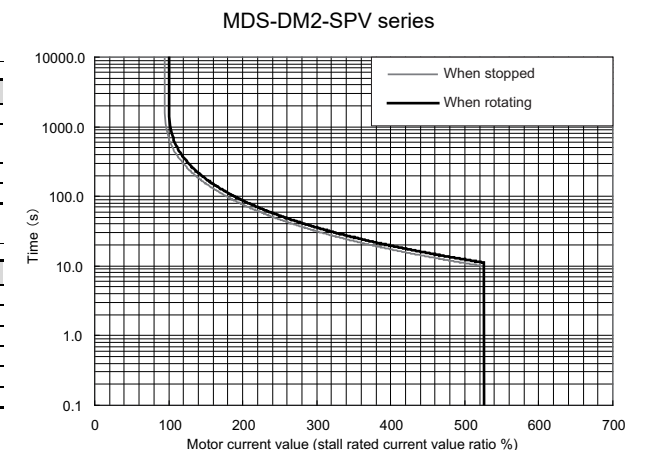
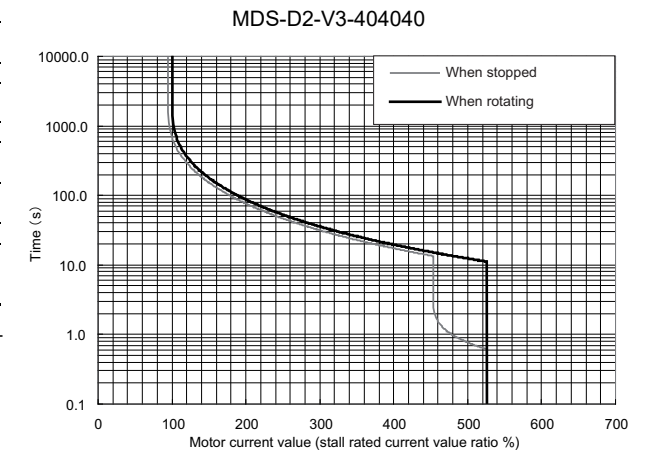
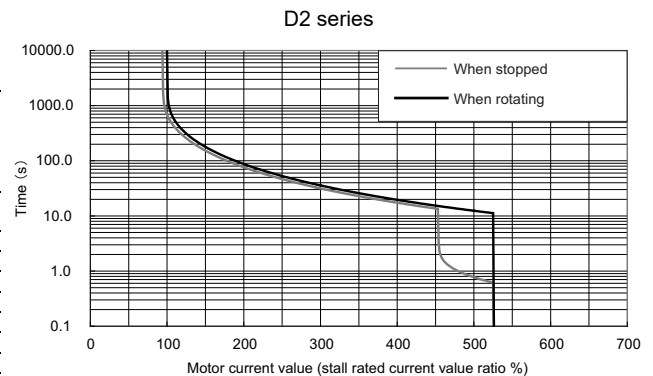
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N·m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

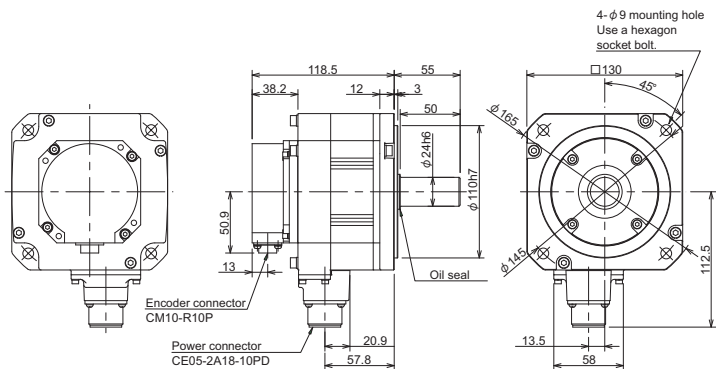
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

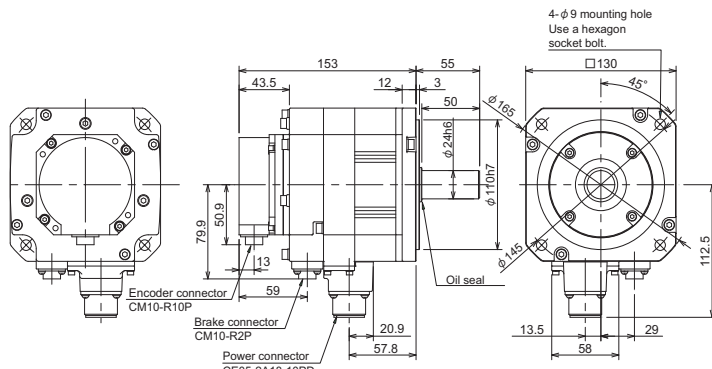


Outline dimension drawings [Unit : mm]

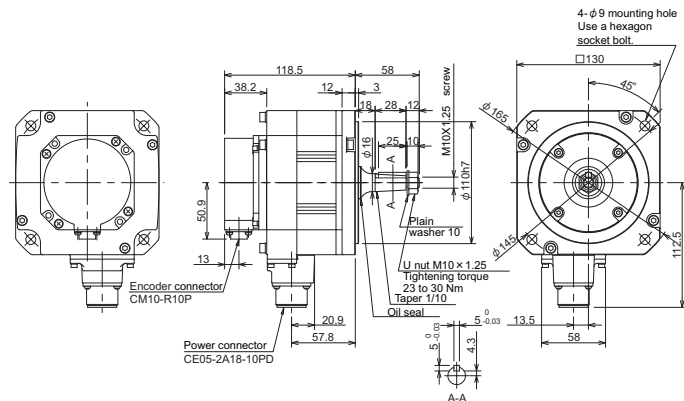
HF54S-A48



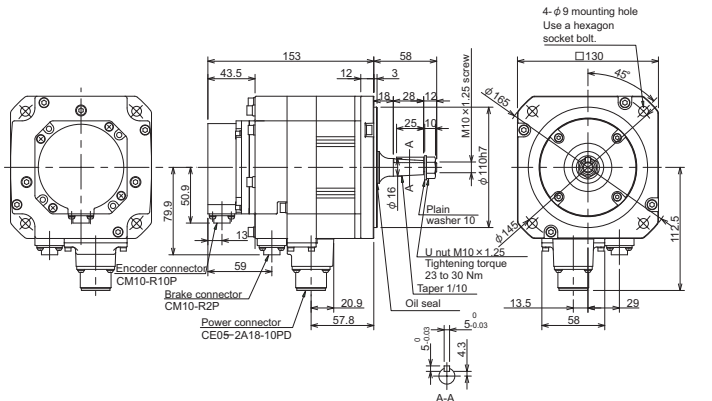
HF54BS-A48



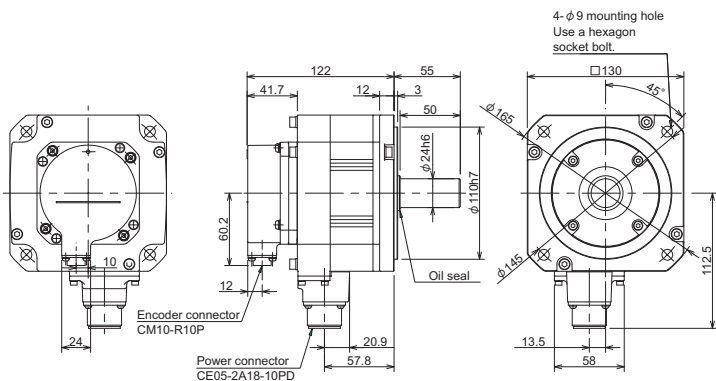
HF54T-A48



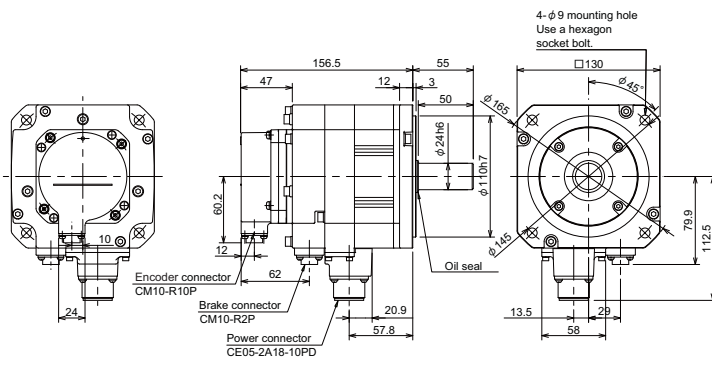
HF54BT-A48



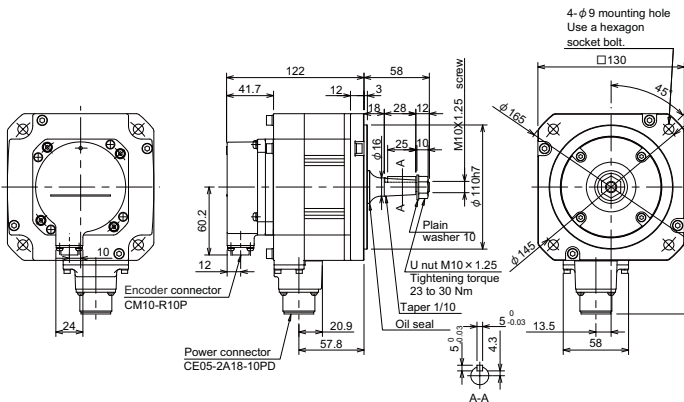
HF54S-A51,-A74N



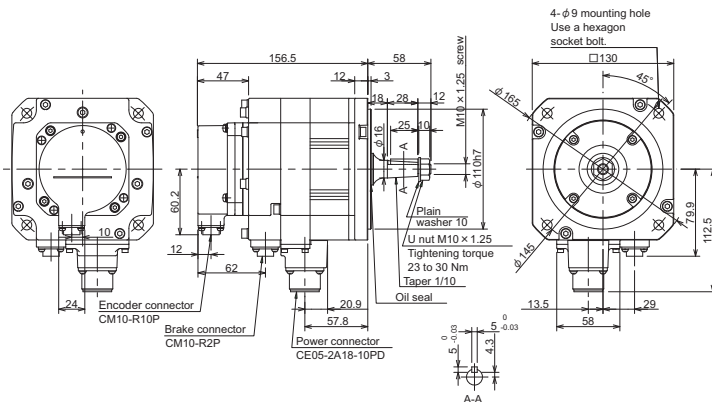
HF54BS-A51,-A74N



HF54T-A51,-A74N



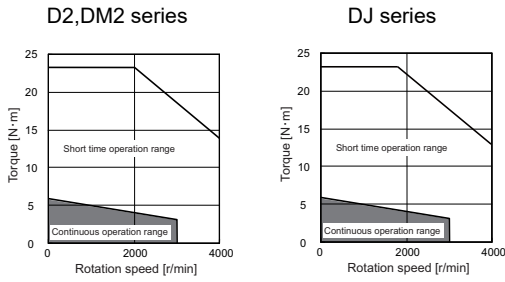
HF54BT-A51,-A74N



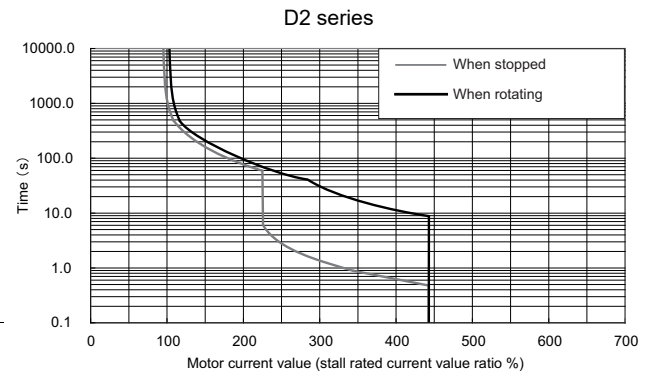
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3 ± 1.5 (94.5)	166.3 ± 1.5 (76) (34)	186.3 ± 1.5 (123.9) (94.5)	186.3 ± 1.5 (105) (76) (34) (34)	186.3 ± 1.5 (103.8)	166.3 ± 1.5 (85.3) (34)	186.3 ± 1.5 (123.9) (103.8)	186.3 ± 1.5 (105) (85.3) (34) (34)
	67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type
5.9N•m	3000r/min	HF104 □□-XXX	(1) Magnetic brake
			B with brake
			None without brake
(2) Shaft end			
S Straight			
T Taper			
(3) Encoder			
XXX Type			

Torque characteristics



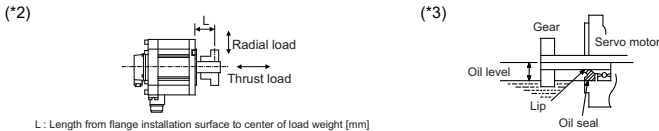
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-40
	2-axis type	MDS-D2-V2-4020 (L) MDS-D2-V2-4040 (L,M) MDS-D2-V2-8040 (M)
	3-axis type	MDS-D2-V3-404040 (L,M,S)
	Multi axis integrated type	MDS-DM2-SPV2-xxx80 (L,M) MDS-DM2-SPV3-xxx80 (L,M,S) MDS-DM2-SPHV3-20080 (L,M,S)
	Regenerative resistor type	MDS-DJ-V1-40
Continuous characteristics	Rated output[kW]	1.0
	Rated current[A]	3.9
	Rated torque[N•m]	3.2
	Stall current[A]	6.6
	Stall torque[N•m]	5.9
	Maximum momentary output (For power supply selection)[kW]	5.0
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	29.0	
Maximum torque[N•m]	23.3	
Power rate at continuous rated torque[kW/s]	8.4	
Max. deceleration torque of dynamic brake(Tdp)[N•m]	10.02	
Motor inertia[×10 ⁻⁴ kg•m ²]	11.9	
(Brake inertia)[×10 ⁻⁴ kg•m ²]	14.1	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg•m ²]	35.7
	General machine tool (interpolation axis)[×10 ⁻⁴ kg•m ²]	59.5
	Non-interpolation axis[×10 ⁻⁴ kg•m ²]	83.3
Mass	(Without) [kg]	6.5
	(With brake)[kg]	8.5
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] (G)	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] (mm)	392 (L=58)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] (mm)	980 (L=55)
	Thrust load[N]	490
Oil level (*3)[mm]	22.5	
Absolute position encoder	16,000,000 p/rev (A74N)	MDS-D2-V1/V2/V3
	1,000,000 p/rev (A51)	MDS-D2-V1/V2/V3 MDS-DM2, MDS-DJ-V1
	260,000 p/rev (A48)	MDS-D2-V1/V2/V3 MDS-DM2, MDS-DJ-V1

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

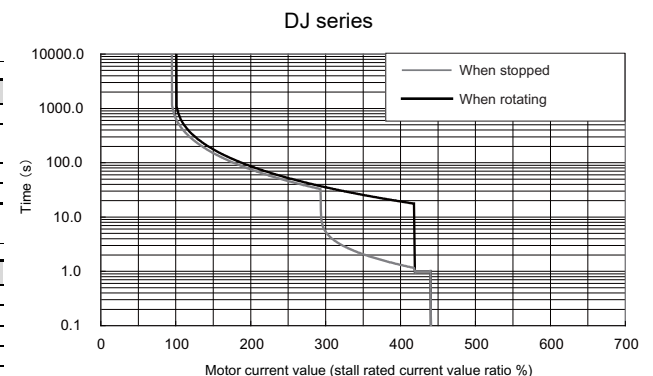
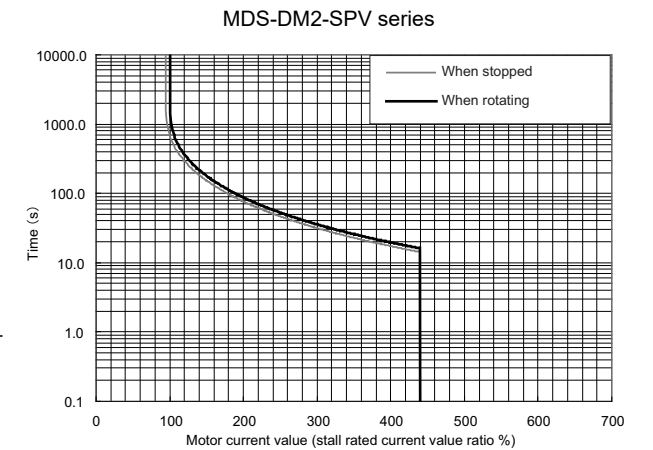
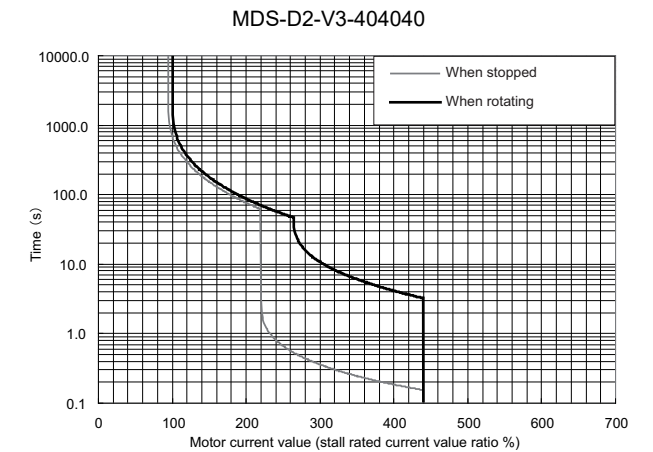
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N•m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

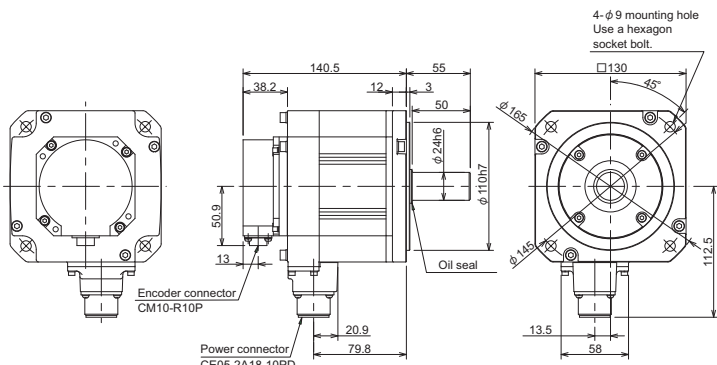
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

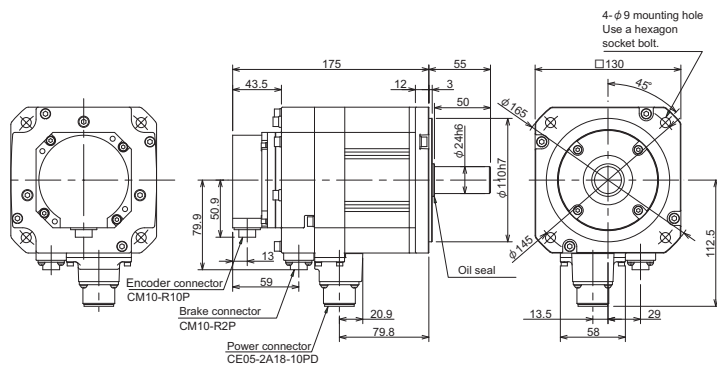


Outline dimension drawings [Unit : mm]

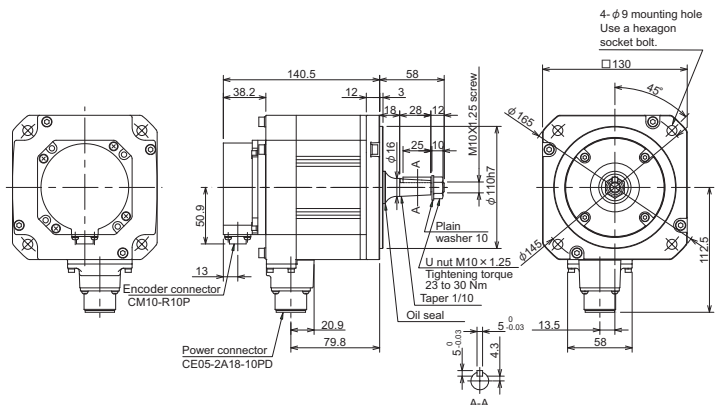
HF104S-A48



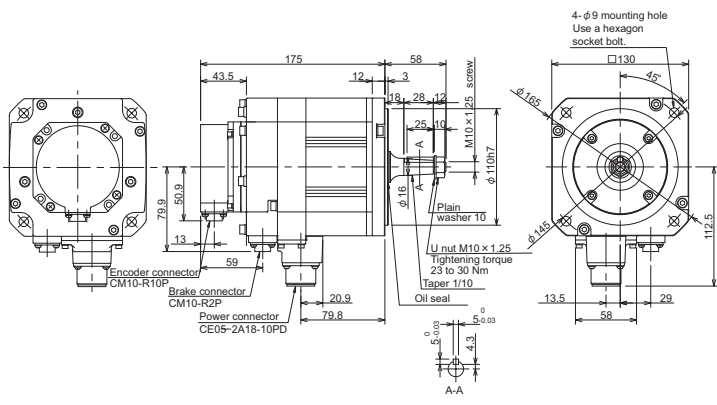
HF104BS-A48



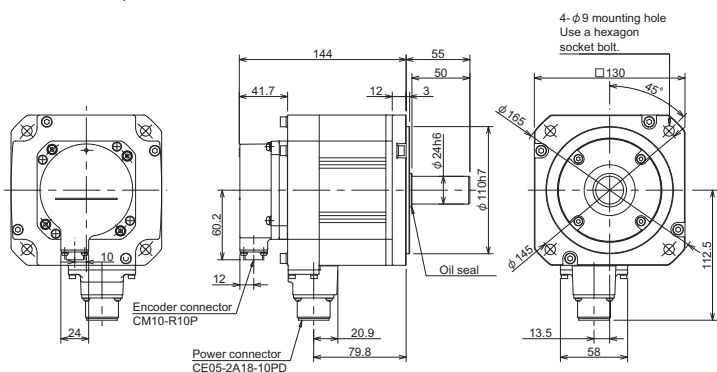
HF104T-A48



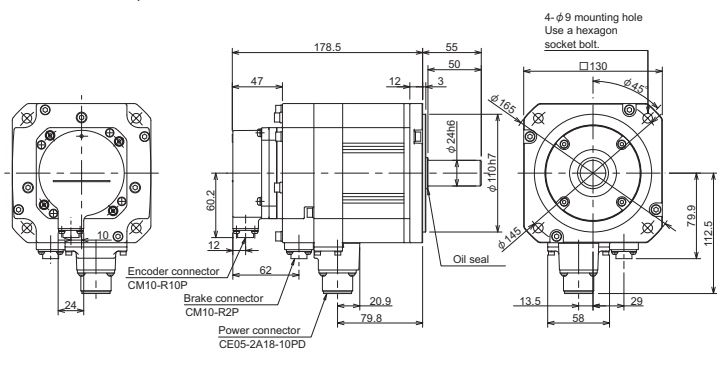
HF104BT-A48



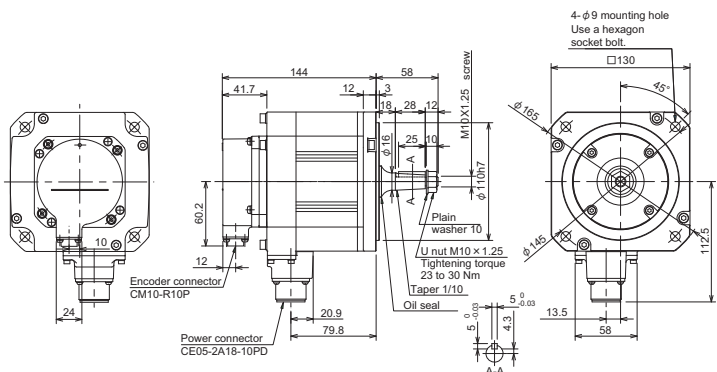
HF104S-A51,-A74N



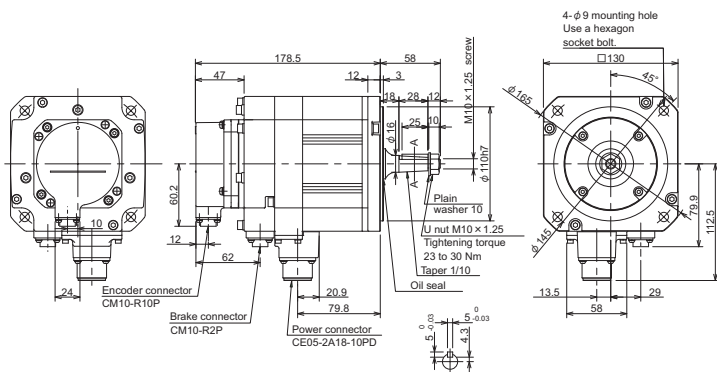
HF104BS-A51,-A74N



HF104T-A51,-A74N



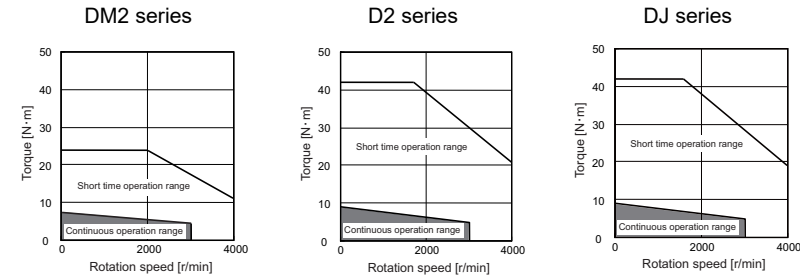
HF104BT-A51,-A74N



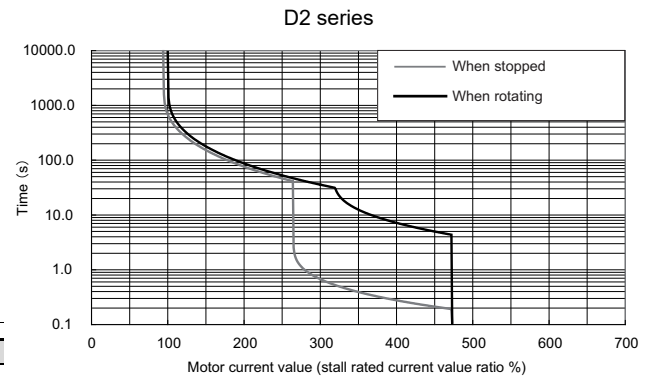
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3±1.5 (94.5)	166.3±1.5 (76)	186.3±1.5 (94.5)	186.3±1.5 (105)	186.3±1.5 (103.8)	166.3±1.5 (85.3)	186.3±1.5 (94.5)	186.3±1.5 (105)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
9.0N·m	3000r/min	HF154 □□-XXX (1)(2) (3)	(1) Magnetic brake	B with brake
				None without brake
			(2) Shaft end	S Straight
				T Taper
		(3) Encoder	XXX Type	

Torque characteristics



Servo overload protection characteristics

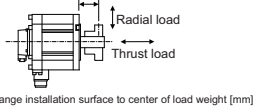


Specifications

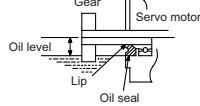
Item	Specifications		
Compatible drive unit (*1)	1-axis type	-	MDS-D2-V1-80
	2-axis type	-	MDS-D2-V2-8040 (L) MDS-D2-V2-8080 (L,M) MDS-D2-V2-16080 (M)
	3-axis type	MDS-D2-V3-404040 (L,M,S)	-
	Multi axis integrated type	-	MDS-DM2-SPV2-xxx80(L,M) MDS-DM2-SPV3-xxx80(L,M,S) MDS-DM2-SPV3-200120(L,M,S) MDS-DM2-SPH3-20080(L,M,S)
	Regenerative resistor type	-	MDS-DJ-V1-80
Continuous characteristics	Rated output[kW]	1.5	1.5
	Rated current[A]	5.6	5.6
	Rated torque[N·m]	4.8	4.8
	Stall current[A]	8.5	11
	Stall torque[N·m]	7.0	9.0
	Maximum momentary output (For power supply selection)[kW]	9.0	9.0
Rated rotation speed[r/min]	3000	3000	
Maximum rotation speed[r/min]	4000	4000	
Maximum current[A]	29.0	52.0	
Maximum torque[N·m]	23.7	42.0	
Power rate at continuous rated torque[kW/s]	12.7	12.7	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	15.65	15.65	
Motor inertia[×10 ⁻⁴ kg·m ²]	17.8	17.8	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	20.0	20.0	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	53.4	53.4
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	89.0	89.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	124.6	124.6
Mass	(Without) [kg]	8.3	8.3
	(With brake)[kg]	10.3	10.3
Heat-resistant class	155(F)	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=58)	392 (L=58)
	Thrust load[N]	490	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=55)	980 (L=55)
	Thrust load[N]	490	490
Oil level (*3)[mm]	22.5	22.5	
Absolute position encoder	16,000,000 p/rev (A74N)	MDS-D2-V3	MDS-D2-V1/V2
	1,000,000 p/rev (A51)	MDS-DM2	MDS-D2/DM2, MDS-DJ-V1
	260,000 p/rev (A48)	MDS-DM2	MDS-D2/DM2, MDS-DJ-V1

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(*3)



Environmental conditions

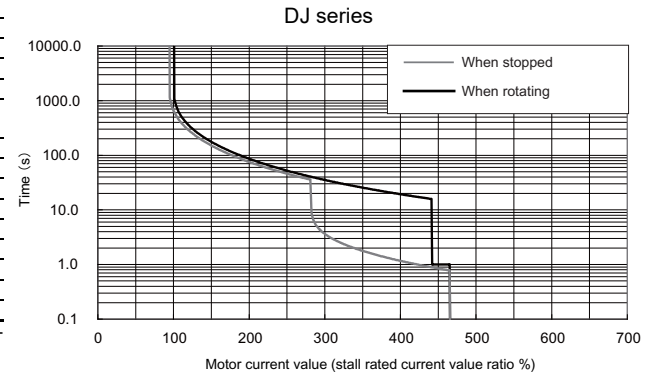
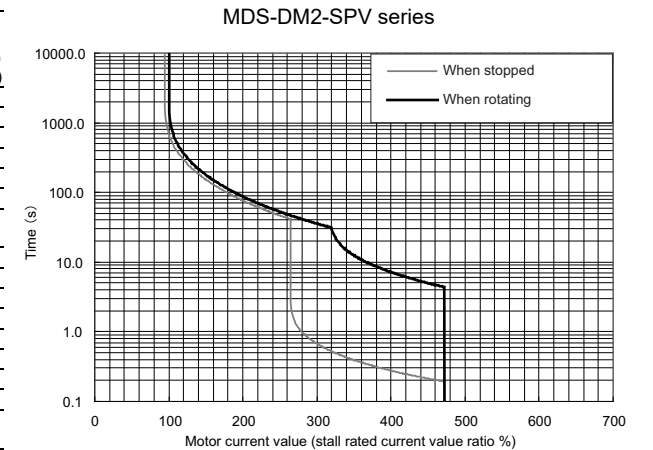
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation:80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N·m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

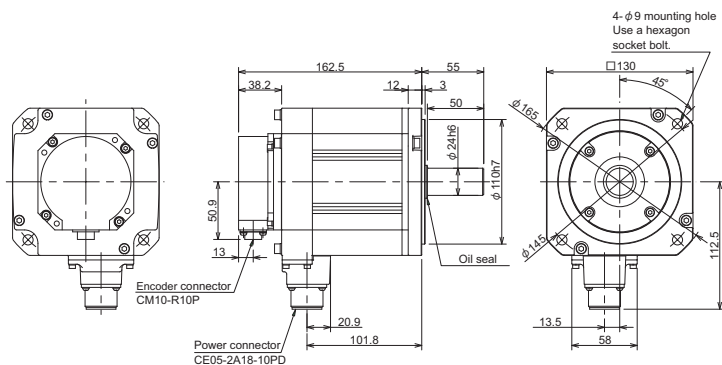
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

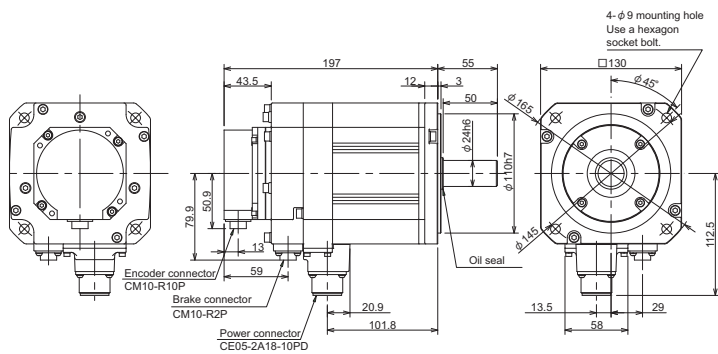


Outline dimension drawings [Unit : mm]

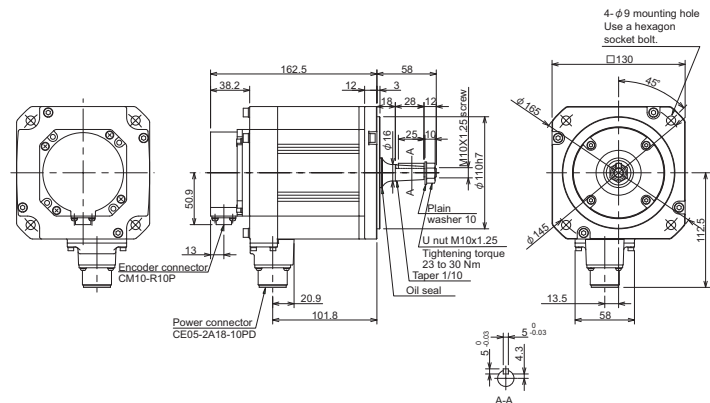
HF154S-A48



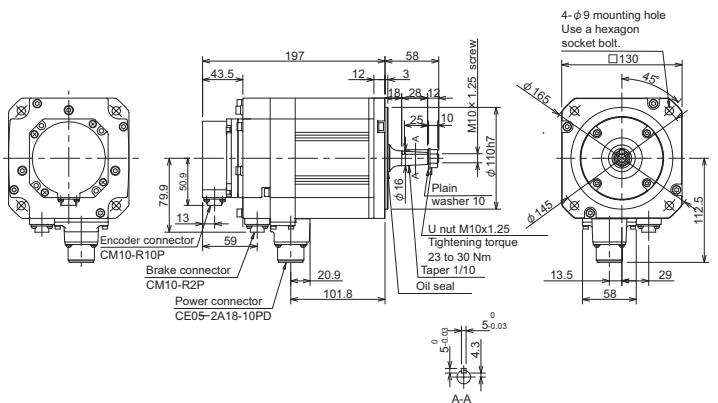
HF154BS-A48



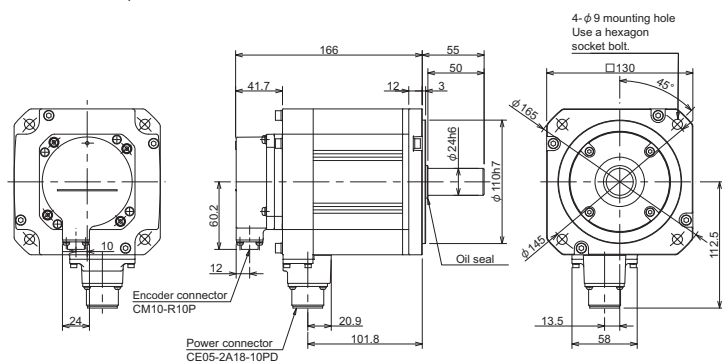
HF154T-A48



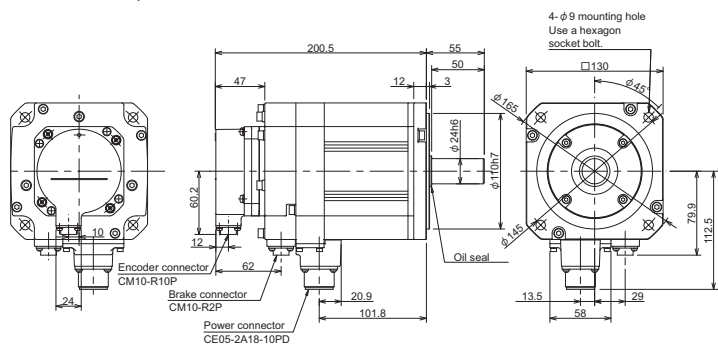
HF154BT-A48



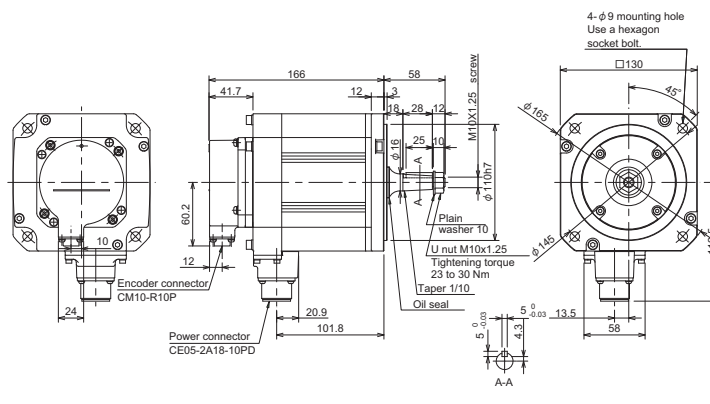
HF154S-A51,-A74N



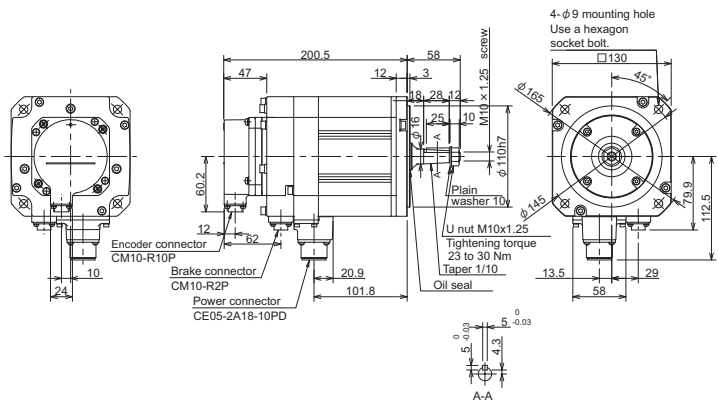
HF154BS-A51,-A74N



HF154T-A51,-A74N



HF154BT-A51,-A74N

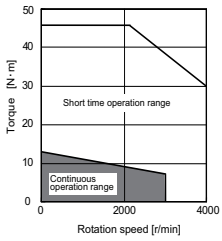


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3±1.5 (94.5)	166.3±1.5 (76) (34)	186.3±1.5 (123.9) (94.5)	186.3±1.5 (105) (76) (34) (34)	186.3±1.5 (103.8)	166.3±1.5 (85.3) (34)	186.3±1.5 (123.9) (103.8)	186.3±1.5 (105) (85.3) (34) (34)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

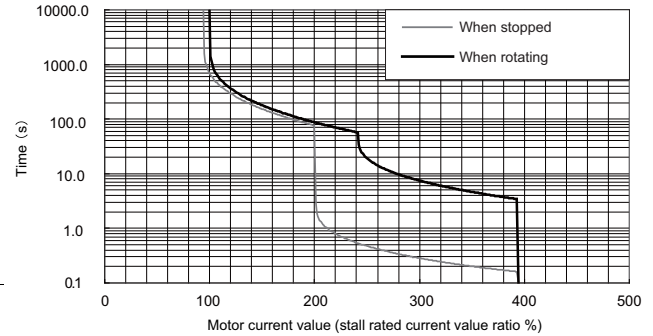
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
12.0N·m	3000r/min	HF224 □□-XXX (1)(2) (3)	(1) Magnetic brake	B with brake
				None without brake
			(2) Shaft end	S Straight
			T Taper	
			(3) Encoder	XXX Type

Torque characteristics

Servo overload protection characteristics



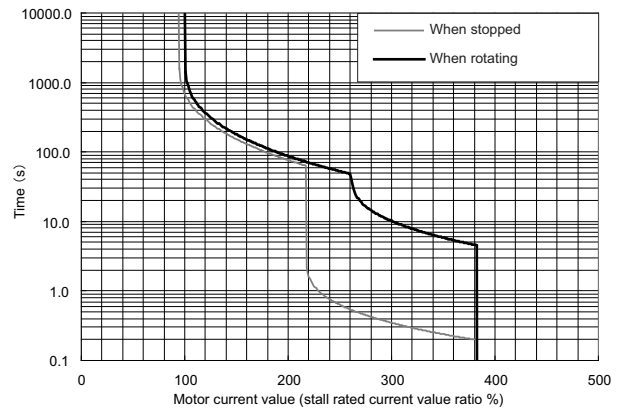
D2 series



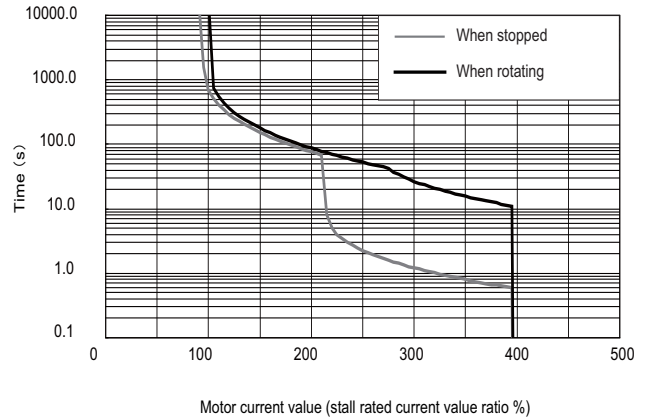
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-80
	2-axis type	MDS-D2-V2-8040 (L) MDS-D2-V2-8080 (L,M) MDS-D2-V2-16080 (M)
	3-axis type	-
	Multi axis integrated type	MDS-DM2-SPV2-xxx80 (L,M) MDS-DM2-SPV3-xxx80 (L,M,S) MDS-DM2-SPV3-200120 (L,M,S) MDS-DM2-SPHV3-20080 (L,M,S)
	Regenerative resistor type	MDS-DJ-V1-80
Continuous characteristics	Rated output[kW]	2.2
	Rated current[A]	8.6
	Rated torque[N·m]	7.0
	Stall current[A]	15
	Stall torque[N·m]	12.0
	Maximum momentary output (For power supply selection)[kW]	12.3
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	57.0	
Maximum torque[N·m]	46.5	
Power rate at continuous rated torque[kW/s]	20.7	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	21.77	
Motor inertia[×10 ⁻⁴ kg·m ²]	23.7	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	25.9	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	71.1
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	118.5
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	165.9
Mass	(Without) [kg]	10.0
	(With brake)[kg]	12.0
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=58)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=55)
	Thrust load[N]	490
Oil level (*3)[mm]	22.5	
Absolute position encoder	16,000,000 p/rev (A74N)	MDS-D2-V1/V2
	1,000,000 p/rev (A51)	MDS-D2-V1/V2, MDS-DM2, MDS-DJ-V1
	260,000 p/rev (A48)	MDS-D2-V1/V2, MDS-DM2, MDS-DJ-V1

MDS-DM2-SPV series

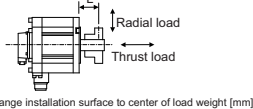


DJ series

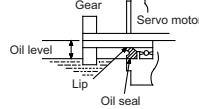


(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

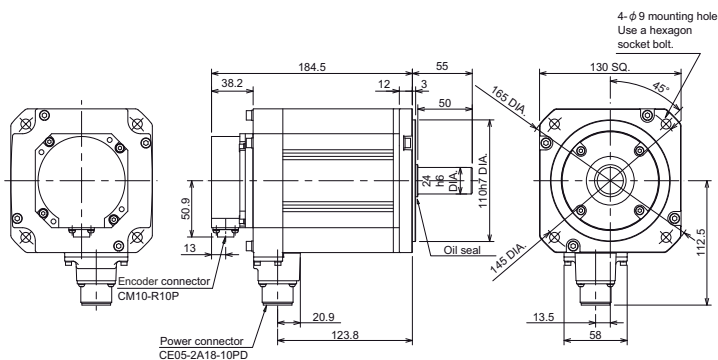
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N·m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

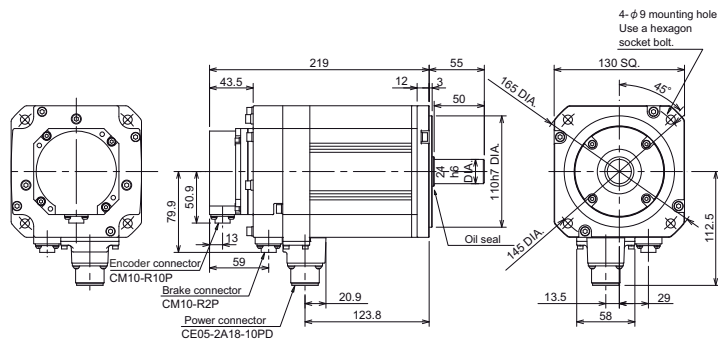
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

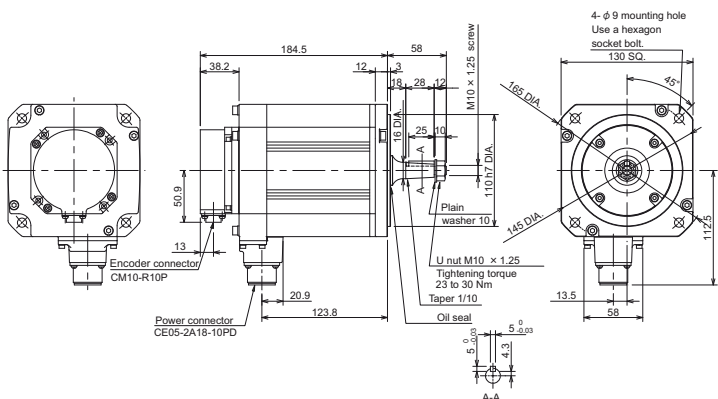
HF224S-A48



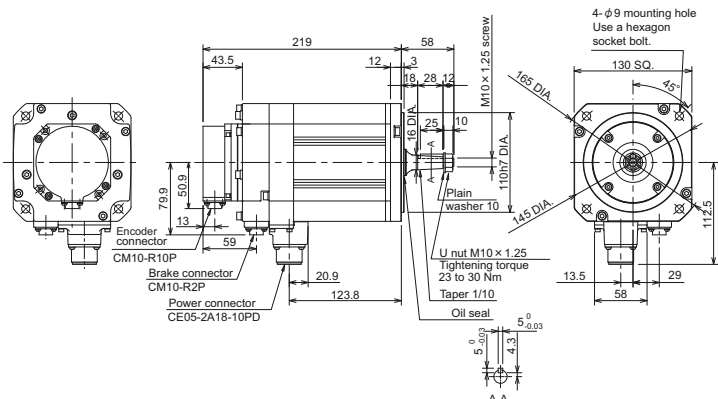
HF224BS-A48



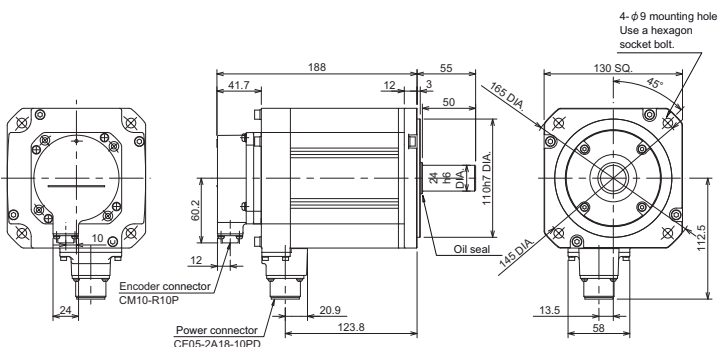
HF224T-A48



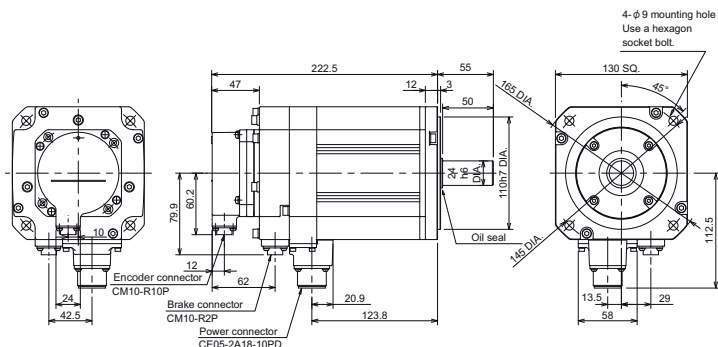
HF224BT-A48



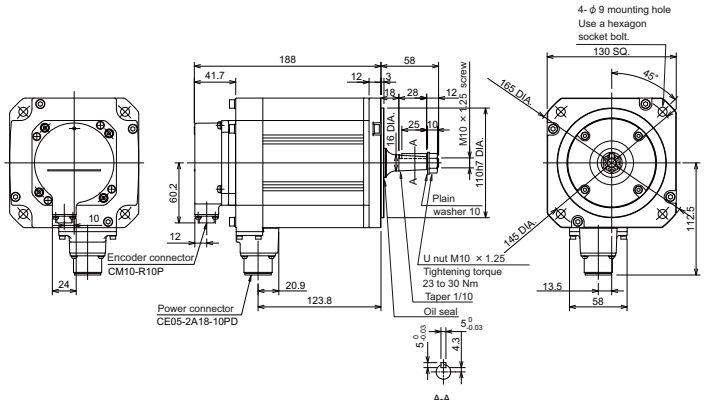
HF224S-A51,-A74N



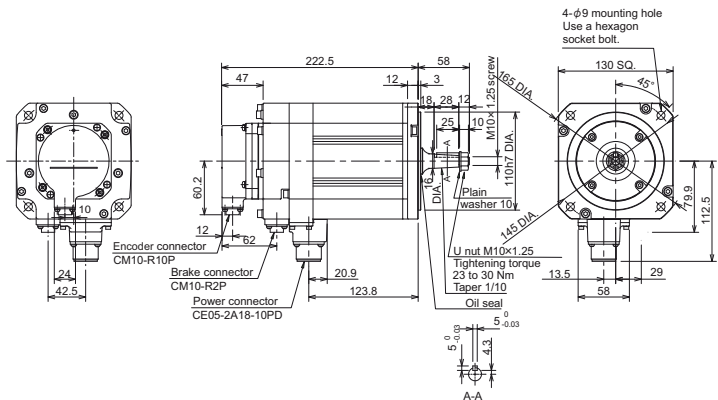
HF224BS-A51,-A74N



HF224T-A51,-A74N



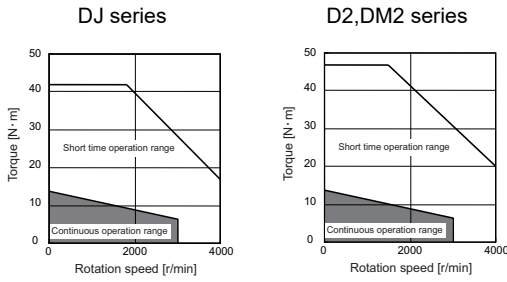
HF224BT-A51,-A74N



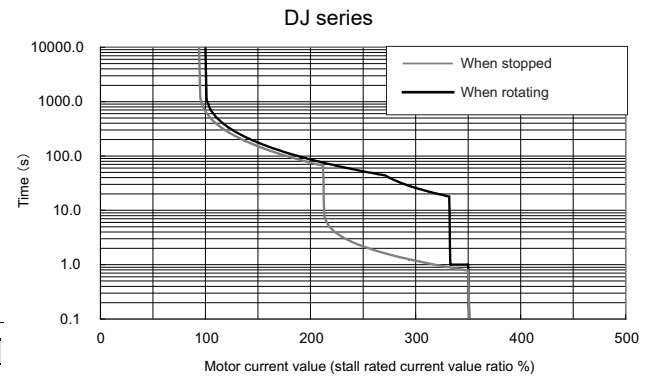
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3 ± 1.5 (94.5)	166.3 ± 1.5 (76)	186.3 ± 1.5 (123.9)	186.3 ± 1.5 (105)	186.3 ± 1.5 (103.8)	186.3 ± 1.5 (85.3)	186.3 ± 1.5 (123.9)	186.3 ± 1.5 (105)
	67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
13.7N·m	3000r/min	HF204 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

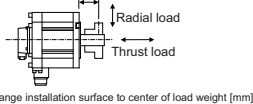


仕様

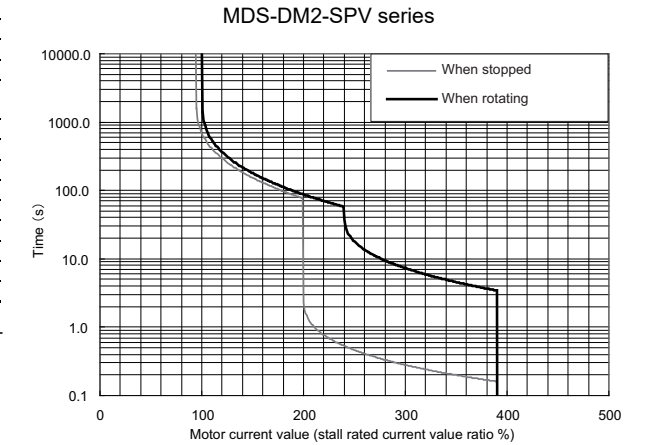
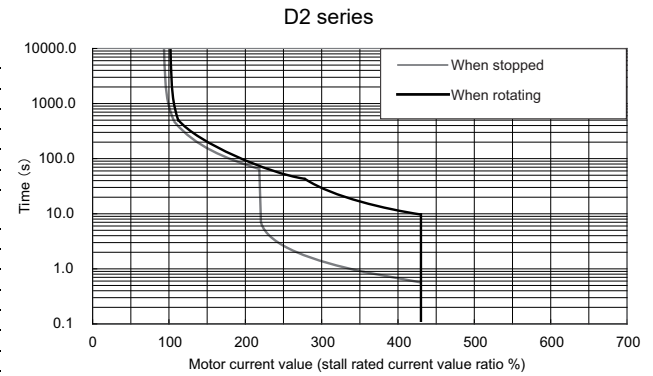
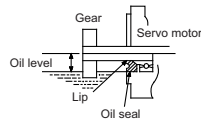
Item	Specifications		
Compatible drive unit (*1)	1-axis type	-	MDS-D2-V1-80
	2-axis type	-	MDS-D2-V2-8040 (L)
		-	MDS-D2-V2-8080 (L,M)
		-	MDS-D2-V2-16080 (M)
	3-axis type	-	-
Multi axis integrated type	-	-	MDS-DM2-SPV2-xxx80 (L,M)
	-	-	MDS-DM2-SPV3-xxx80 (L,M,S)
Regenerative resistor type	MDS-DJ-V1-80	-	MDS-DM2-SPV3-200120 (L,M,S)
	-	-	MDS-DM2-SPHV3-20080 (L,M,S)
Continuous characteristics	Rated output[kW]	2.0	2.0
	Rated current[A]	6.8	6.8
	Rated torque[N·m]	6.4	6.4
	Stall current[A]	15	15
	Stall torque[N·m]	13.7	13.7
	Maximum momentary output (For power supply selection)[kW]	8.0	8.0
Rated rotation speed[r/min]	3000	3000	
Maximum rotation speed[r/min]	4000	4000	
Maximum current[A]	52.0	57.0	
Maximum torque[N·m]	42.0	47.0	
Power rate at continuous rated torque[kW/s]	10.6	10.6	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	15.97	15.97	
Motor inertia[×10 ⁻⁴ kg·m ²]	38.3	38.3	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	48.0	48.0	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	114.9	114.9
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	191.5	191.5
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	268.1	268.1
Mass	(Without) [kg]	12.0	12.0
	(With brake)[kg]	18	18
Heat-resistant class	155(F)	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:29.4(3)	X:24.5(2.5),Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-	-
	Thrust load[N]	-	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2058 (L=79)	2058 (L=79)
	Thrust load[N]	980	980
Oil level (*3)[mm]	30	30	
Absolute position encoder	16,000,000 p/rev (A74N)	-	MDS-D2-V1/V2
	1,000,000 p/rev (A51)	MDS-DJ-V1	MDS-D2-V1/V2, MDS-DM2
	260,000 p/rev (A48)	MDS-DJ-V1	MDS-D2-V1/V2, MDS-DM2

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

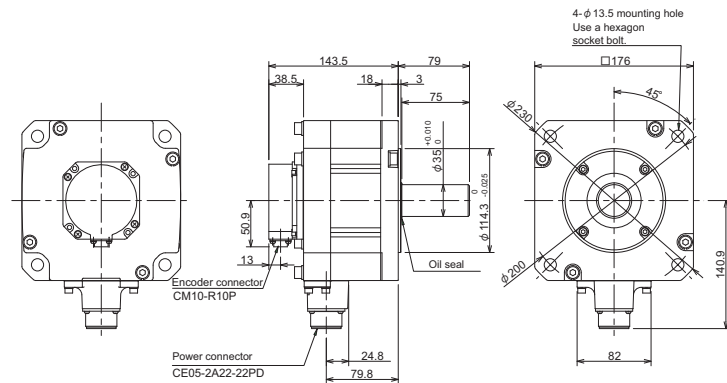
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

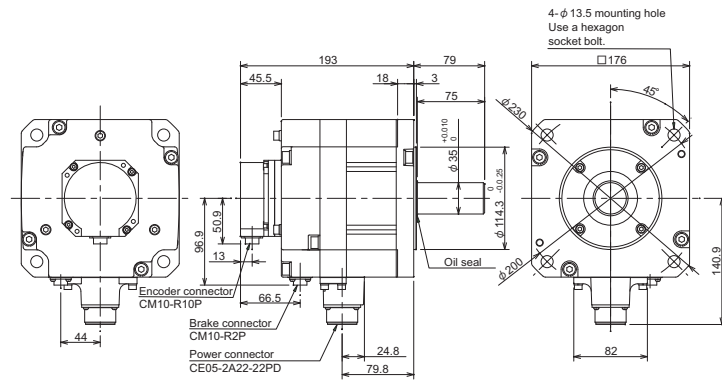
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

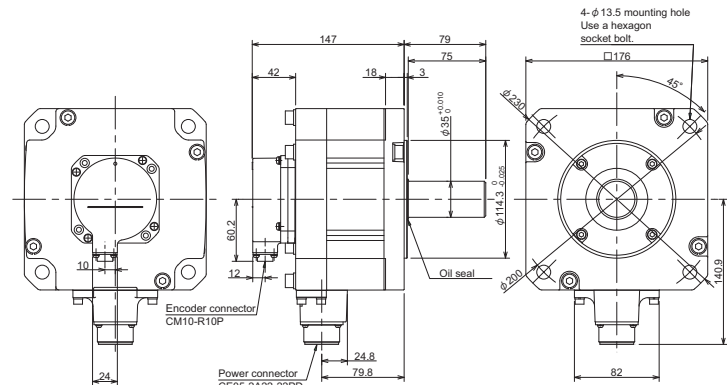
HF204S-A48



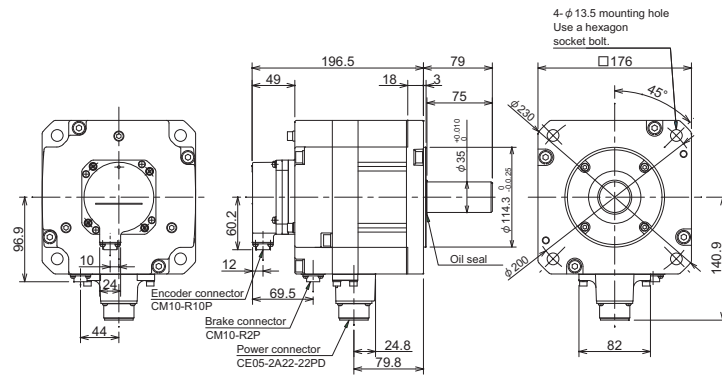
HF204BS-A48



HF204S-A51,-A74N



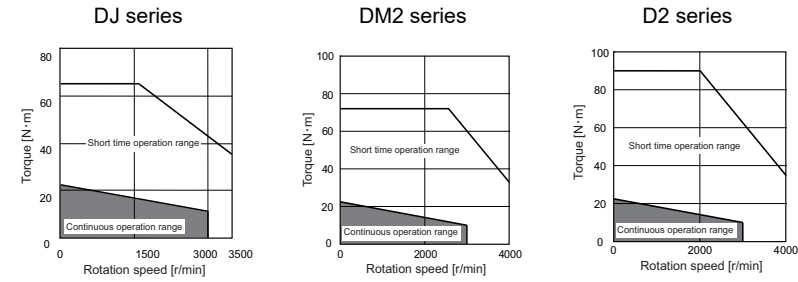
HF204BS-A51,-A74N



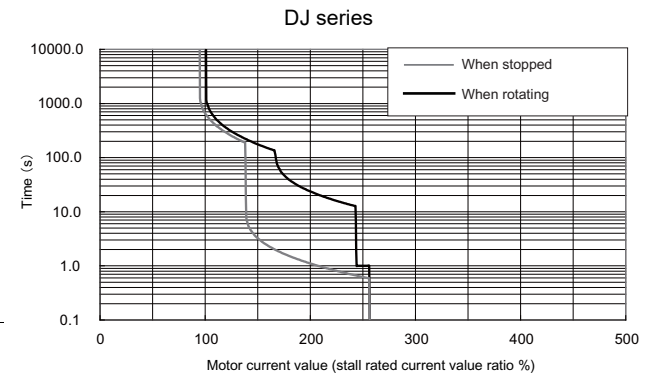
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
218.9±1.5 (84.5)	201.5±1.5 (76) (34) 69.3±1.5	218.9±1.5 (84.5)	201.5±1.5 (122) (76) (34) 69.3±1.5	218.9±1.5 (103.8)	201.5±1.5 (85.3) (34) 69.3±1.5	218.9±1.5 (140.5) (103.8)	201.5±1.5 (122) (85.3) (34) 69.3±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
22.5N·m	3000r/min	HF354 □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

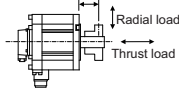


Specifications

Item	Specifications			
Compatible drive unit (*1)	1-axis type	-	-	MDS-D2-V1-160
	2-axis type	-	-	MDS-D2-V2-16080 (L) MDS-D2-V2-160160 (L,M) MDS-D2-V2-160160W (L,M)
	3-axis type	-	-	-
	Multi axis integrated type	-	MDS-DM2-SPV3-200120 (L,M,S)	-
	Regenerative resistor type	MDS-DJ-V1-100	-	-
Continuous characteristics	Rated output[kW]	3.5	3.5	3.5
	Rated current[A]	12	12	12
	Rated torque[N·m]	11.1	11.1	11.1
	Stall current[A]	22	22	22
	Stall torque[N·m]	22.5	22.5	22.5
	Maximum momentary output (For power supply selection)[kW]	18.0	18.0	18.0
Rated rotation speed[r/min]	3000	3000	3000	
Maximum rotation speed[r/min]	3500	4000	4000	
Maximum current[A]	64.0	79.6	116.0	
Maximum torque[N·m]	65.0	75.0	90.0	
Power rate at continuous rated torque[kW/s]	16.5	16.5	16.5	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	35.25	35.25	35.25	
Motor inertia[×10 ⁻⁴ kg·m ²]	75.0	75.0	75.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	84.7	84.7	84.7	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	225.0	225.0	225.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	375.0	375.0	375.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	525.0	525.0	525.0
Mass	(Without) [kg]	19.0	19.0	19.0
	(With brake)[kg]	25	25	25
Heat-resistant class	155(F)	155(F)	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)			
Quakeproof level[m/s ²] (G)	X:24.5(2.5),Y:29.4(3)			
Axis tolerable load (Taper shaft)	Radial load (*2)[N] (mm)	-	-	-
	Thrust load[N]	-	-	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] (mm)	2058 (L=79)	2058 (L=79)	2058 (L=79)
	Thrust load[N]	980	980	980
Oil level (*3)[mm]	30	30	30	
Absolute position encoder	16,000,000 p/rev (A74N)	-	-	MDS-D2-V1/V2
	1,000,000 p/rev (A51)	MDS-DJ-V1	MDS-DM2	MDS-D2-V1/V2
	260,000 p/rev (A48)	MDS-DJ-V1	MDS-DM2	MDS-D2-V1/V2

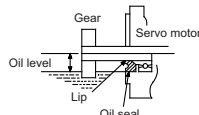
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

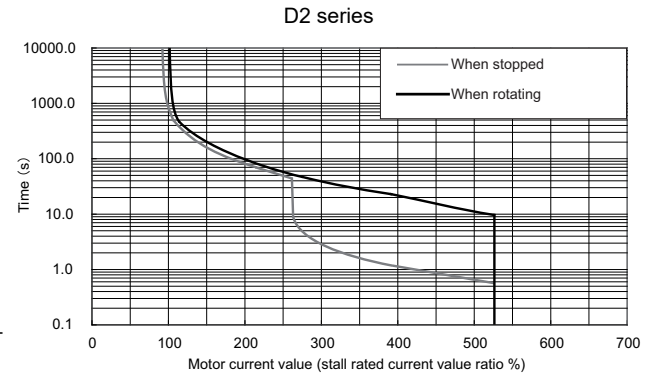
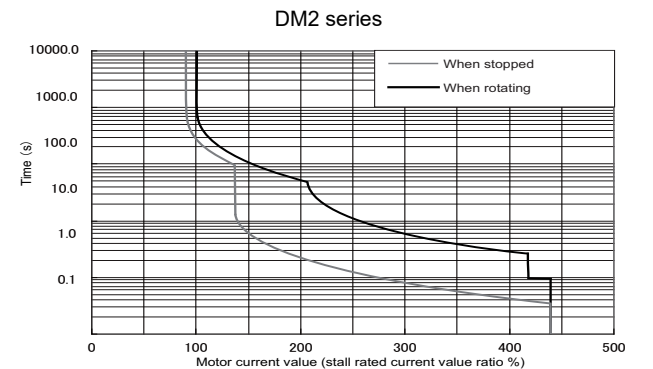
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

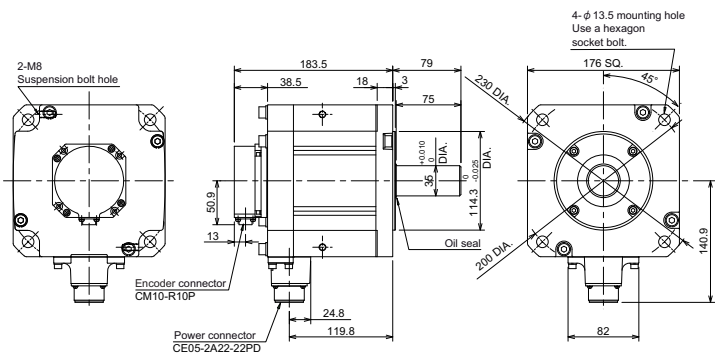
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

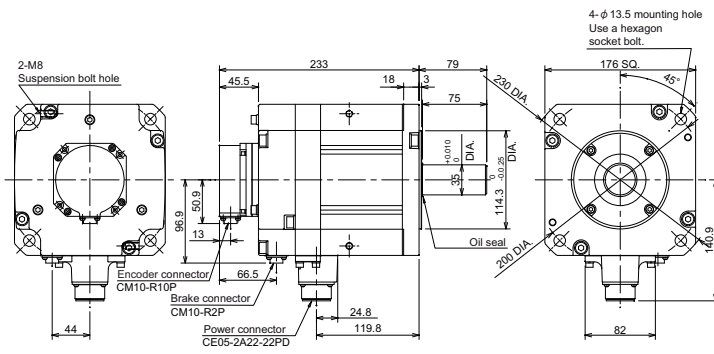


Outline dimension drawings [Unit : mm]

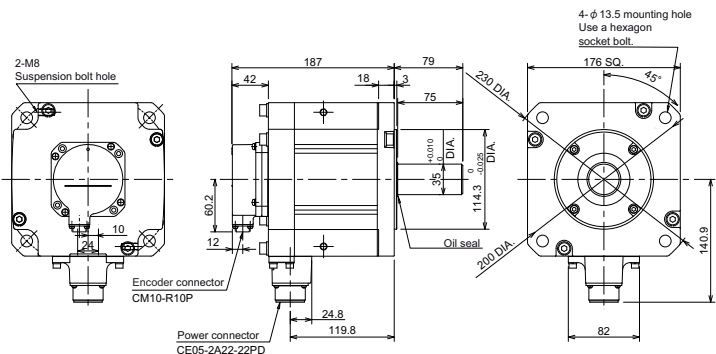
HF354S-A48



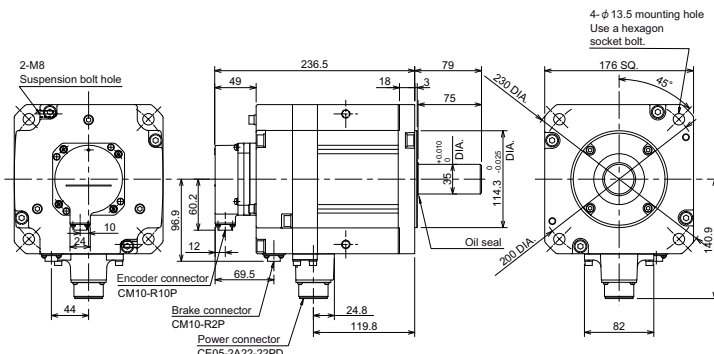
HF354BS-A48



HF354S-A51,-A74N



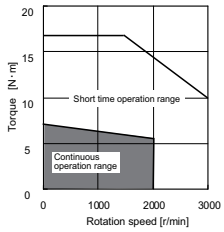
HF354BS-A51,-A74N



A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
218.9±1.5 (84.5)	201.5±1.5 (76) (34) 69.3±1.5	218.9±1.5 (84.5)	201.5±1.5 (122) (76) (34) (34) 69.3±1.5	218.9±1.5 (103.8)	201.5±1.5 (85.3) (34) 69.3±1.5	218.9±1.5 (140.5) (103.8)	201.5±1.5 (122) (85.3) (34) 69.3±1.5

Stall torque 7.0N·m	Rated rotation speed 2000r/min	Servo motor type HF123 □□-XXX (1)(2) (3)	Explanation of type	
			(1) Magnetic brake	B with brake None without brake
			(2) Shaft end	S Straight T Taper
			(3) Encoder	XXX Type

Torque characteristics



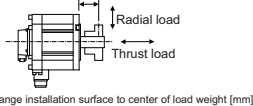
Servo overload protection characteristics

Specifications

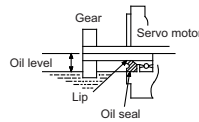
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-20
	2-axis type	MDS-D2-V2-2020 (L,M) MDS-D2-V2-4020 (M)
	3-axis type	MDS-D2-V3-202020 (L,M,S) MDS-D2-V3-404040 (L,M,S)
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-V1-40
Continuous characteristics	Rated output[kW]	1.2
	Rated current[A]	5.2
	Rated torque[N·m]	5.7
	Stall current[A]	6.4
	Stall torque[N·m]	7.0
	Maximum momentary output (For power supply selection)[kW]	4.0
Rated rotation speed[r/min]	2000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	15.5	
Maximum torque[N·m]	17.0	
Power rate at continuous rated torque[kW/s]	27.3	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	9.79	
Motor inertia[×10 ⁻⁴ kg·m ²]	11.9	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	14.1	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	35.7
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	59.5
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	83.3
Mass	(Without) [kg]	6.5
	(With brake)[kg]	8.5
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (**)[N] ((mm))	392 (L=58)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (**)[N] ((mm))	980 (L=55)
	Thrust load[N]	490
Oil level (**)[mm]	22.5	
Absolute position encoder	16,000,000 p/rev (A74N)	MDS-D2-V1/V2/V3
	1,000,000 p/rev (A51)	MDS-D2-V1/V2/V3
	260,000 p/rev (A48)	MDS-DM2, MDS-DJ-V1 MDS-D2-V1/V2/V3 MDS-DM2, MDS-DJ-V1

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

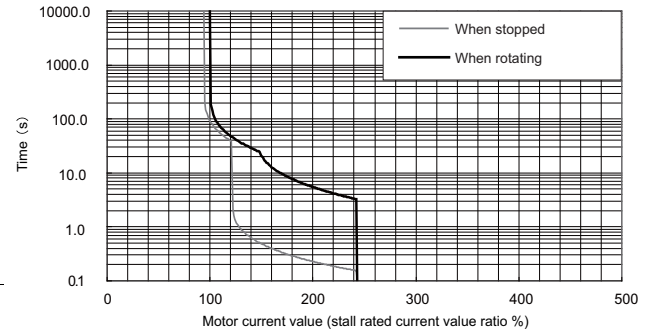
Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N·m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

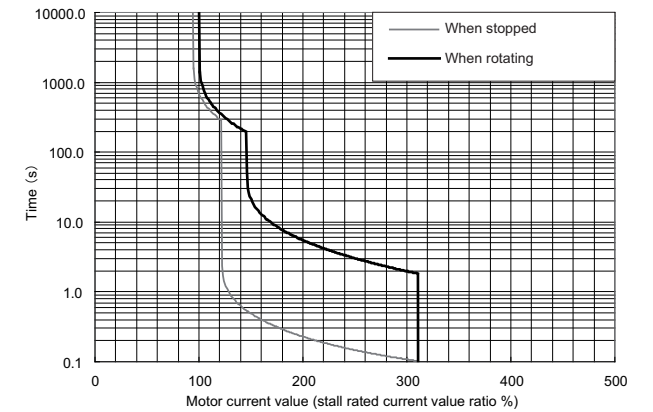
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

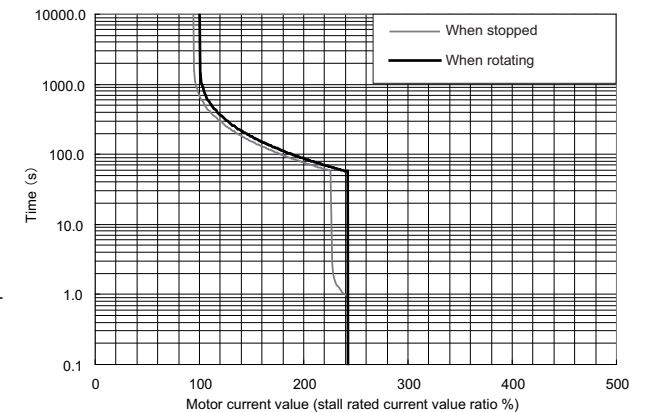
D2 series



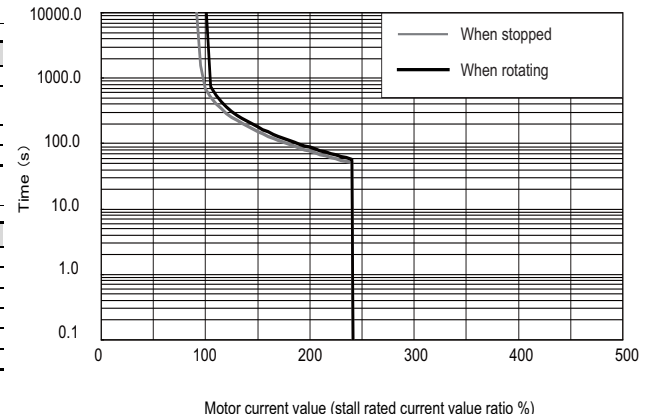
MDS-D2-V3-202020



MDS-D2-V3-404040

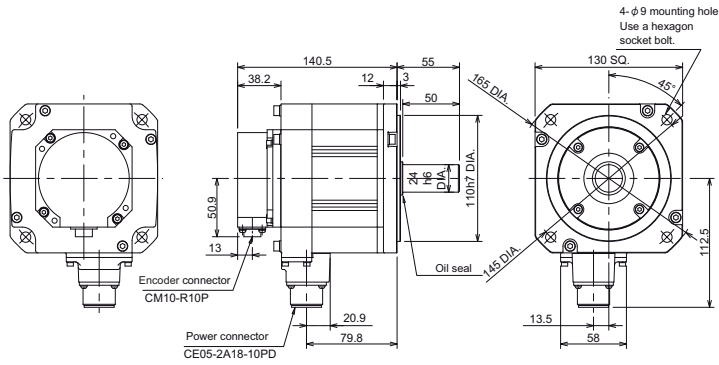


DJ-V1 series

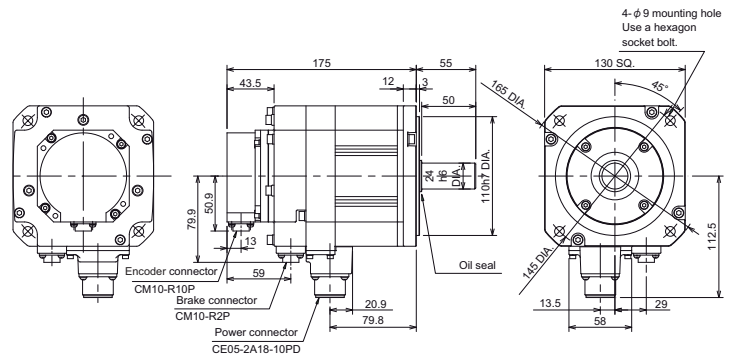


Outline dimension drawings [Unit : mm]

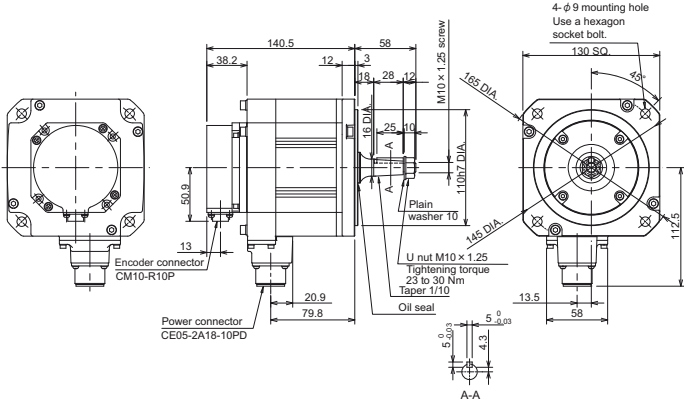
HF123S-A48



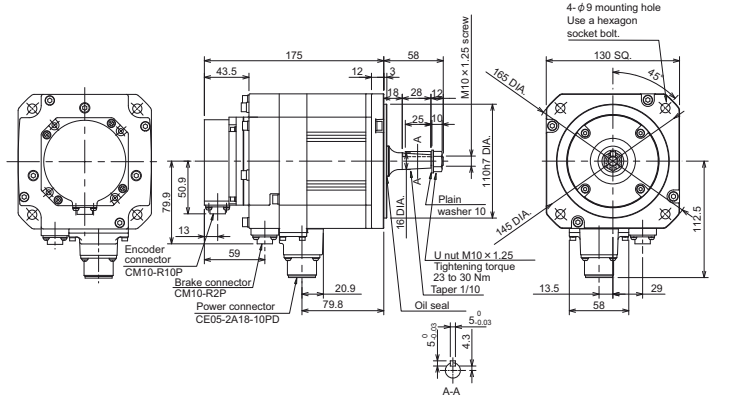
HF123BS-A48



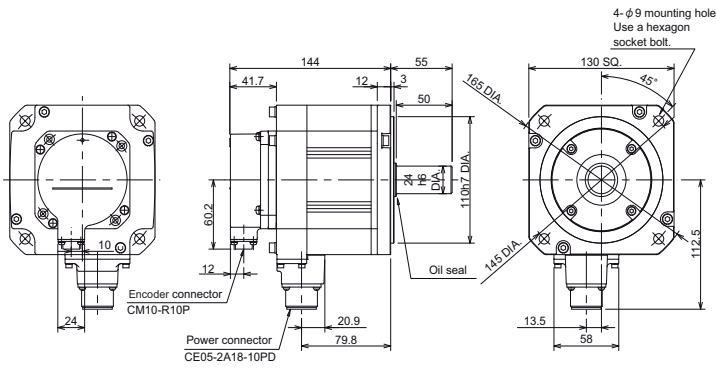
HF123T-A48



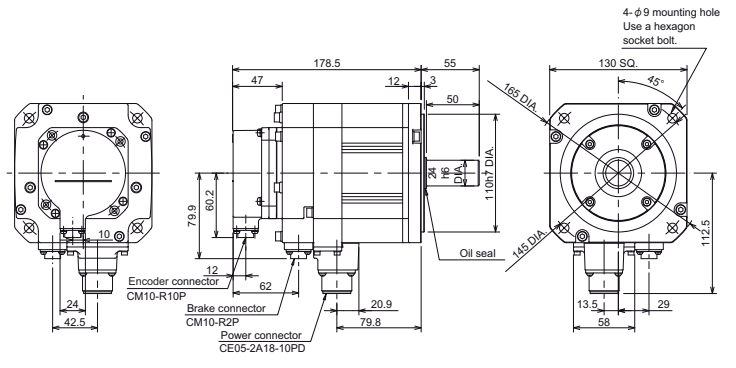
HF123BT-A48



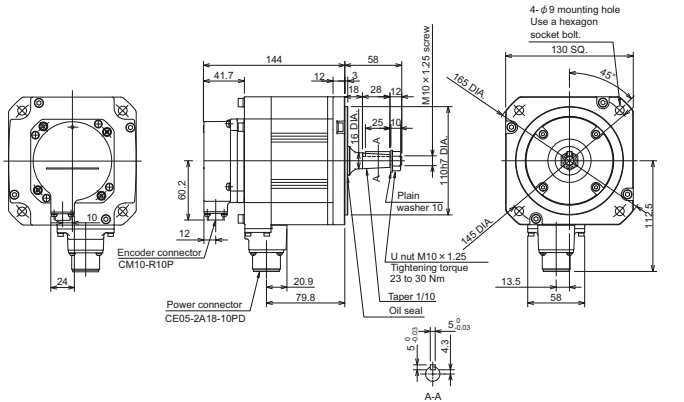
HF123S-A51,-A74N



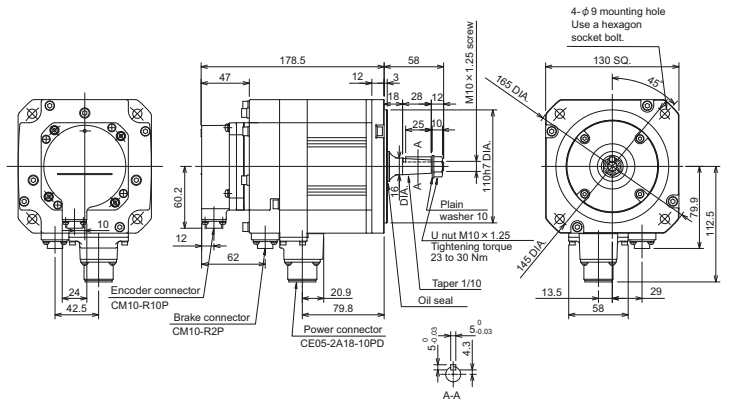
HF123BS-A51,-A74N



HF123T-A51,-A74N



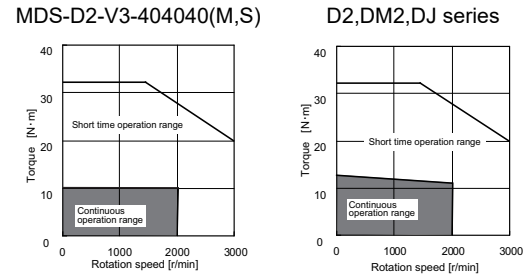
HF123BT-A51,-A74N



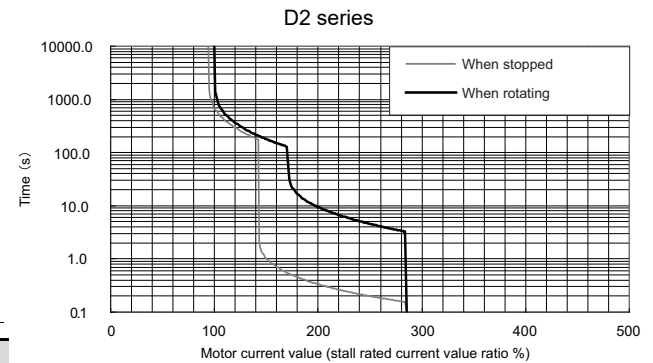
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3±1.5 (94.5)	166.3±1.5 (76)	186.3±1.5 (123.9)	186.3±1.5 (76)	186.3±1.5 (103.8)	166.3±1.5 (85.3)	186.3±1.5 (123.9)	186.3±1.5 (105)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type
12.0N·m	2000r/min	HF223 □□-XXX	(1) Magnetic brake
			B with brake
			None without brake
(2) Shaft end			
S Straight			
T Taper			
(3) Encoder			
XXX Type			

Torque characteristics



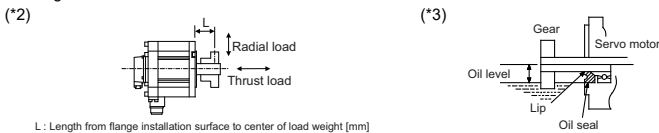
Servo overload protection characteristics



Specifications

Item	Specifications		
Compatible drive unit (*1)	1-axis type	-	MDS-D2-V1-40
	2-axis type	-	MDS-D2-V2-4020 (L) MDS-D2-V2-4040 (L,M) MDS-D2-V2-8040 (M)
	3-axis type	MDS-D2-V3-404040 (M,S)	MDS-D2-V3-404040 (L)
	Multi axis integrated type	-	MDS-DM2-SPV2-xxx80 (L,M) MDS-DM2-SPV3-xxx80 (L,M,S) MDS-DM2-SPHV3-20080 (L,M,S)
	Regenerative resistor type	-	MDS-DJ-V1-40
Continuous characteristics	Rated output[kW]	2.1	2.2
	Rated current[A]	8.5	9.0
	Rated torque[N·m]	10.0	10.5
	Stall current[A]	8.5	11
	Stall torque[N·m]	10.0	12.0
	Maximum momentary output (For power supply selection)[kW]	7.5	7.5
Rated rotation speed[r/min]	2000	2000	
Maximum rotation speed[r/min]	3000	3000	
Maximum current[A]	29.0	29.0	
Maximum torque[N·m]	32.0	32.0	
Power rate at continuous rated torque[kW/s]	46.5	46.5	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	19.95	19.95	
Motor inertia[×10 ⁻⁴ kg·m ²]	23.7	23.7	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	25.9	25.9	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	71.1	71.1
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	118.5	118.5
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	165.9	165.9
Mass	(Without) [kg]	10.0	10.0
	(With brake)[kg]	12.0	12.0
Heat-resistant class	155(F)	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=58)	392 (L=58)
	Thrust load[N]	490	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=55)	980 (L=55)
	Thrust load[N]	490	490
Oil level (*3)[mm]	22.5	22.5	
Absolute position encoder	16,000,000 p/rev (A74N)	MDS-D2-V3	MDS-D2-V1/V2/V3
	1,000,000 p/rev (A51)	MDS-DM2	MDS-D2/DM2, MDS-DJ-V1
	260,000 p/rev (A48)	MDS-DM2	MDS-D2/DM2, MDS-DJ-V1

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



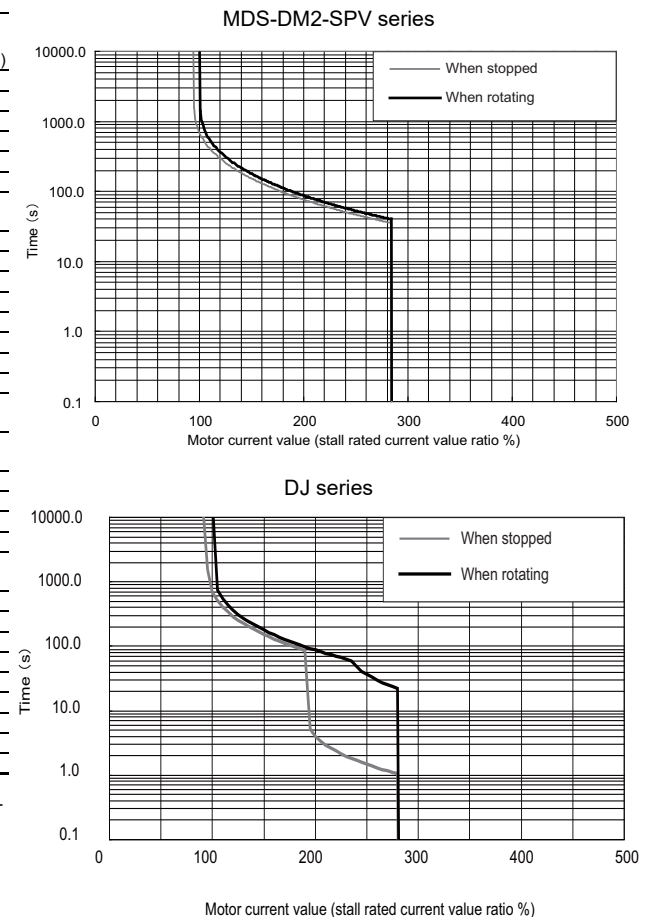
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation:80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

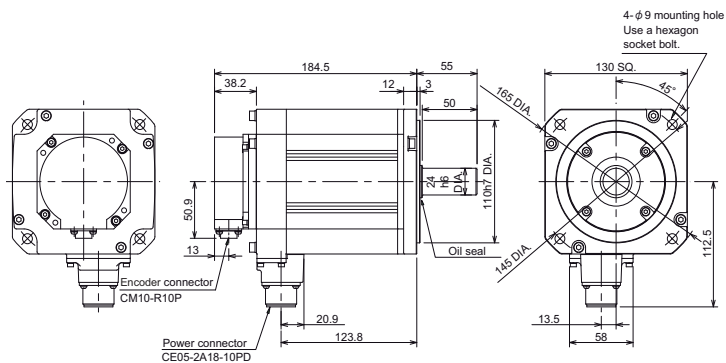
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N·m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.
 (*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

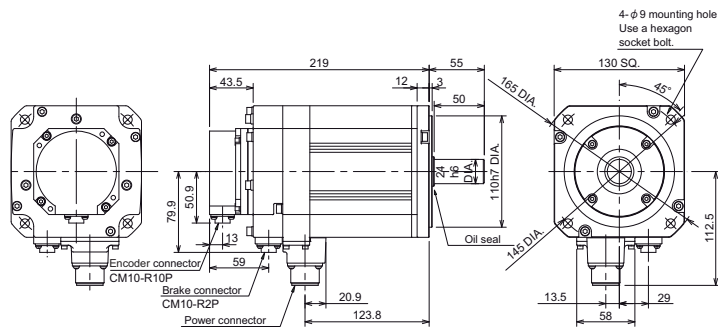


Outline dimension drawings [Unit : mm]

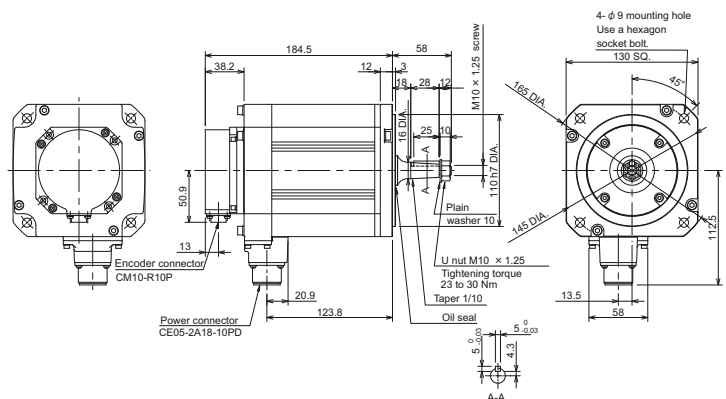
HF223S-A48



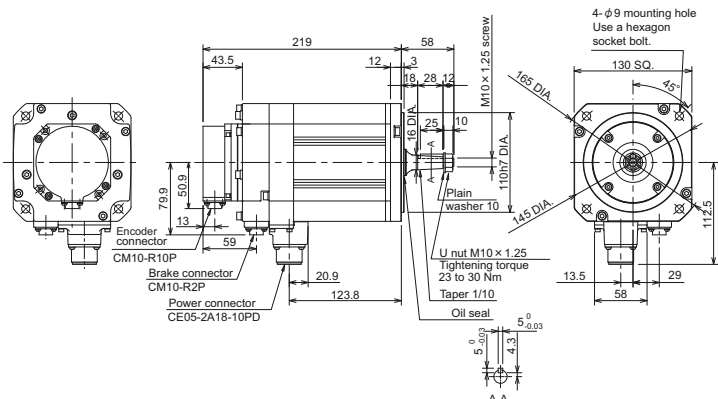
HF223BS-A48



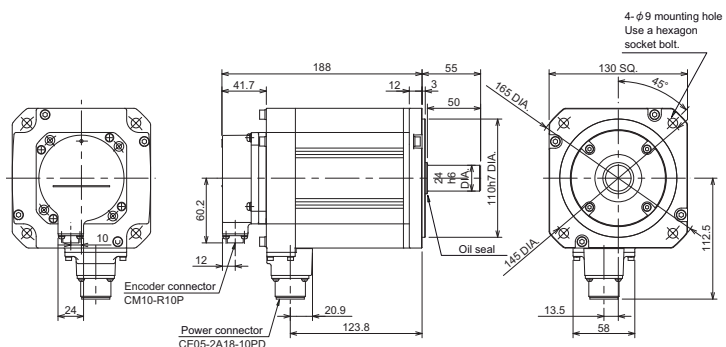
HF223T-A48



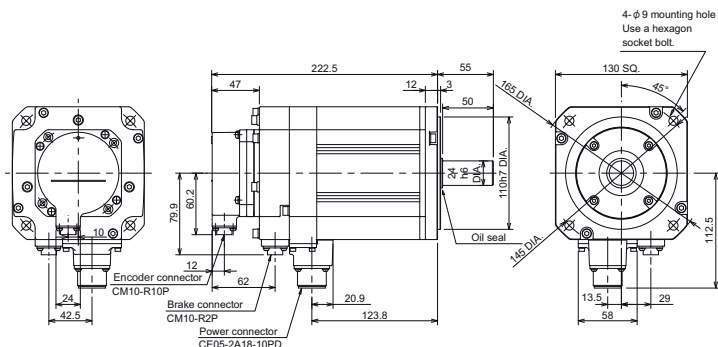
HF223BT-A48



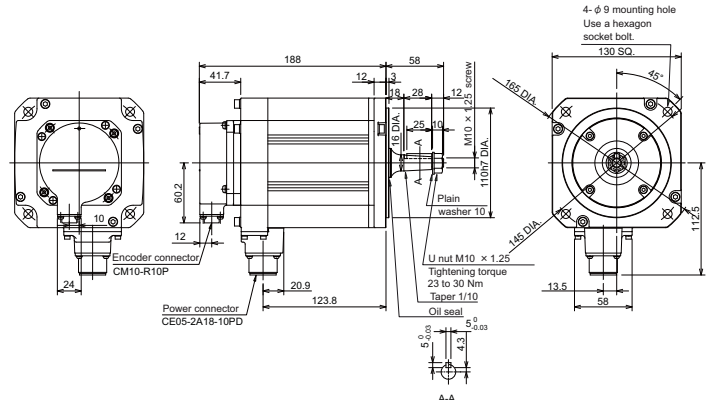
HF223S-A51,-A74N



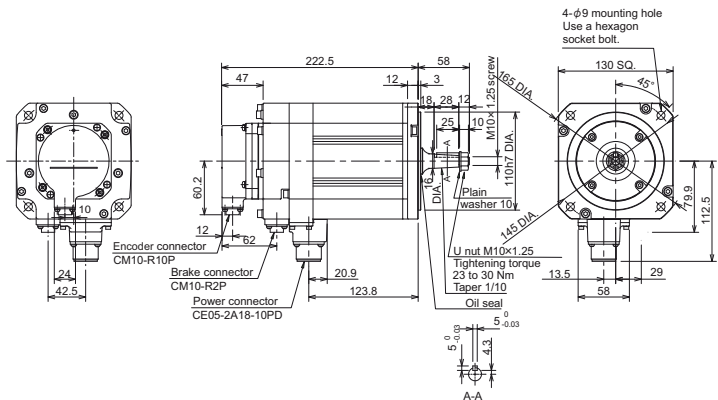
HF223BS-A51,-A74N



HF223T-A51,-A74N



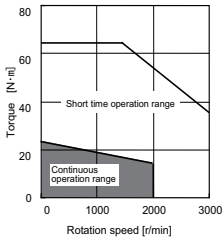
HF223BT-A51,-A74N



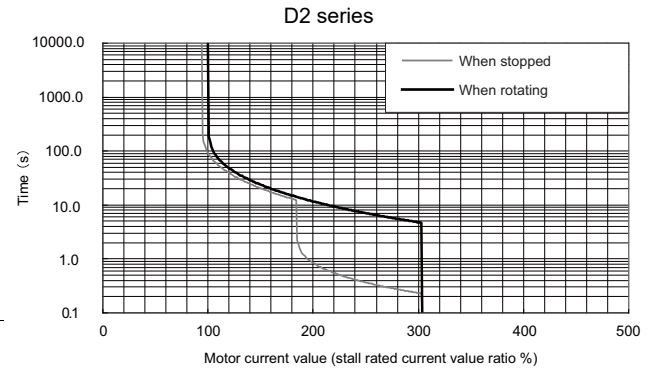
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3 ± 1.5 (94.5)	166.3 ± 1.5 (76)	186.3 ± 1.5 (123.9)	186.3 ± 1.5 (105)	186.3 ± 1.5 (103.8)	186.3 ± 1.5 (85.3)	186.3 ± 1.5 (123.9)	186.3 ± 1.5 (105)
	67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
22.5N·m	2000r/min	HF303 □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics

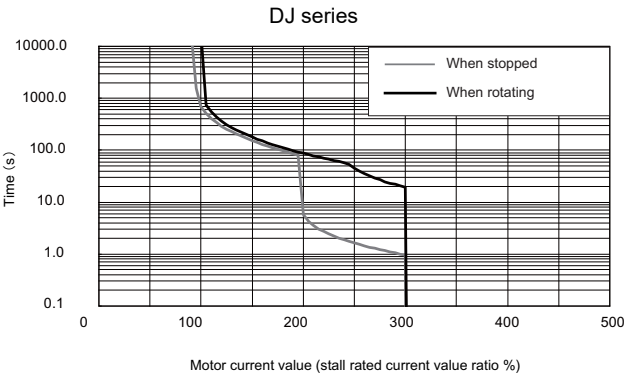
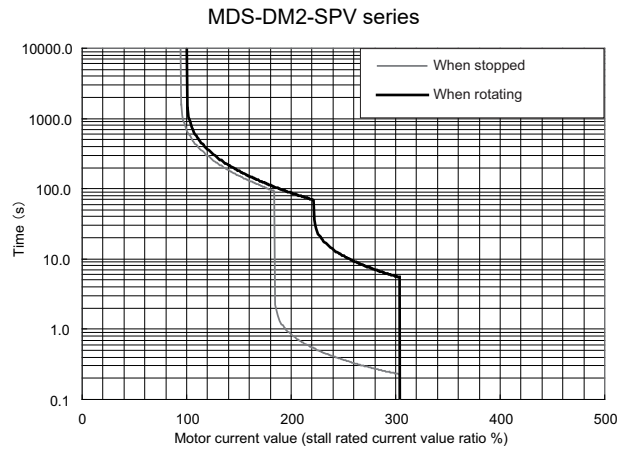


Servo overload protection characteristics

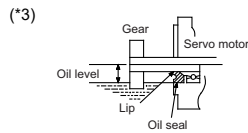
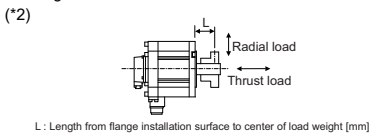


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-80
	2-axis type	MDS-D2-V2-8040 (L)
		MDS-D2-V2-8080 (L,M)
		MDS-D2-V2-16080 (M)
	3-axis type	-
Multi axis integrated type	MDS-DM2-SPV2-xxx80 (L,M) MDS-DM2-SPV3-xxx80 (L,M,S) MDS-DM2-SPV3-200120 (L,M,S) MDS-DM2-SPHV3-20080 (L,M,S)	
Continuous characteristics	Regenerative resistor type	MDS-DJ-V1-80
	Rated output[kW]	3.0
	Rated current[A]	11
	Rated torque[N·m]	14.3
	Stall current[A]	16
	Stall torque[N·m]	22.5
Maximum momentary output (For power supply selection)[kW]	12.0	
Rated rotation speed[r/min]	2000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	48.0	
Maximum torque[N·m]	64.0	
Power rate at continuous rated torque[kW/s]	27.3	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	30.43	
Motor inertia[×10 ⁻⁴ kg·m ²]	75.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	84.7	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	225
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	375
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	525
Mass	(Without) [kg]	19.0
	(With brake)[kg]	25.0
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Oil level (*3)[mm]	30	
Absolute position encoder	16,000,000 p/rev (A74N)	MDS-D2-V1/V2
	1,000,000 p/rev (A51)	MDS-D2-V1/V2, MDS-DM2, MDS-DJ-V1
	260,000 p/rev (A48)	MDS-D2-V1/V2, MDS-DM2, MDS-DJ-V1



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

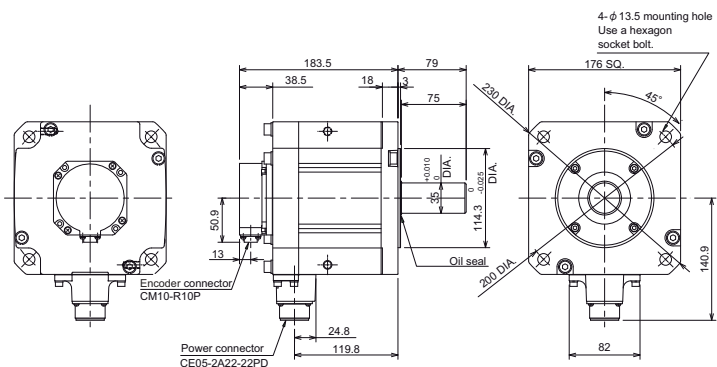
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

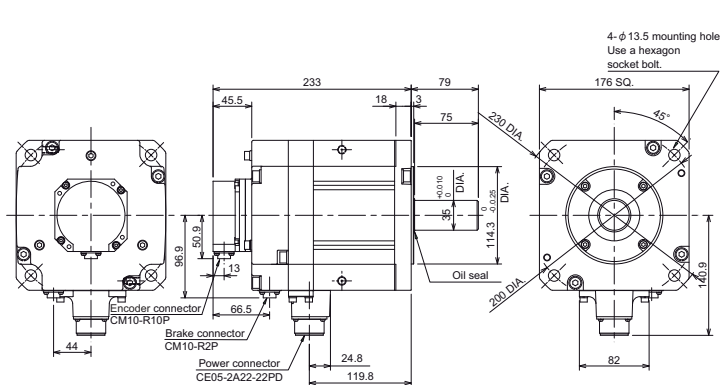
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

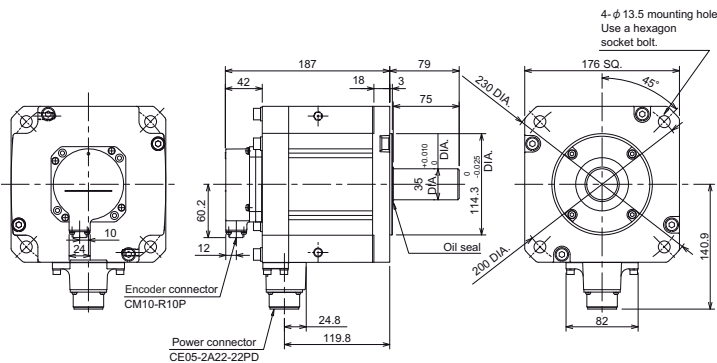
HF303S-A48



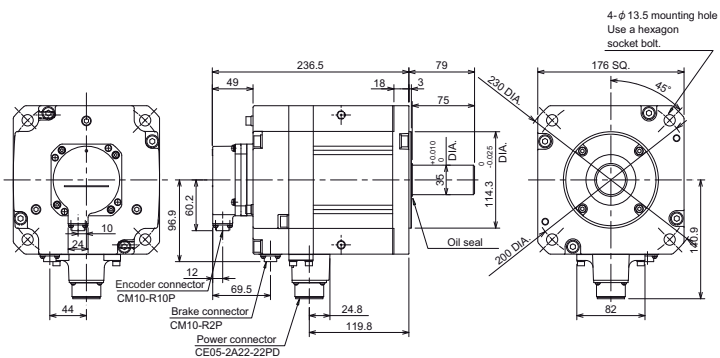
HF303BS-A48



HF303S-A51,-A74N



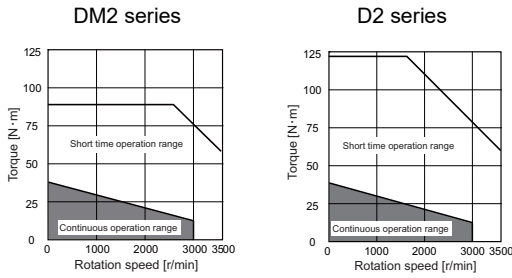
HF303BS-A51,-A74N



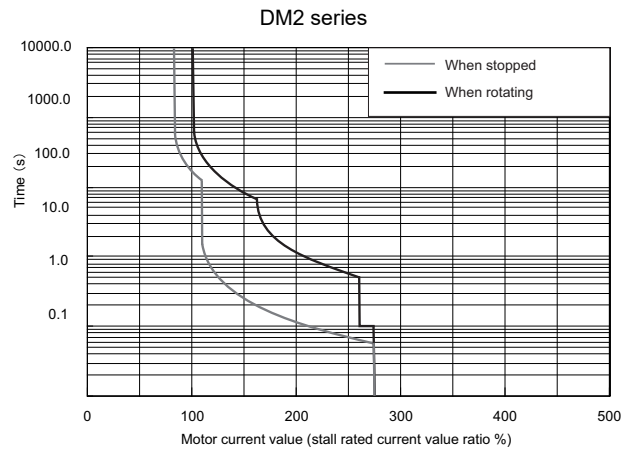
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
218.9±1.5 (84.5)	201.5±1.5 (76) (34) 69.3±1.5	218.9±1.5 (140.5) (84.5)	201.5±1.5 (122) (76) (34) 69.3±1.5	218.9±1.5 (103.8)	201.5±1.5 (85.3) (34) 69.3±1.5	218.9±1.5 (140.5) (103.8)	201.5±1.5 (122) (85.3) (34) 69.3±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
37.2N·m	3000r/min	HF453 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics

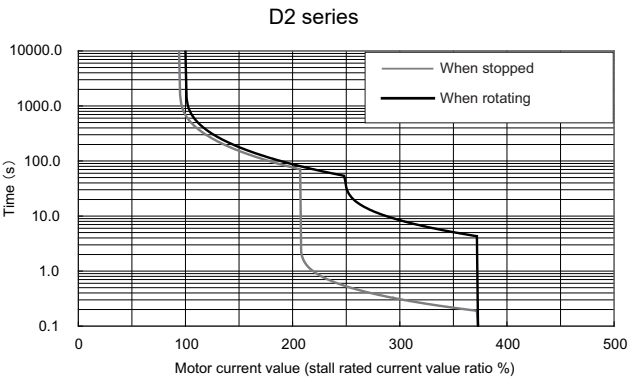


Servo overload protection characteristics

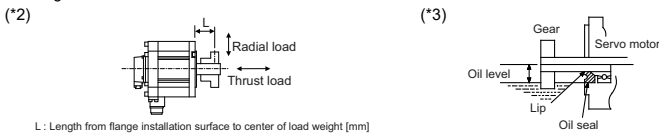


Specifications

Item	Specification	
Compatible drive unit (*1)	1-axis type	- MDS-D2-V1-160
	2-axis type	- MDS-D2-V2-16080 (L) MDS-D2-V2-160160 (L,M) MDS-D2-V2-160160W (L,M)
	3-axis type	-
	Multi axis integrated type	MDS-DM2-SPV3-200120 (L,M,S)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	4.5
	Rated current[A]	19
	Rated torque[N·m]	14.3
	Stall current[A]	28
	Stall torque[N·m]	37.2
	Maximum momentary output (For power supply selection)[kW]	22.0
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3500	
Maximum current[A]	79.6	
Maximum torque[N·m]	90.0	
Power rate at continuous rated torque[kW/s]	18.3	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	53.01	
Motor inertia[×10 ⁻⁴ kg·m ²]	112.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	121.7	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	336.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	560.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	784.0
Mass	(Without) [kg]	25.0
	(With brake)[kg]	31.0
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Oil level (*3)[mm]	30	
Absolute position encoder	16,000,000 p/rev (A74N)	-
	1,000,000 p/rev (A51)	MDS-DM2
	260,000 p/rev (A48)	MDS-DM2



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

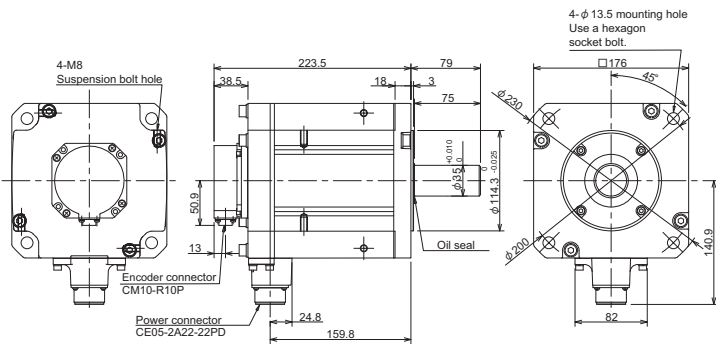
Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

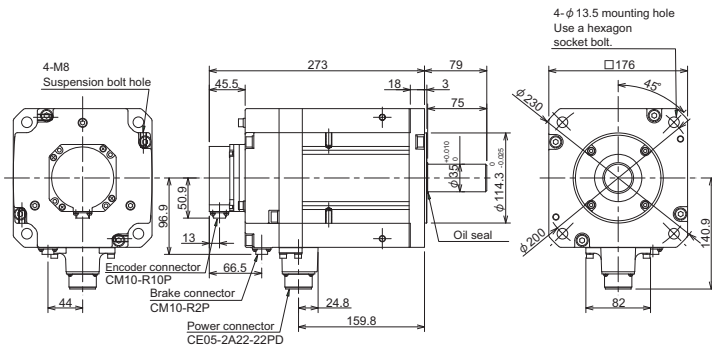
(*1) This is the representative value for the initial attraction gap at 20°C.
 (*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

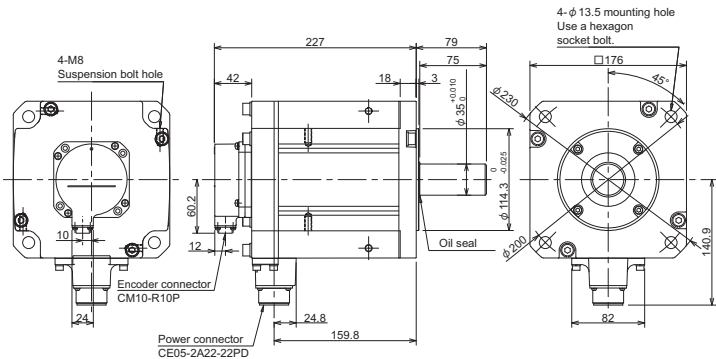
HF453S-A48



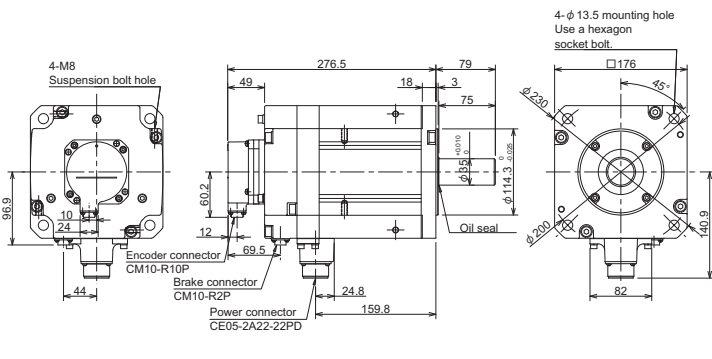
HF453BS-A48



HF453S-A51,-A74N



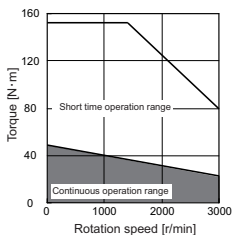
HF453BS-A51,-A74N



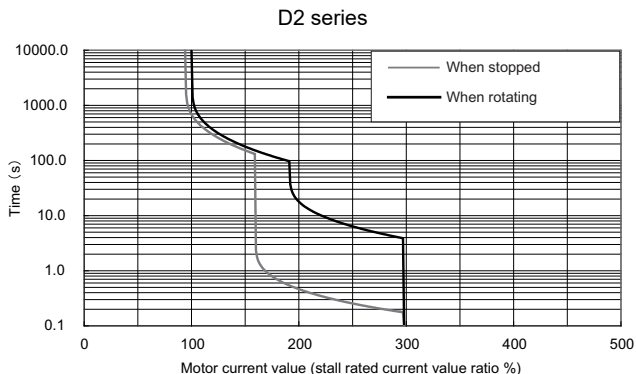
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
218.9±1.5 (84.5)	201.5±1.5 (76) 69.3±1.5 (34)	218.9±1.5 (84.5)	201.5±1.5 (122) (76) (34) 69.3±1.5 (34)	218.9±1.5 (103.8)	201.5±1.5 (85.3) (34) 69.3±1.5 (34)	218.9±1.5 (140.5) (103.8)	201.5±1.5 (122) (85.3) (34) 69.3±1.5 (34)

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
49.0N·m	3000r/min	HF703 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



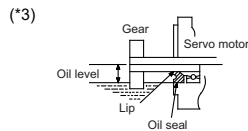
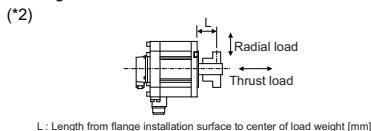
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-160W
	2-axis type	MDS-D2-V2-160160W (L,M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	7.0
	Rated current[A]	34
	Rated torque[N·m]	22.3
	Stall current[A]	37
	Stall torque[N·m]	49.0
Maximum momentary output (For power supply selection)[kW]	28.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	108.4	
Maximum torque[N·m]	152.0	
Power rate at continuous rated torque[kW/s]	32.2	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	71.93	
Motor inertia[×10 ⁻⁴ kg·m ²]	154.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	163.7	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	462.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	770.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	1078.0
Mass	(Without) [kg]	32.0
	(With brake)[kg]	38
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Oil level (*3)[mm]	30	
Absolute position encoder	16,000,000 p/rev (A74N)	MDS-D2-V1/V2
	1,000,000 p/rev (A51)	MDS-D2-V1/V2
	260,000 p/rev (A48)	MDS-D2-V1/V2

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

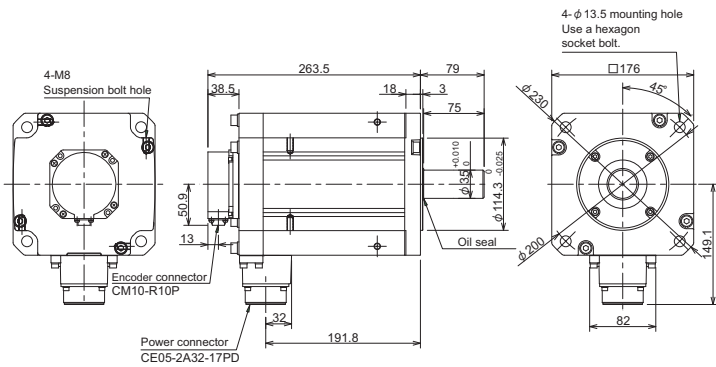
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

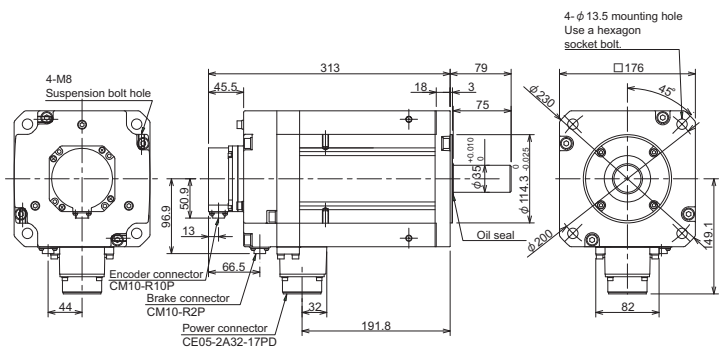
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

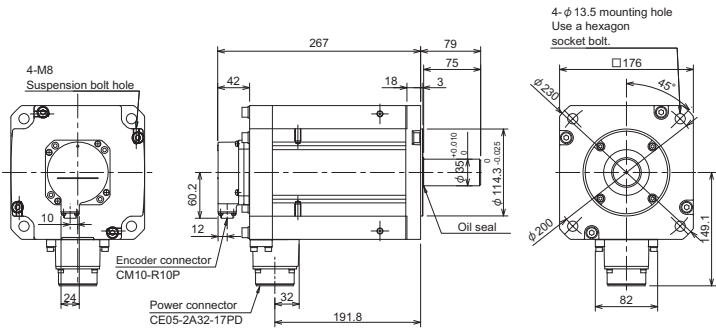
HF703S-A48



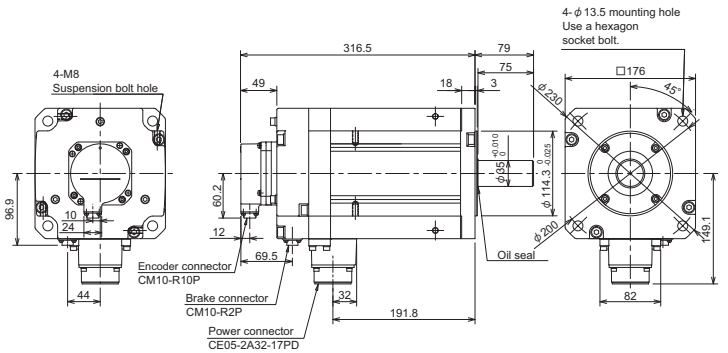
HF703BS-A48



HF703S-A51,-A74N



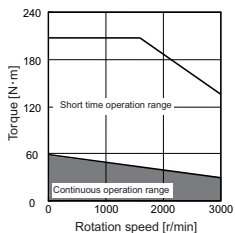
HF703BS-A51,-A74N



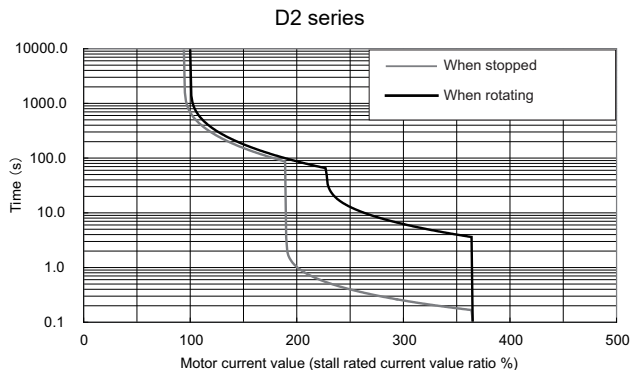
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
242±1.5	228±1.5	242±1.5	228±1.5	242±1.5	228±1.5	242±1.5	228±1.5
(84.5)	(76)	(140.5)	(76)	(103.8)	(86.3)	(140.5)	(86.3)
	(34)		(34)		(34)		(34)
	84.9±1.5		84.9±1.5		84.9±1.5		84.9±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
58.8N·m	3000r/min	HF903 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



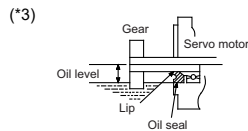
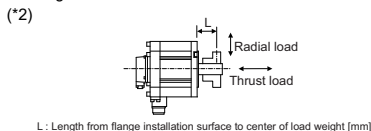
Servo overload protection characteristics



Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type MDS-D2-V1-320 2-axis type - 3-axis type - Multi axis integrated type - Regenerative resistor type -
Continuous characteristics	Rated output[kW] 9.0 Rated current[A] 30 Rated torque[N·m] 28.6 Stall current[A] 56 Stall torque[N·m] 58.8
Maximum momentary output (For power supply selection)[kW]	41.0
Rated rotation speed[r/min]	3000
Maximum rotation speed[r/min]	3000
Maximum current[A]	204.0
Maximum torque[N·m]	208.0
Power rate at continuous rated torque[kW/s]	42.1
Max. deceleration torque of dynamic brake(Tdp)[N·m]	89.23
Motor inertia[×10 ⁻⁴ kg·m ²]	196.0
(Brake inertia)[×10 ⁻⁴ kg·m ²]	205.7
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²] 588.0 General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²] 980.0 Non-interpolation axis[×10 ⁻⁴ kg·m ²] 1372.0
Mass	(Without) [kg] 43.0 (With brake)[kg] 49.0
Heat-resistant class	155(F)
Degree of protection	IP67 (The shaft-through portion is excluded.)
Quakeproof level[m/s ²] ((G))	X:9.8(1), Y:9.8(1)
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm)) - Thrust load[N] -
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm)) 2450 (L=85) Thrust load[N] 980
Oil level (*3)[mm]	34
Absolute position encoder	16,000,000 p/rev (A74N) MDS-D2-V1 1,000,000 p/rev (A51) MDS-D2-V1 260,000 p/rev (A48) MDS-D2-V1

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation:80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

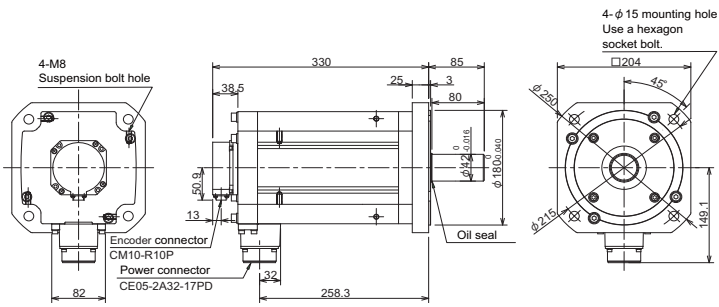
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

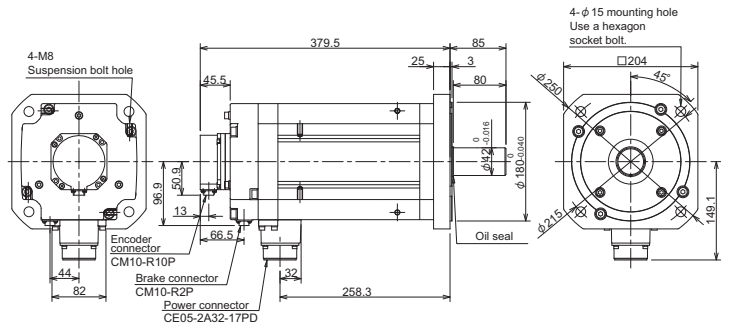
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

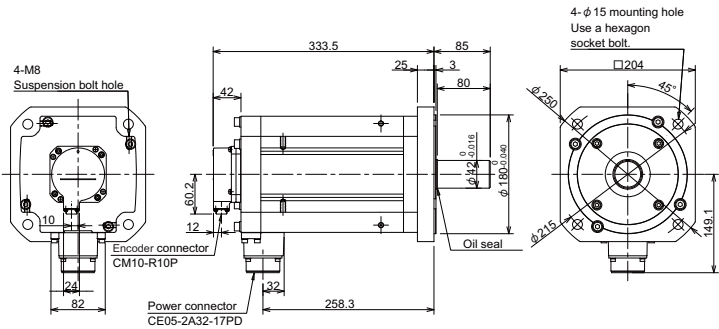
HF903S-A48



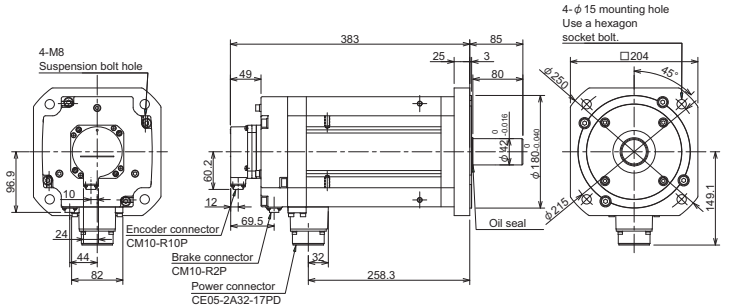
HF903BS-A48



HF903S-A51,-A74N



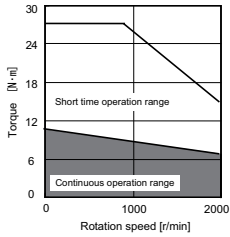
HF903BS-A51,-A74N



A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
242±1.5	226±1.5	242±1.5	226±1.5	242±1.5	226±1.5	242±1.5	226±1.5
(94.5)	(76)	(140.5)	(122)	(103.8)	(86.3)	(140.5)	(122)
	(34)		(34)		(34)		(34)
	84.9±1.5		84.9±1.5		84.9±1.5		84.9±1.5

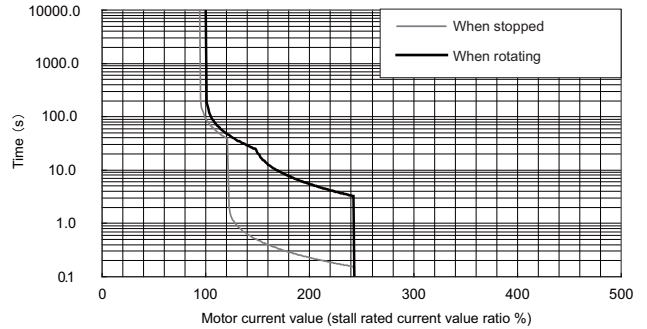
Stall torque	Rated rotation speed	Servo motor type	Explanation of type
11.0N·m	2000r/min	HF142 □□-XXX	(1) Magnetic brake
			B with brake
			None without brake
(2) Shaft end			
S Straight			
T Taper			
(3) Encoder			
XXX Type			

Torque characteristics



Servo overload protection characteristics

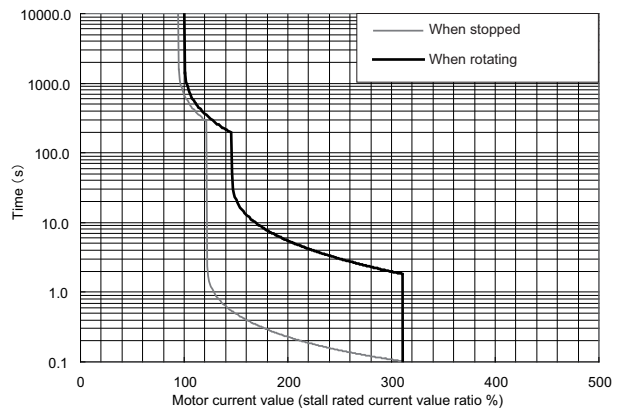
D2 series



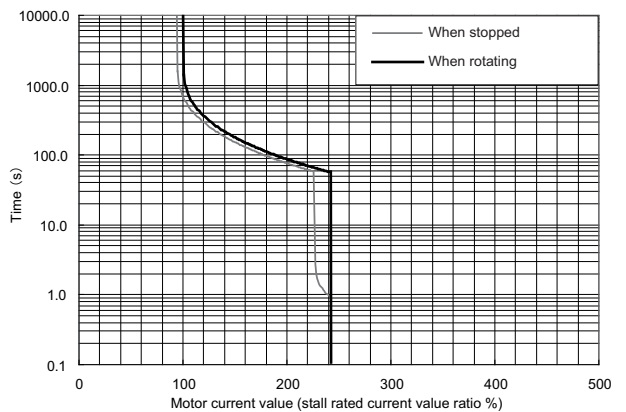
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-20
	2-axis type	MDS-D2-V2-2020 (L,M) MDS-D2-V2-4020 (M)
	3-axis type	MDS-D2-V3-202020 (L,M,S) MDS-D2-V3-404040 (L,M,S)
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-V1-40
Continuous characteristics	Rated output[kW]	1.4
	Rated current[A]	5.2
	Rated torque[N·m]	6.7
	Stall current[A]	6.4
	Stall torque[N·m]	11.0
	Maximum momentary output (For power supply selection)[kW]	3.8
Rated rotation speed[r/min]	2000	
Maximum rotation speed[r/min]	2000	
Maximum current[A]	15.5	
Maximum torque[N·m]	26.5	
Power rate at continuous rated torque[kW/s]	25.2	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	14.43	
Motor inertia[×10 ⁻⁴ kg·m ²]	17.8	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	20.0	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	53.4
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	89
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	124.6
Mass	(Without) [kg]	8.3
	(With brake)[kg]	11.0
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=58)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=55)
	Thrust load[N]	490
Oil level (*3)[mm]	22.5	
Absolute position encoder	16,000,000 p/rev (A74N)	MDS-D2-V1/V2/V3
	1,000,000 p/rev (A51)	MDS-D2-V1/V2/V3
		MDS-DM2, MDS-DJ-V1
	260,000 p/rev (A48)	MDS-D2-V1/V2/V3 MDS-DM2, MDS-DJ-V1

MDS-D2-V3-202020

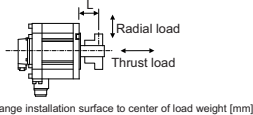


MDS-D2-V3-404040

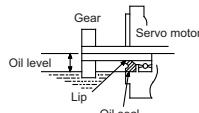


(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

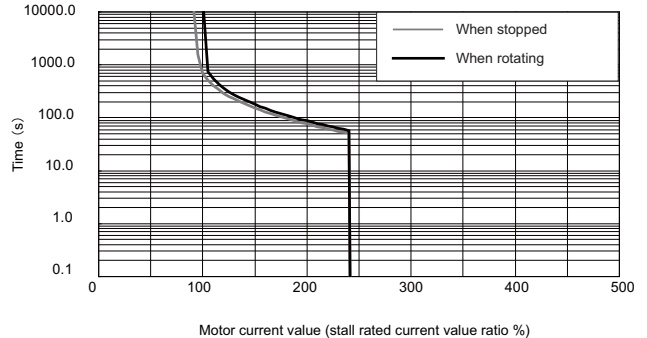
Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N·m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

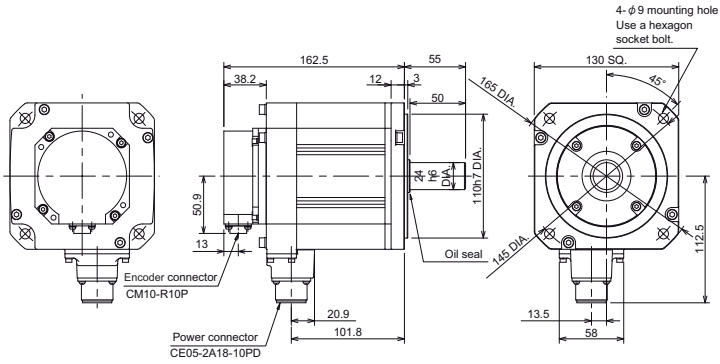
DJ series



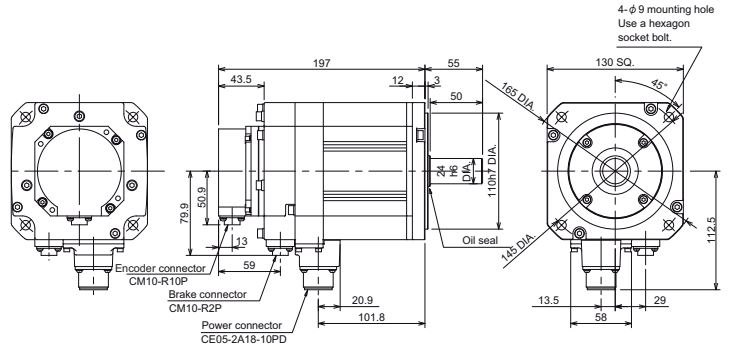
200V System Medium Inertia Servo Motor HF Series

Outline dimension drawings [Unit : mm]

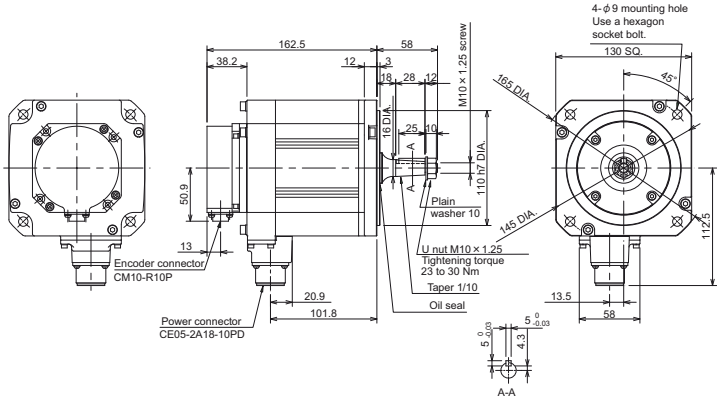
HF142S-A48



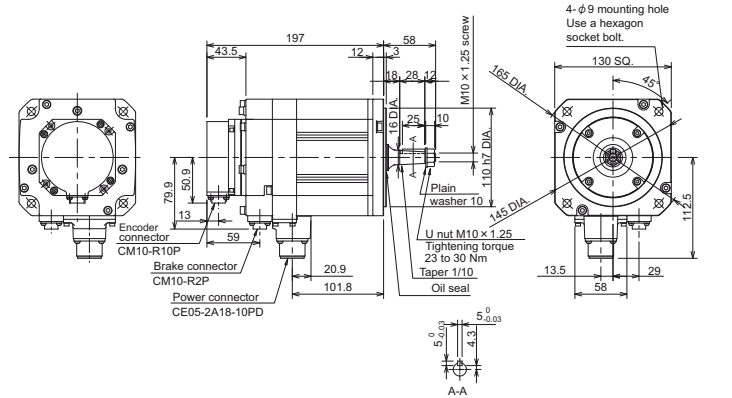
HF142BS-A48



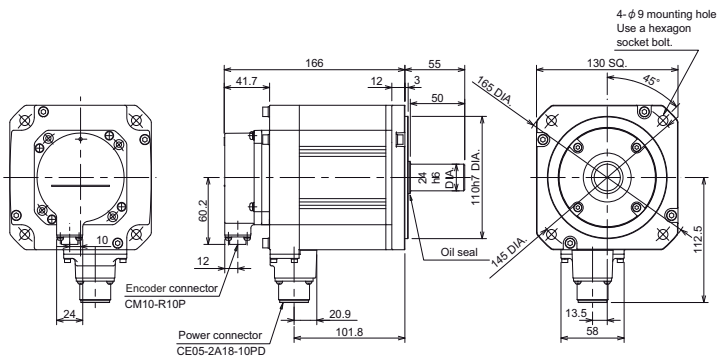
HF142T-A48



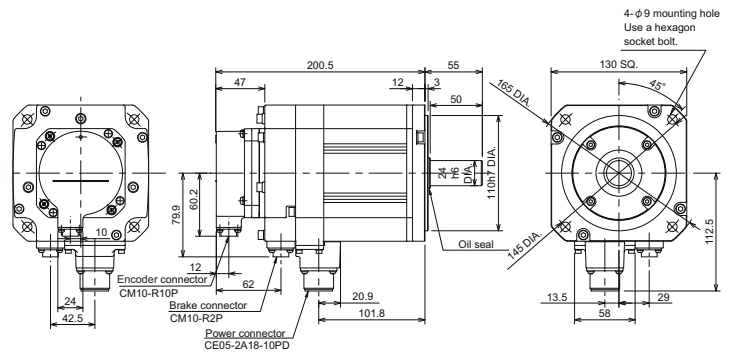
HF142BT-A48



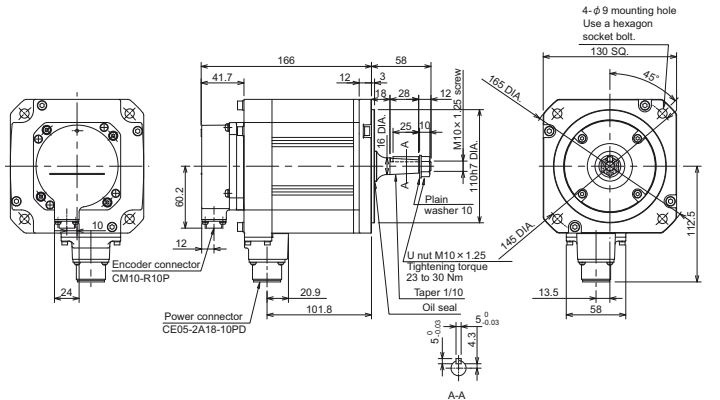
HF142S-A51,-A74N



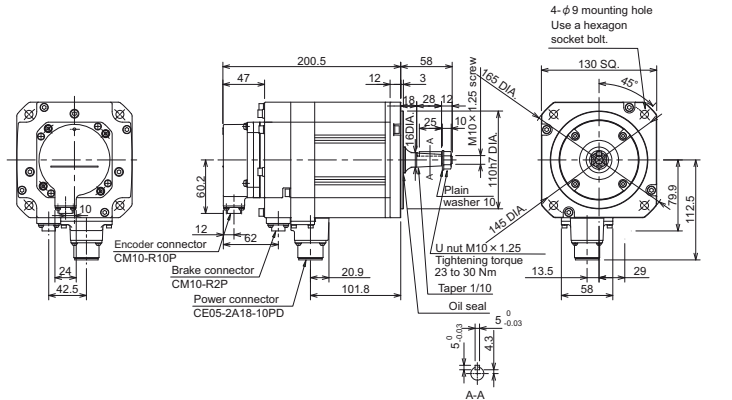
HF142BS-A51,-A74N



HF142T-A51,-A74N



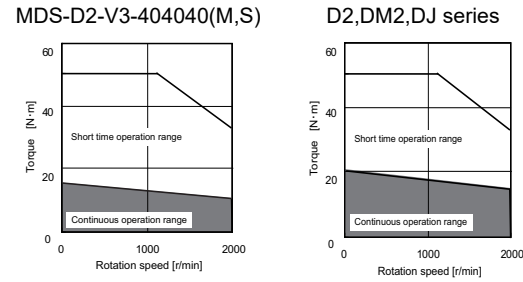
HF142BT-A51,-A74N



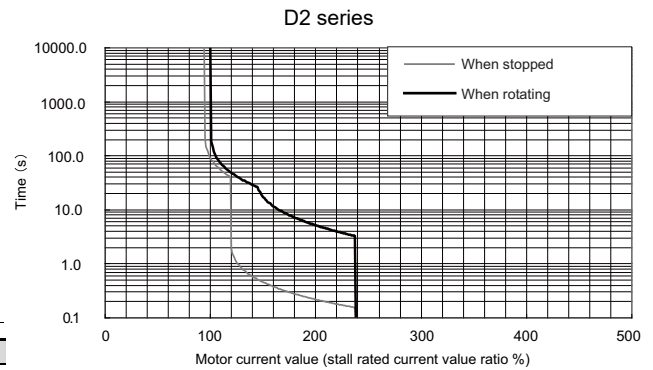
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3±1.5 (94.5)	166.3±1.5 (76)	186.3±1.5 (94.5)	186.3±1.5 (105) (76)	186.3±1.5 (103.8)	166.3±1.5 (85.3)	186.3±1.5 (123.9)	186.3±1.5 (105) (85.3)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
20.0N·m	2000r/min	HF302 □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



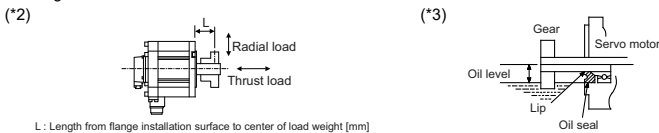
Servo overload protection characteristics



Specifications

Item	Specifications		
Compatible drive unit (*1)	1-axis type	-	MDS-D2-V1-40
	2-axis type	-	MDS-D2-V2-4020 (L) MDS-D2-V2-4040 (L,M) MDS-D2-V2-8040 (M)
	3-axis type	MDS-D2-V3-404040 (M,S)	MDS-D2-V3-404040 (L)
	Multi axis integrated type	-	MDS-DM2-SPV2-xxx80 (L,M) MDS-DM2-SPV3-xxx80 (L,M,S) MDS-DM2-SPHV3-20080 (L,M,S)
	Regenerative resistor type	-	MDS-DJ-V1-40
Continuous characteristics	Rated output[kW]	2.2	3.0
	Rated current[A]	8.5	11
	Rated torque[N·m]	10.6	14.3
	Stall current[A]	8.5	11
	Stall torque[N·m]	15.6	20.0
	Maximum momentary output (For power supply selection)[kW]	7.4	7.4
Rated rotation speed[r/min]	2000	2000	
Maximum rotation speed[r/min]	2000	2000	
Maximum current[A]	29.0	29.0	
Maximum torque[N·m]	50.0	50.0	
Power rate at continuous rated torque[kW/s]	27.3	27.3	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	29.42	29.42	
Motor inertia[×10 ⁻⁴ kg·m ²]	75.0	75.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	84.7	84.7	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	225	225
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	375	375
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	525	525
Mass	(Without) [kg]	19.0	19.0
	(With brake)[kg]	25.0	25.0
Heat-resistant class	155(F)	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:29.4(3)	X:24.5(2.5),Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-	-
	Thrust load[N]	-	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2058 (L=79)	2058 (L=79)
	Thrust load[N]	980	980
Oil level (*3)[mm]	30	30	
Absolute position encoder	16,000,000 p/rev (A74N)	MDS-D2-V3	MDS-D2-V1/V2/V3
	1,000,000 p/rev (A51)	MDS-DM2	MDS-D2/DM2, MDS-DJ-V1
	260,000 p/rev (A48)	MDS-DM2	MDS-D2/DM2, MDS-DJ-V1

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



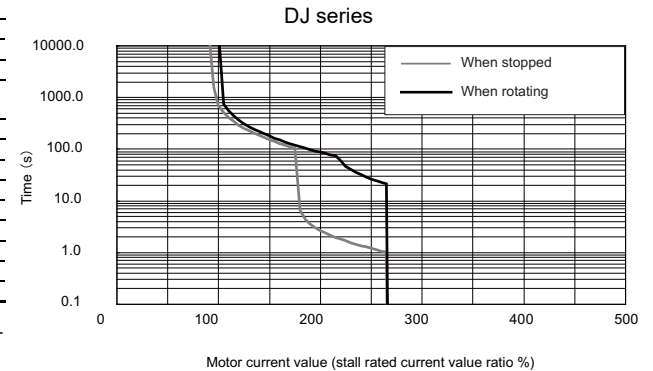
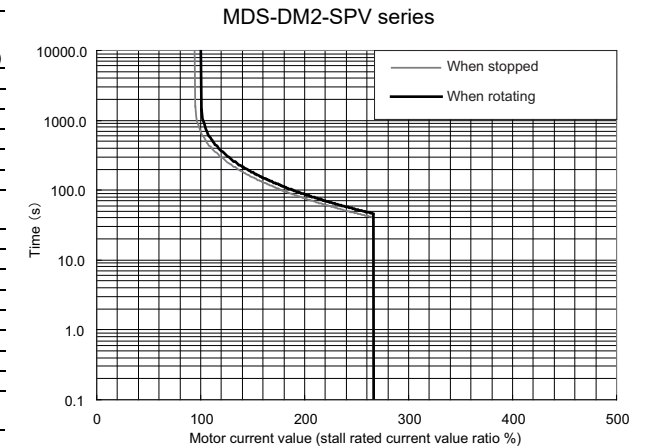
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation:80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

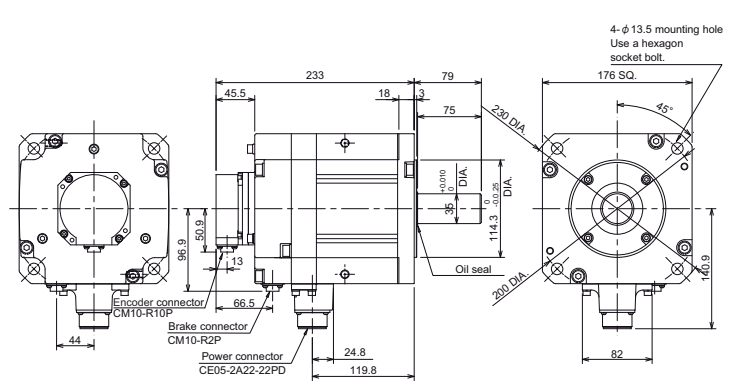
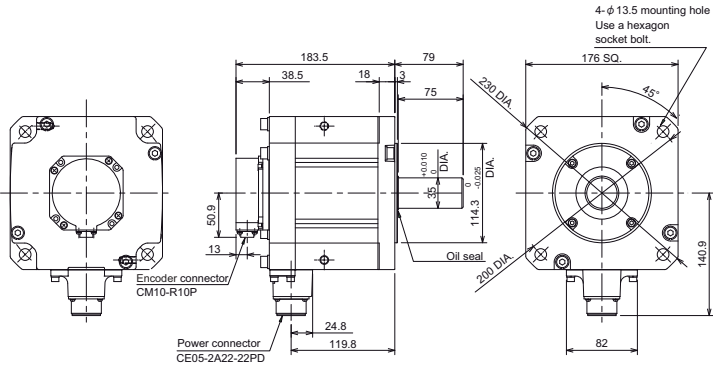


200V System Medium Inertia Servo Motor HF Series

Outline dimension drawings [Unit : mm]

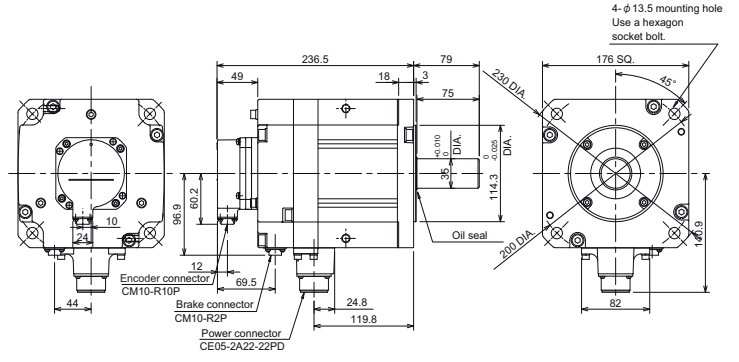
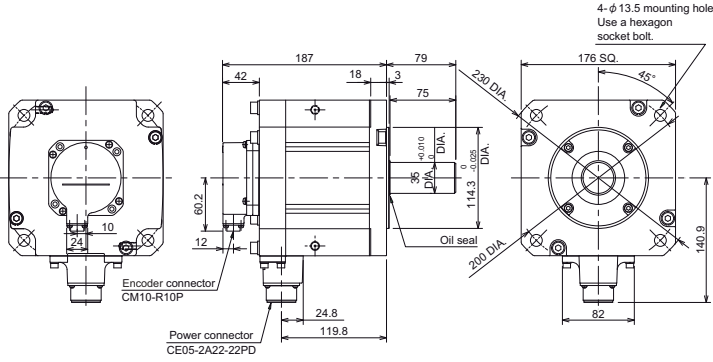
HF302S-A48

HF302BS-A48



HF302S-A51,-A74N

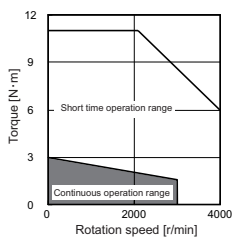
HF302BS-A51,-A74N



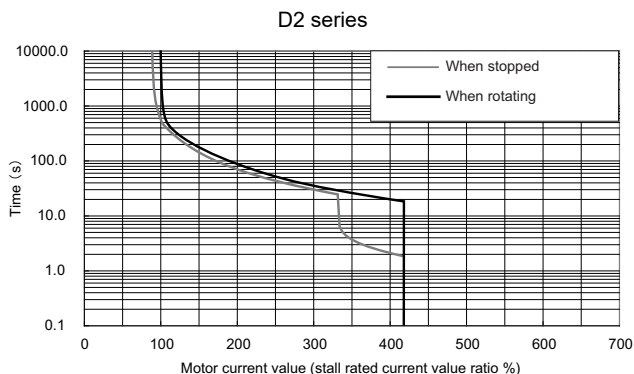
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
218.9±1.5 (84.5)	201.5±1.5 (76) (34) 69.3±1.5	218.9±1.5 (140.5) (84.5)	201.5±1.5 (122) (76) (34) 69.3±1.5	218.9±1.5 (103.8)	201.5±1.5 (85.3) (34) 69.3±1.5	218.9±1.5 (140.5) (103.8)	201.5±1.5 (122) (85.3) (34) 69.3±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
3.0N•m	3000r/min	HP54 □□-XXX	(1) Magnetic brake	B with brake None without brake
			(2) Shaft end	S Straight T Taper
			(3) Encoder	XXX Type

Torque characteristics



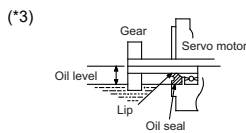
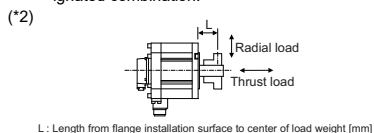
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-40
	2-axis type	MDS-D2-V2-4020 (L) MDS-D2-V2-4040 (L,M) MDS-D2-V2-8040 (M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	0.5
	Rated current[A]	1.8
	Rated torque[N•m]	1.6
	Stall current[A]	4.4
	Stall torque[N•m]	3.0
Maximum momentary output (For power supply selection)[kW]	2.3	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	16.8	
Maximum torque[N•m]	11.0	
Power rate at continuous rated torque[kW/s]	5.5	
Max. deceleration torque of dynamic brake(Tdp)[N•m]	6.36	
Motor inertia[×10 ⁻⁴ kg•m ²]	4.6	
(Brake inertia)[×10 ⁻⁴ kg•m ²]	5.1	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg•m ²]	13.8
	General machine tool (interpolation axis)[×10 ⁻⁴ kg•m ²]	23.0
	Non-interpolation axis[×10 ⁻⁴ kg•m ²]	46.0
Mass	(Without) [kg]	6.0
	(With brake)[kg]	7.3
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=52.7)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	20	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

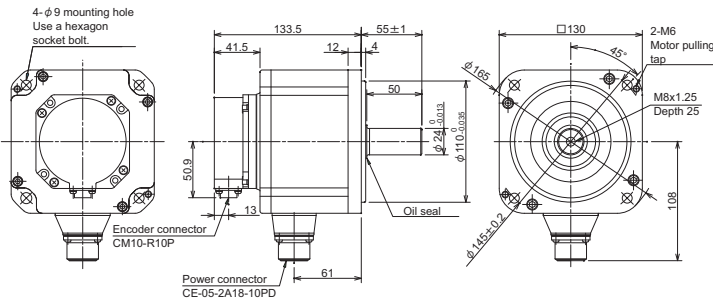
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.91
Static friction torque[N•m]	3.5
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

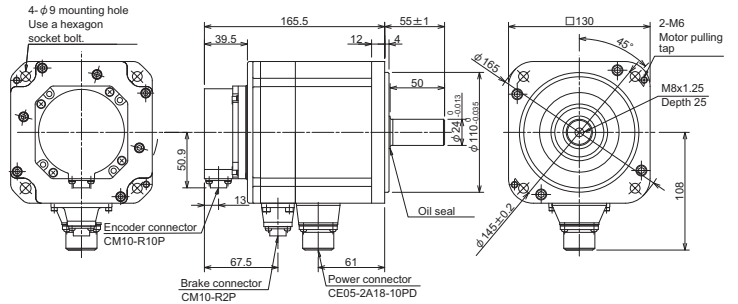
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

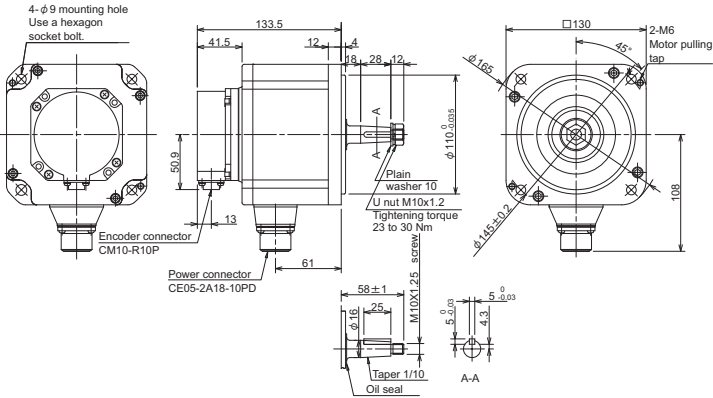
HP54S-A48



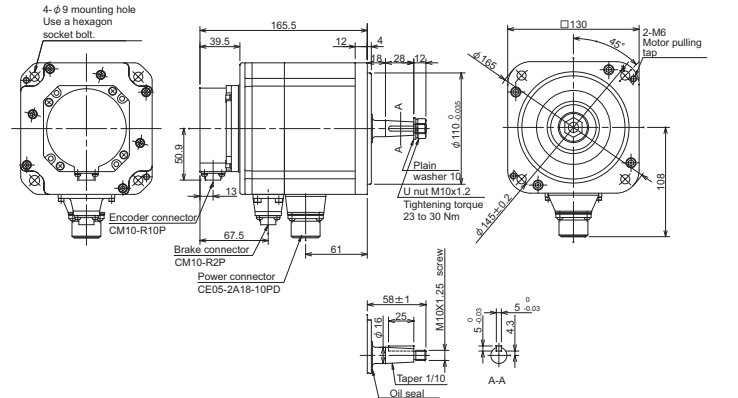
HP54BS-A48



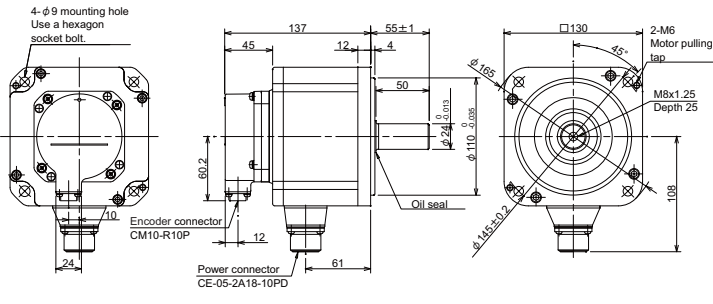
HP54T-A48



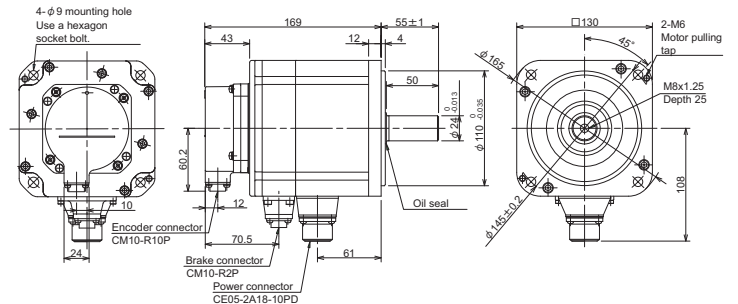
HP54BT-A48



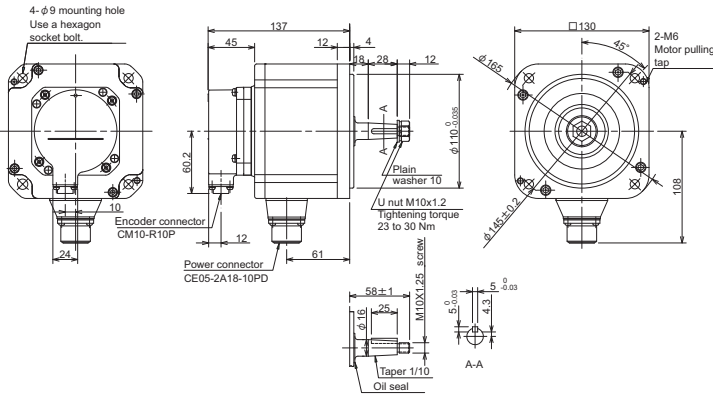
HP54S-A51,-A74N



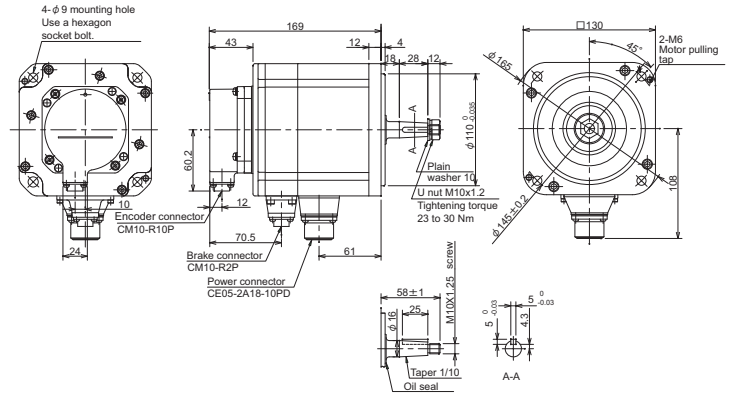
HP54BS-A51,-A74N



HP54T-A51,-A74N



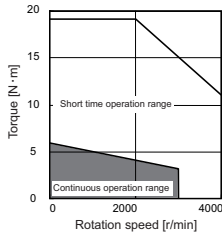
HP54BT-A51,-A74N



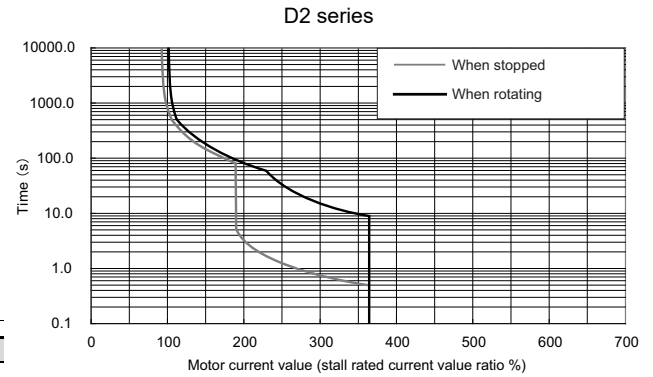
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
181.8±1.5 (94.5)	161.8±1.5 (76) (34)	181.8±1.5 (138.6)	161.8±1.5 (120.1) (76) (34)	181.8±1.5 (103.9)	161.8±1.5 (85.3) (34)	181.8±1.5 (138.8)	161.8±1.5 (120.1) (85.3) (34)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
5.9N·m	3000r/min	HP104 □□-XXX	(1) Magnetic brake	B with brake None without brake
			(2) Shaft end	S Straight T Taper
			(3) Encoder	XXX Type

Torque characteristics



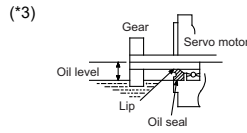
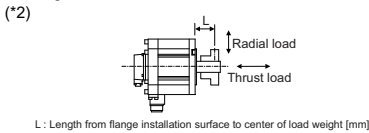
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-40
	2-axis type	MDS-D2-V2-4020 (L) MDS-D2-V2-4040 (L,M) MDS-D2-V2-8040 (M)
	Regenerative resistor type	-
	Rated output[kW]	1.0
Continuous characteristics	Rated current[A]	3.6
	Rated torque[N·m]	3.2
	Stall current[A]	7.8
	Stall torque[N·m]	5.9
	Maximum momentary output (For power supply selection)[kW]	4.3
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	25.6	
Maximum torque[N·m]	19.2	
Power rate at continuous rated torque[kW/s]	13.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	11.10	
Motor inertia[×10 ⁻⁴ kg·m ²]	7.7	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	8.2	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	23.1
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	38.5
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	77.0
Mass	(Without) [kg]	7.0
	(With brake)[kg]	8.5
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=52.7)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	20	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

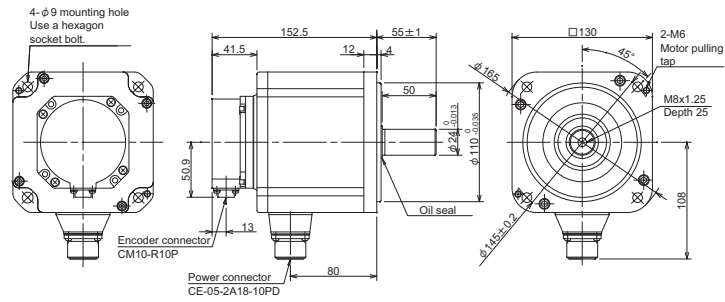
Item	Specifications
Rated voltage	DC24V
Rated current at 20°C[A]	0.86
Static friction torque[N·m]	9
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

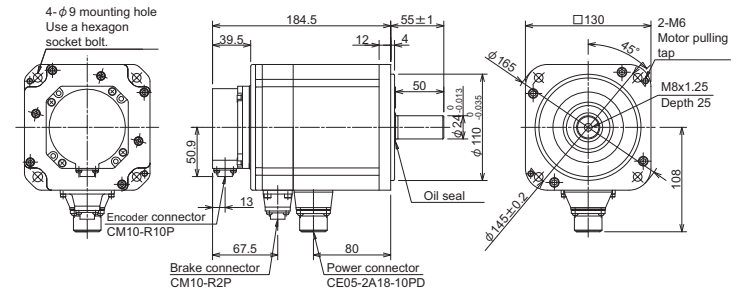
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

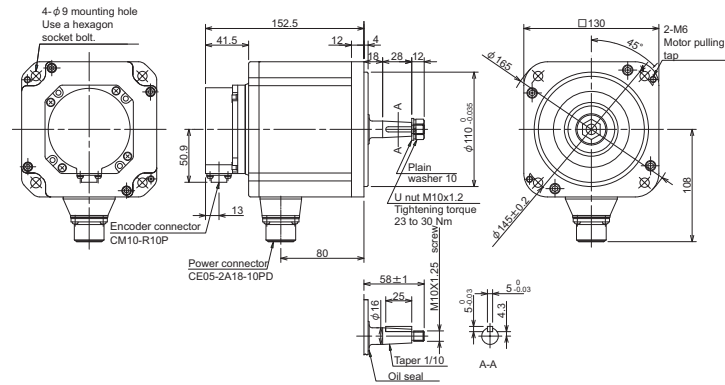
HP104S-A48



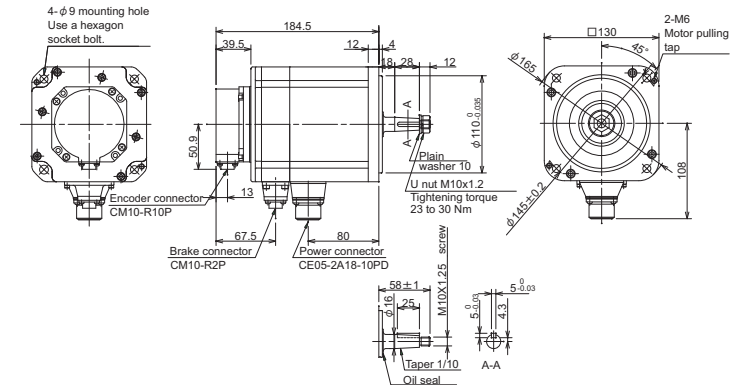
HP104BS-A48



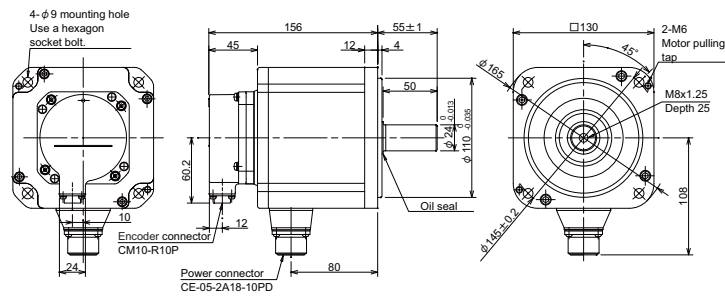
HP104T-A48



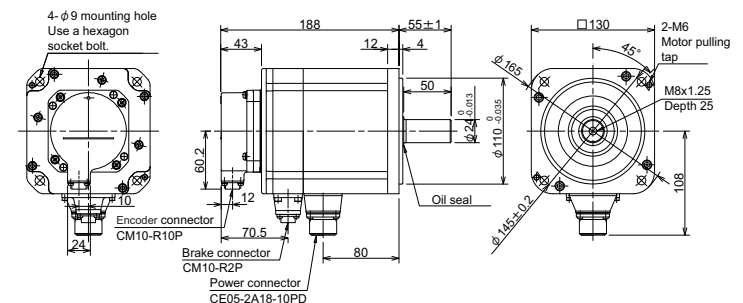
HP104BT-A48



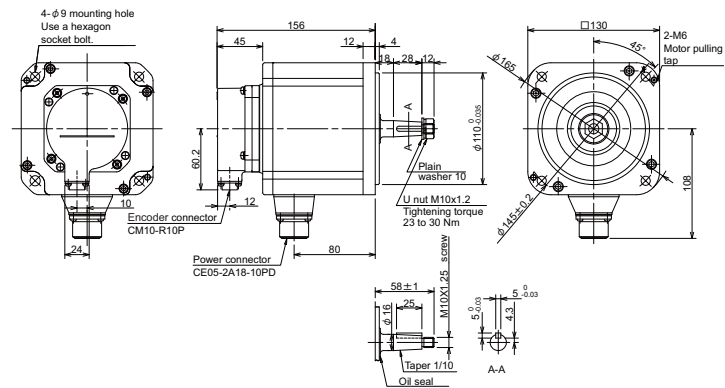
HP104S-A51,-A74N



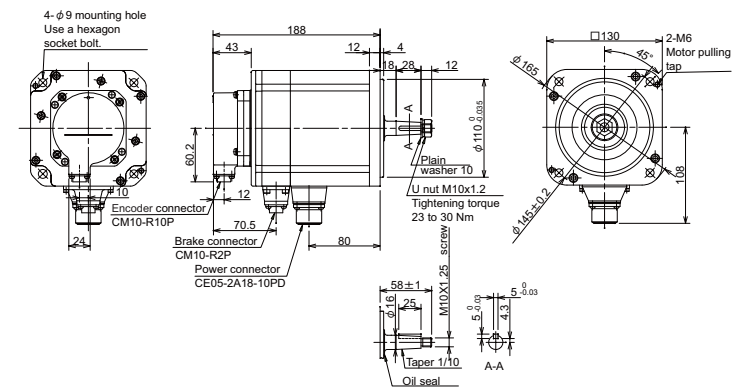
HP104BS-A51,-A74N



HP104T-A51,-A74N



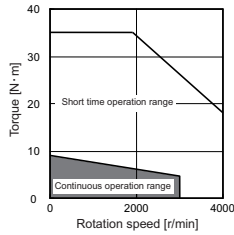
HP104BT-A51,-A74N



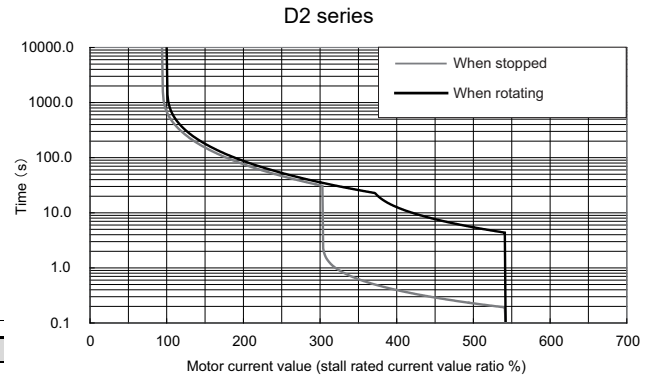
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
181.8±1.5 (94.5)	161.8±1.5 (76) (34)	181.8±1.5 (138.6)	161.8±1.5 (120.7) (34)	181.8±1.5 (103.9)	161.8±1.5 (85.3) (34)	181.8±1.5 (138.6)	161.8±1.5 (85.3) (34)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
9.0N·m	3000r/min	HP154 □□-XXX (1)(2) (3)	(1) Magnetic brake	B with brake None without brake
			(2) Shaft end	S Straight T Taper
			(3) Encoder	XXX Type

Torque characteristics



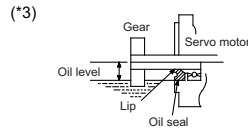
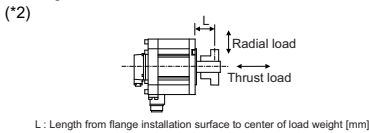
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-80
	2-axis type	MDS-D2-V2-8040 (L) MDS-D2-V2-8080 (L,M) MDS-D2-V2-16080 (M)
	Regenerative resistor type	-
	Maximum momentary output (For power supply selection)[kW]	8.0
Continuous characteristics	Rated output[kW]	1.5
	Rated current[A]	5.1
	Rated torque[N·m]	4.8
	Stall current[A]	9.6
	Stall torque[N·m]	9.0
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	52.0	
Maximum torque[N·m]	36.5	
Power rate at continuous rated torque[kW/s]	19.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	17.41	
Motor inertia[×10 ⁻⁴ kg·m ²]	12.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	12.5	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	36.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	60.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	120.0
Mass	(Without) [kg]	8.0
	(With brake)[kg]	9.5
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=52.7)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	20	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

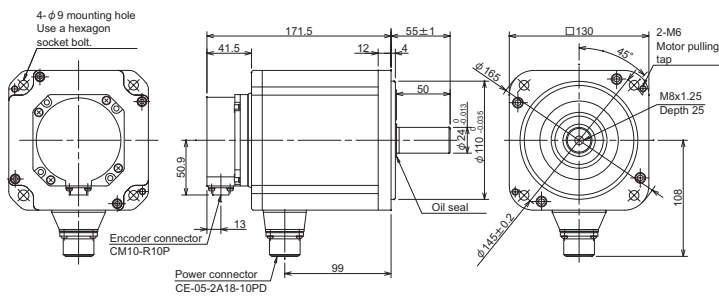
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.86
Static friction torque[N·m]	9
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

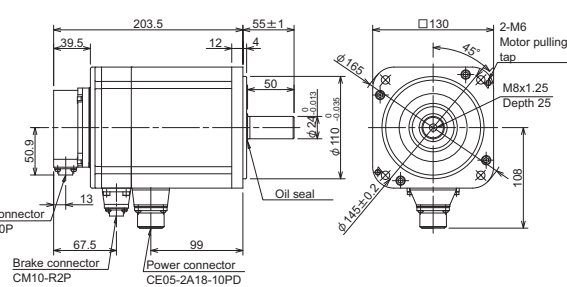
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

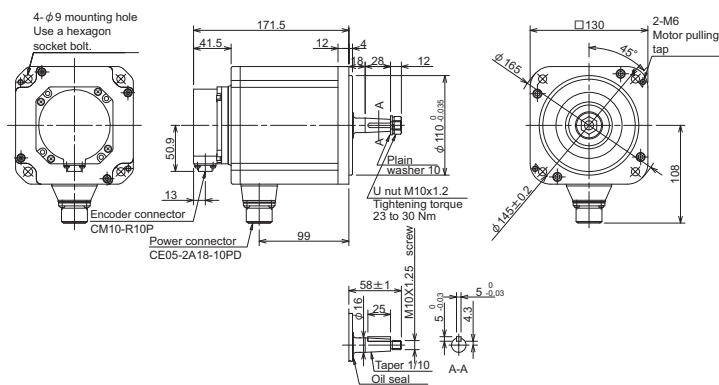
HP154S-A48



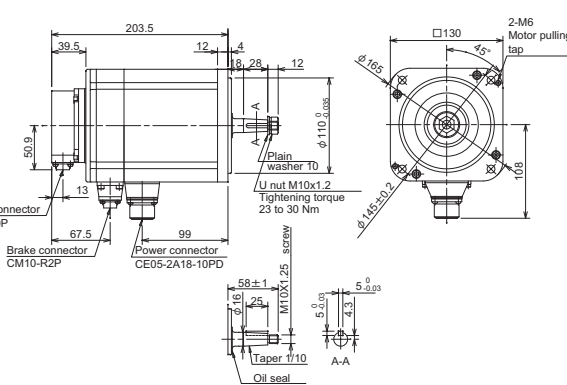
HP154BS-A48



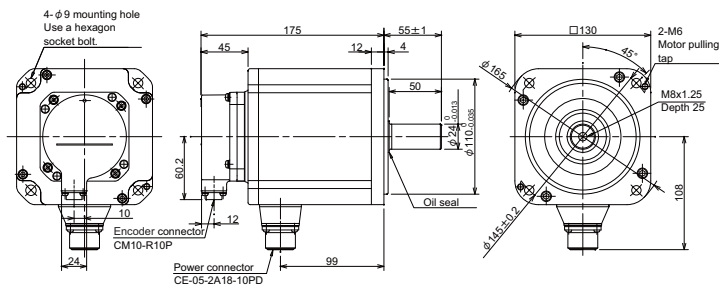
HP154T-A48



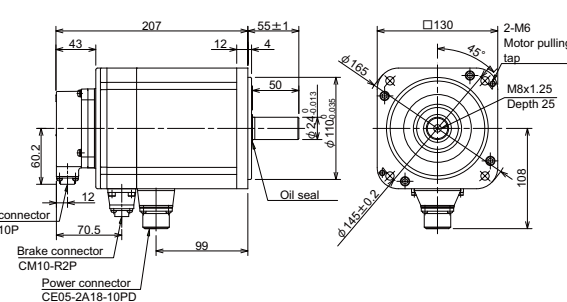
HP154BT-A48



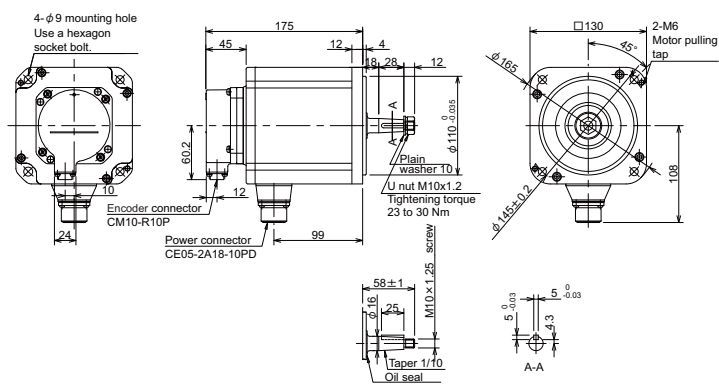
HP154S-A51,-A74N



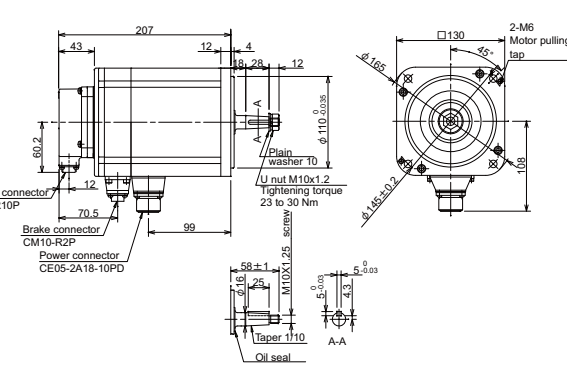
HP154BS-A51,-A74N



HP154T-A51,-A74N



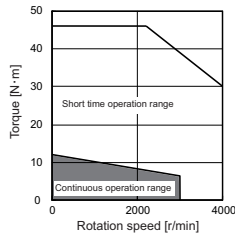
HP154BT-A51,-A74N



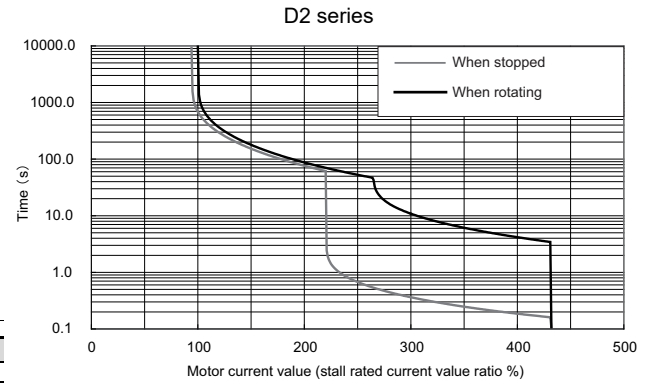
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
181.8±1.5 (94.5)	161.8±1.5 (76) (34)	181.8±1.5 (138.6)	161.8±1.5 (120.1) (76) (34)	181.8±1.5 (103.8)	161.8±1.5 (65.3) (34)	181.8±1.5 (138.6)	161.8±1.5 (120.1) (85.3) (34)
67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
12.0N·m	3000r/min	HP224 □□-XXX	(1) Magnetic brake	B with brake None without brake
			(2) Shaft end	S Straight T Taper
			(3) Encoder	XXX Type

Torque characteristics



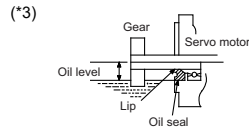
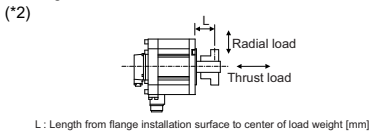
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-80
	2-axis type	MDS-D2-V2-8040 (L) MDS-D2-V2-8080 (L,M) MDS-D2-V2-16080 (M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	2.2
	Rated current[A]	6.9
	Rated torque[N·m]	6.4
	Stall current[A]	14.0
	Stall torque[N·m]	12.0
Maximum momentary output (For power supply selection)[kW]	11.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	57.0	
Maximum torque[N·m]	46.0	
Power rate at continuous rated torque[kW/s]	20.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	28.74	
Motor inertia[×10 ⁻⁴ kg·m ²]	20.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	20.5	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	60.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	100.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	200.0
Mass	(Without) [kg]	12.0
	(With brake)[kg]	13.9
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=52.7)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	20	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

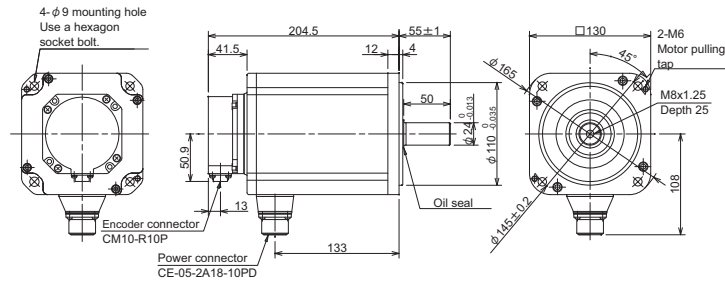
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.0
Static friction torque[N·m]	12
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

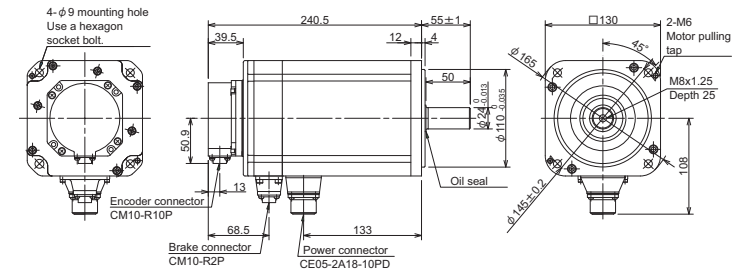
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

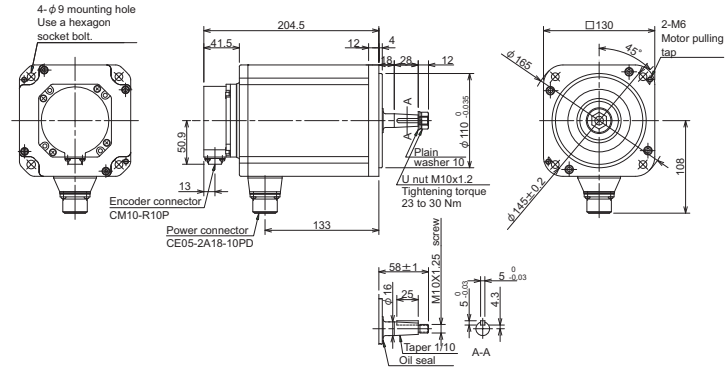
HP224S-A48



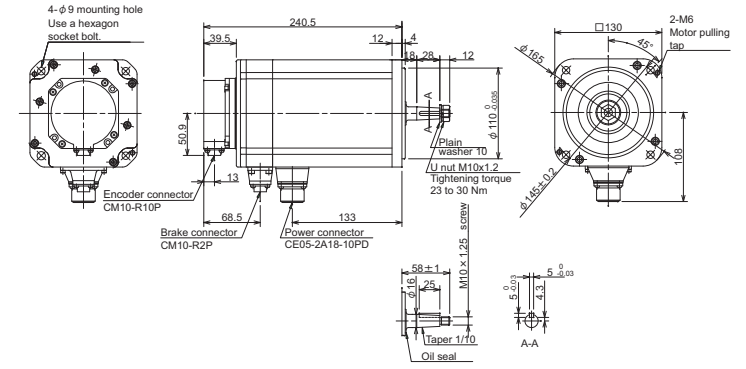
HP224BS-A48



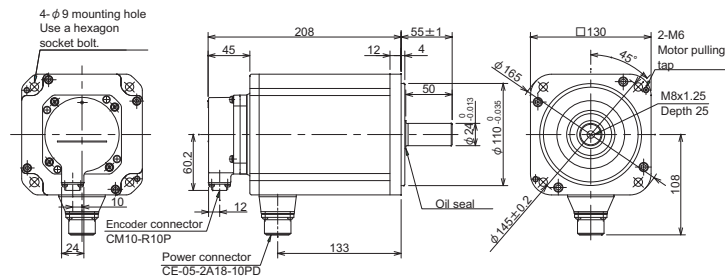
HP224T-A48



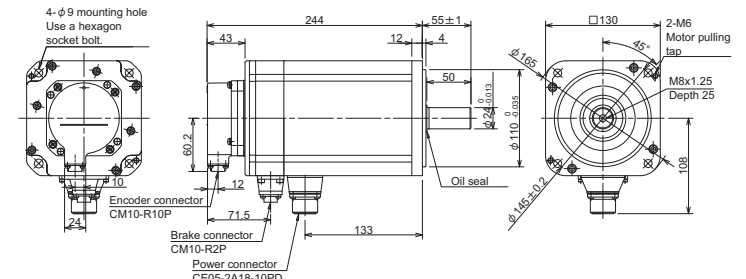
HP224BT-A48



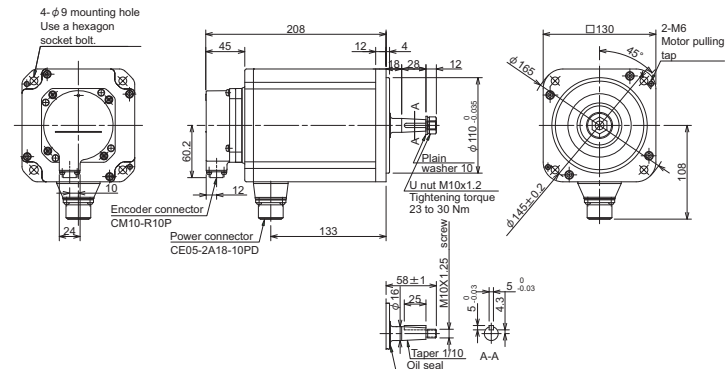
HP224S-A51,-A74N



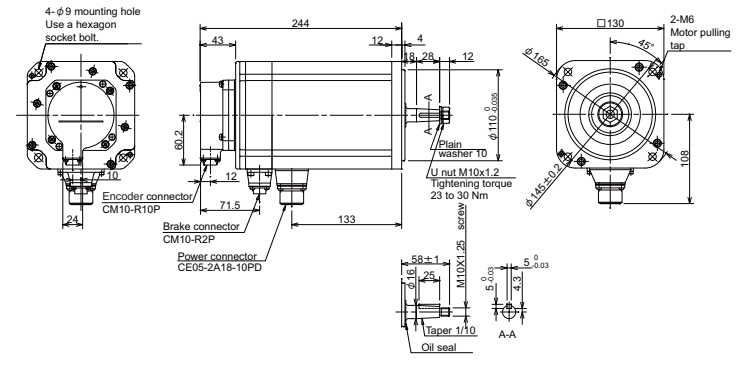
HP224BS-A51,-A74N



HP224T-A51,-A74N



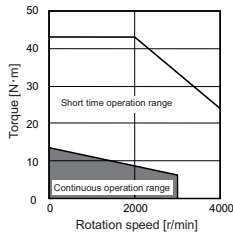
HP224BT-A51,-A74N



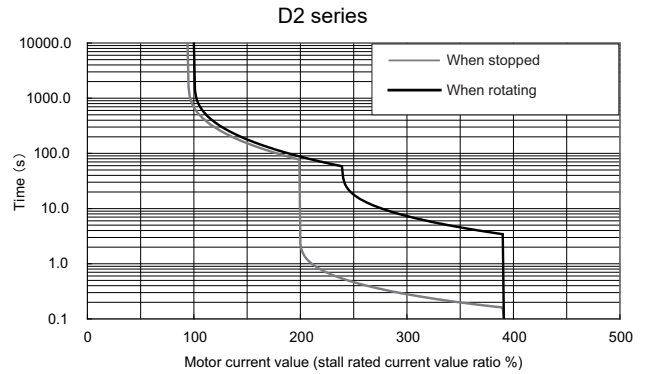
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
181.8±1.5 (94.5)	161.8±1.5 (76) (34) (69.5)	181.8±1.5 (138.6) (94.5)	181.8±1.5 (120.1) (76) (34)	181.8±1.5 (103.8)	161.8±1.5 (85.3) (34)	181.8±1.5 (138.6) (103.8)	161.8±1.5 (85.3) (34)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
13.7N·m	3000r/min	HP204 □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



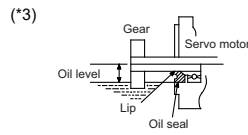
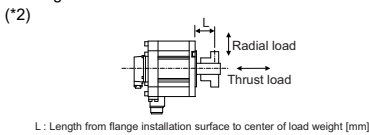
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-80
	2-axis type	MDS-D2-V2-8040 (L) MDS-D2-V2-8080 (L,M) MDS-D2-V2-16080 (M)
	Regenerative resistor type	-
	Continuous characteristics	Rated output[kW] 2.0 Rated current[A] 7.4 Rated torque[N·m] 6.4 Stall current[A] 14.6 Stall torque[N·m] 13.7
Maximum momentary output (For power supply selection)[kW]	11.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	57.0	
Maximum torque[N·m]	43.0	
Power rate at continuous rated torque[kW/s]	14.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	26.16	
Motor inertia[×10 ⁻⁴ kg·m ²]	29.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	34.5	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	87.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	145.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	290.0
Mass	(Without) [kg]	14.0
	(With brake)[kg]	15.9
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	1500 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	25	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

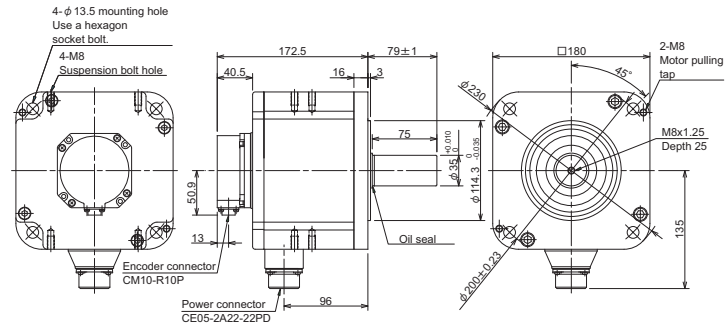
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.0
Static friction torque[N·m]	12
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

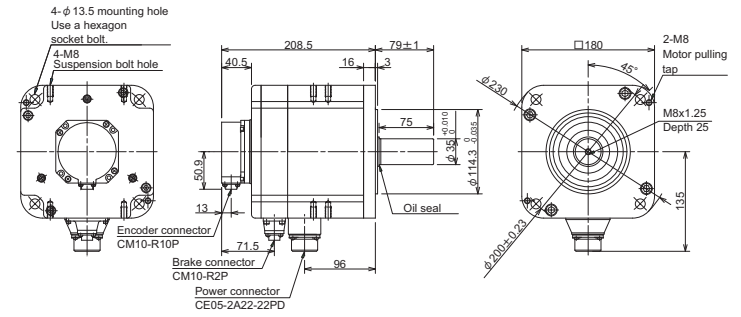
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

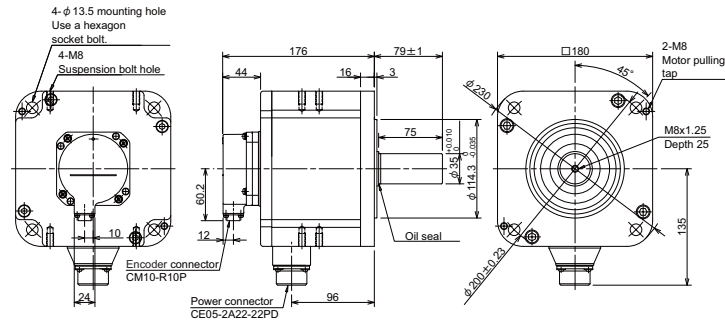
HP204S-A48



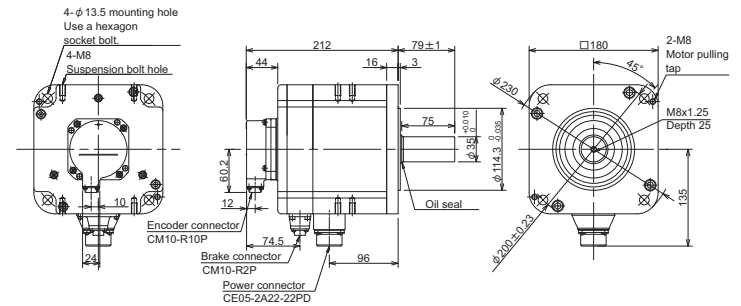
HP204BS-A48



HP204S-A51,-A74N



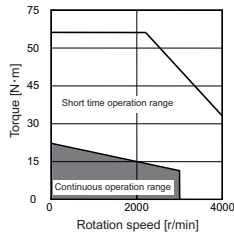
HP204BS-A51,-A74N



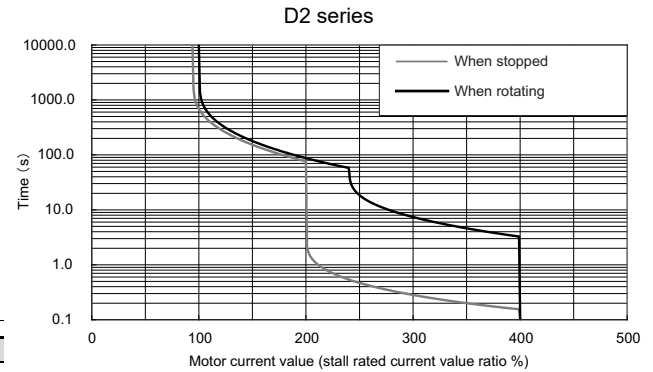
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
213±1.5 (84.5)	195.6±1.5 (76) (34)	213±1.5 (84.5)	195.6±1.5 (76) (34)	213±1.5 (84.5)	195.6±1.5 (76) (34)	213±1.5 (84.5)	195.6±1.5 (76) (34)
	69.3±1.5		69.3±1.5		69.3±1.5		69.3±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
22.5N·m	3000r/min	HP354 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



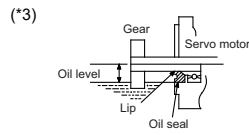
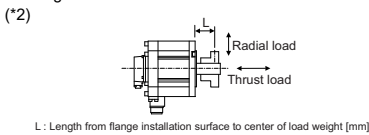
Servo overload protection characteristics



Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type MDS-D2-V1-160 2-axis type MDS-D2-V2-16080 (L) MDS-D2-V2-160160 (L,M) MDS-D2-V2-160160W (L,M)
Continuous characteristics	Regenerative resistor type -
	Rated output[kW] 3.5
	Rated current[A] 14.5
	Rated torque[N·m] 11.1
	Stall current[A] 29.0
Maximum momentary output (For power supply selection)[kW]	15.0
	Rated rotation speed[r/min] 3000
Maximum rotation speed[r/min]	4000
Maximum current[A]	116.0
Maximum torque[N·m]	66.0
Power rate at continuous rated torque[kW/s]	33.0
Max. deceleration torque of dynamic brake(Tdp)[N·m]	38.44
Motor inertia[×10 ⁻⁴ kg·m ²]	37.0
(Brake inertia)[×10 ⁻⁴ kg·m ²]	42.5
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²] 111.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²] 185.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²] 370.0
Mass	(Without) [kg] 17.0
	(With brake)[kg] 22
Heat-resistant class	155(F)
Degree of protection	IP67 (The shaft-through portion is excluded.)
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:29.4(3)
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm)) -
	Thrust load[N] -
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm)) 1500 (L=52.7)
	Thrust load[N] 490
Oil level (*3)[mm]	25
Absolute position encoder	16,000,000 p/rev A74N
	1,000,000 p/rev A51
	260,000 p/rev A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

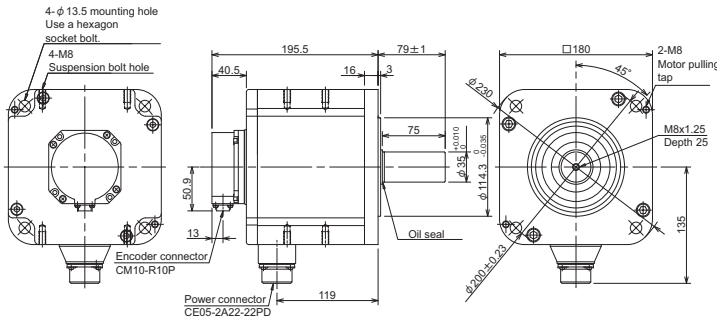
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	32
Release delay time (*1)[s]	0.12
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

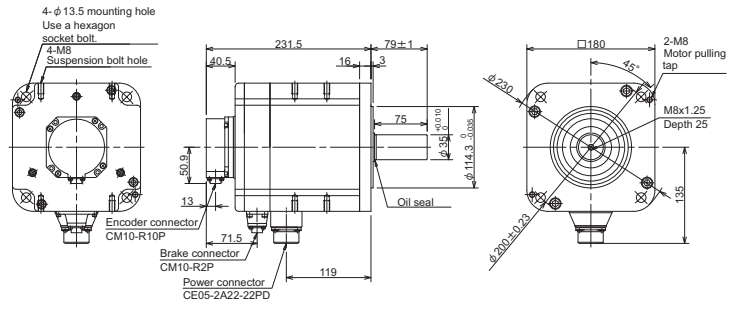
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

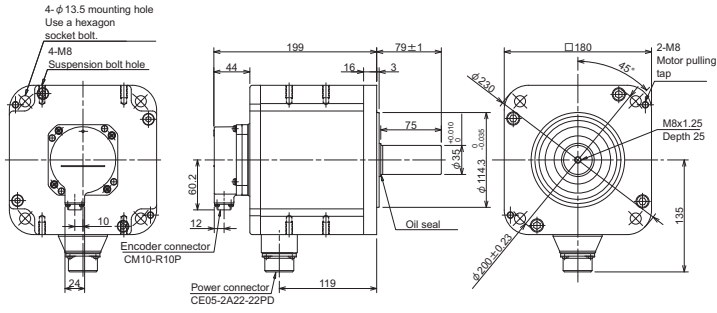
HP354S-A48



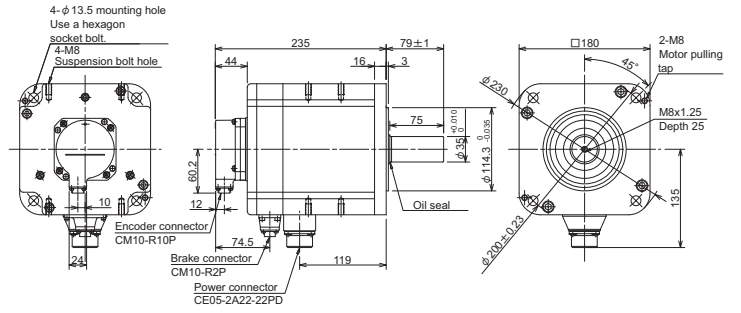
HP354BS-A48



HP354S-A51,-A74N



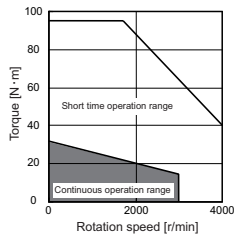
HP354BS-A51,-A74N



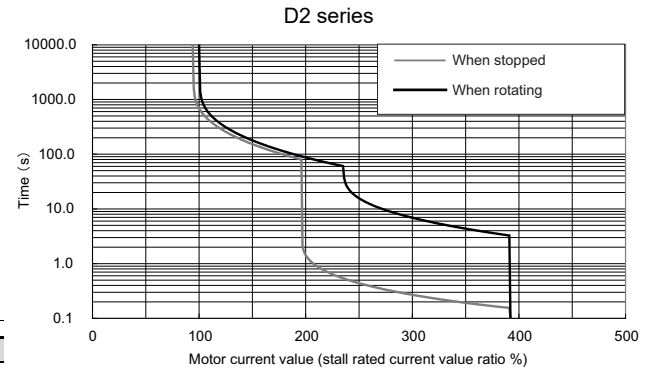
A48		A51/A74N	
Without brake	With brake	Without brake	With brake
Straight plug	Right angle plug	Straight plug	Right angle plug
213±1.5 (84.5)	195.6±1.5 (76) (34) 69.3±1.5	213±1.5 (84.5) (163.6)	195.6±1.5 (76) (145.1) (34) 69.3±1.5
		213±1.5 (84.5)	195.6±1.5 (76) (145.1) (34) 69.3±1.5
		213±1.5 (84.5)	195.6±1.5 (76) (145.1) (34) 69.3±1.5
		213±1.5 (84.5)	195.6±1.5 (76) (145.1) (34) 69.3±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
31.9N·m	3000r/min	HP454 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



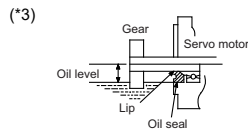
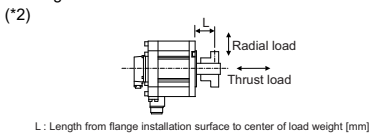
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type MDS-D2-V1-160 2-axis type MDS-D2-V2-16080 (L) MDS-D2-V2-160160 (L,M) MDS-D2-V2-160160W (L,M)	
Continuous characteristics	Regenerative resistor type -	
	Rated output[kW] 4.5	
	Rated current[A] 12.8	
	Rated torque[N·m] 14.3	
	Stall current[A] 29.6	
	Stall torque[N·m] 31.9	
Maximum momentary output (For power supply selection)[kW]	21.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	116.0	
Maximum torque[N·m]	95.0	
Power rate at continuous rated torque[kW/s]	36.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	61.60	
Motor inertia[×10 ⁻⁴ kg·m ²]	55.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	60.5	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	165.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	275.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	550.0
Mass	(Without) [kg]	21.0
	(With brake)[kg]	26
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	1500 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	25	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

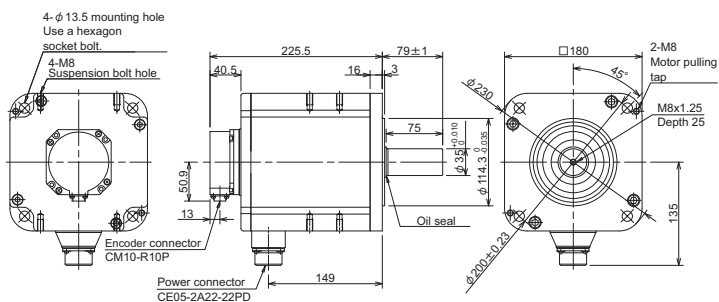
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	32
Release delay time (*1)[s]	0.12
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

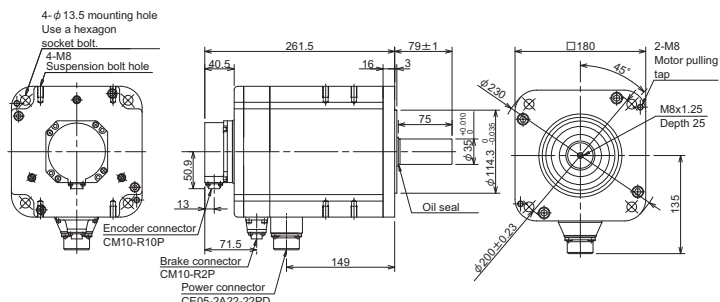
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

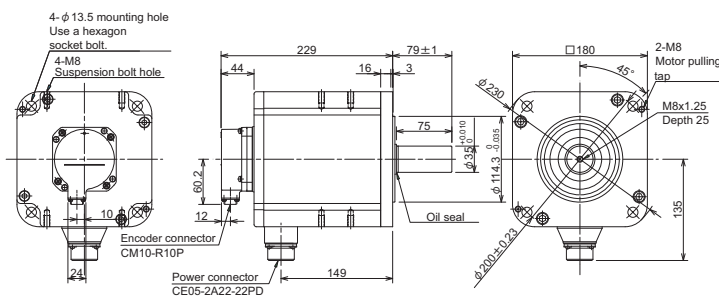
HP454S-A48



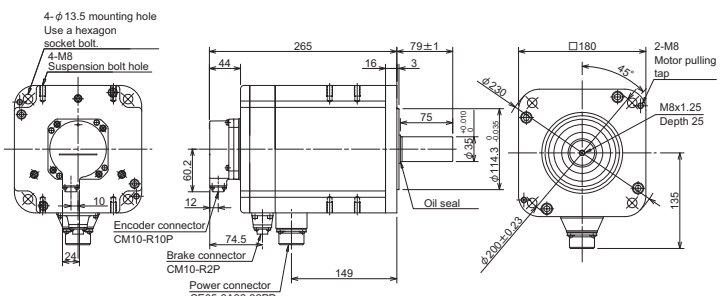
HP454BS-A48



HP454S-A51,-A74N



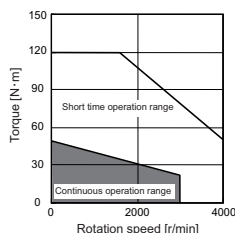
HP454BS-A51,-A74N



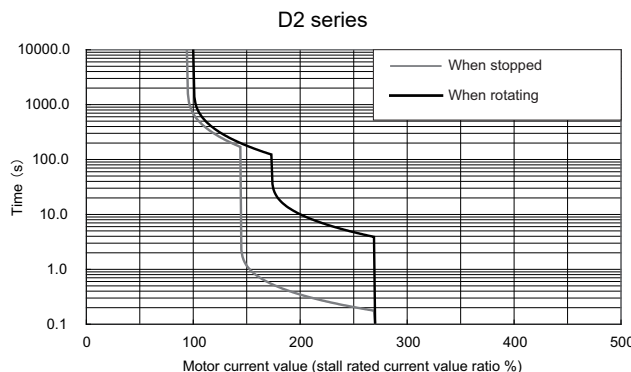
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
213±1.5 (94.5)	195.6±1.5 (76) (34)	213±1.5 (83.6) (94.5)	195.6±1.5 (76) (145.1) (34)	213±1.5 (83.8)	195.6±1.5 (85.3) (34)	213±1.5 (83.6) (102.8)	195.6±1.5 (76) (145.1) (85.3) (34)
69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
49.0N·m	3000r/min	HP704 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



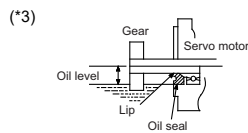
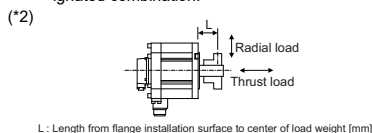
Servo overload protection characteristics



Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type MDS-D2-V1-160W
	2-axis type MDS-D2-V2-160160W (L,M)
	Regenerative resistor type -
Continuous characteristics	Rated output[kW] 7.0
	Rated current[A] 17.2
	Rated torque[N·m] 22.3
	Stall current[A] 40.2
	Stall torque[N·m] 49.0
Maximum momentary output (For power supply selection)[kW]	27.0
Rated rotation speed[r/min]	3000
Maximum rotation speed[r/min]	4000
Maximum current[A]	116.0
Maximum torque[N·m]	120.0
Power rate at continuous rated torque[kW/s]	59.0
Max. deceleration torque of dynamic brake(Tdp)[N·m]	88.38
Motor inertia[×10 ⁻⁴ kg·m ²]	82.0
(Brake inertia)[×10 ⁻⁴ kg·m ²]	87.5
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²] 246.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²] 410.0
	Non-interpolation axis[×10 ⁻⁴ kg·m ²] 820.0
Mass	(Without) [kg] 37.0
	(With brake)[kg] 43
Heat-resistant class	155(F)
Degree of protection	IP67 (The shaft-through portion is excluded.)
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:29.4(3)
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm)) -
	Thrust load[N] -
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm)) 1300 (L=52.7)
	Thrust load[N] 590
Oil level (*3)[mm]	25
Absolute position encoder	16,000,000 p/rev A74N
	1,000,000 p/rev A51
	260,000 p/rev A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

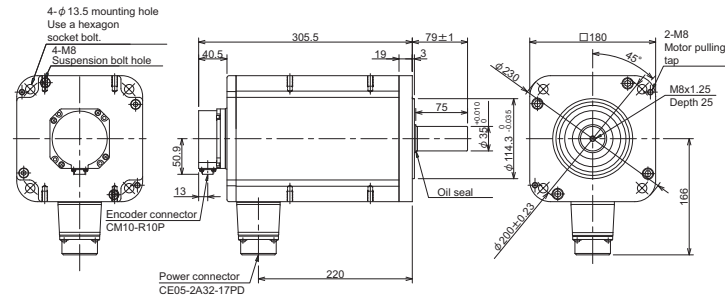
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	54.9
Release delay time (*1)[s]	0.3
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

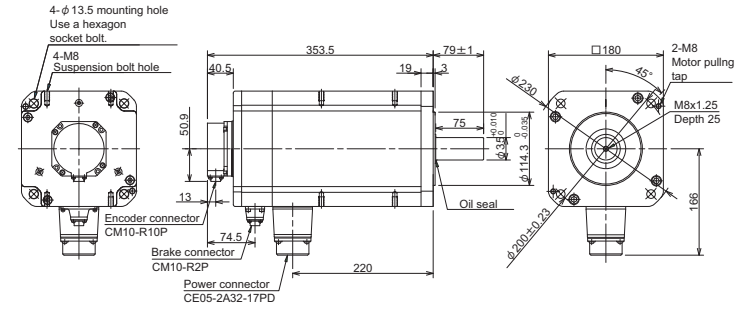
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

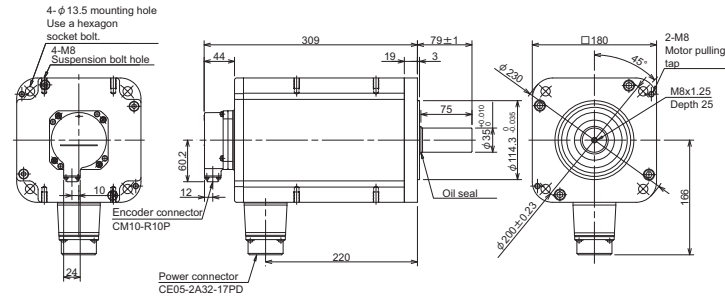
HP704S-A48



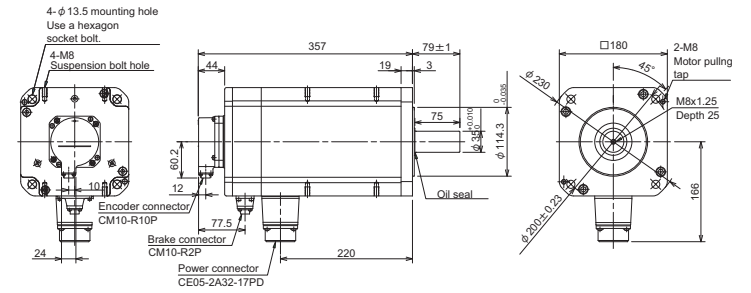
HP704BS-A48



HP704S-A51,-A74N



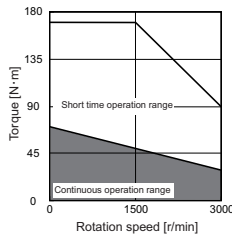
HP704BS-A51,-A74N



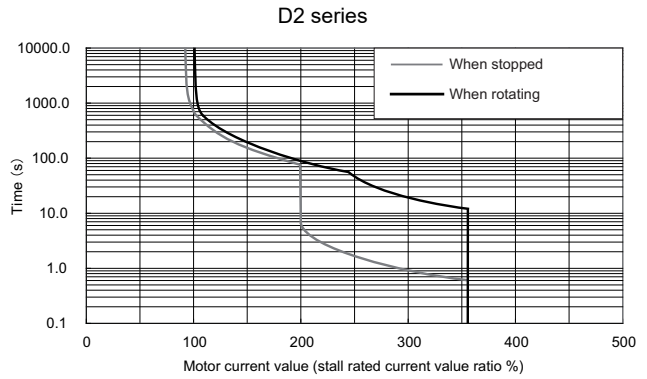
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
258.9±1.5	242.9±1.5	258.9±1.5	242.9±1.5	258.9±1.5	242.9±1.5	258.9±1.5	242.9±1.5
(84.5)	(76)	(84.5)	(145.1)	(103.8)	(85.3)	(163.6)	(145.1)
	(34)		(34)		(34)		(34)
	84.9±1.5		84.9±1.5		84.9±1.5		84.9±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
70.0N·m	3000r/min	HP903 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



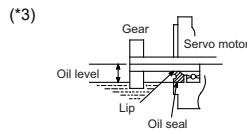
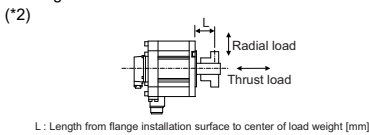
Servo overload protection characteristics



Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type MDS-D2-V1-320 2-axis type - Regenerative resistor type -
Continuous characteristics	Rated output[kW] 9.0 Rated current[A] 21.6 Rated torque[N·m] 28.7 Stall current[A] 54.0 Stall torque[N·m] 70.0
Maximum momentary output (For power supply selection)[kW]	33.0
Rated rotation speed[r/min]	3000
Maximum rotation speed[r/min]	3000
Maximum current[A]	172.0
Maximum torque[N·m]	170.0
Power rate at continuous rated torque[kW/s]	52.0
Max. deceleration torque of dynamic brake(Tdp)[N·m]	91.73
Motor inertia[×10 ⁻⁴ kg·m ²]	163.0
(Brake inertia)[×10 ⁻⁴ kg·m ²]	187.0
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²] 675.0 General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²] 1125.0 Non-interpolation axis[×10 ⁻⁴ kg·m ²] 2250.0
Mass	(Without) [kg] 51.0 (With brake)[kg] 61.4
Heat-resistant class	155(F)
Degree of protection	IP67 (The shaft-through portion is excluded.)
Quakeproof level[m/s ²] ((G))	X:9.8(1), Y:9.8(1)
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm)) - Thrust load[N] -
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm)) 2500 (L=52.7) Thrust load[N] 1100
Oil level (*3)[mm]	30
Absolute position encoder	16,000,000 p/rev A74N 1,000,000 p/rev A51 260,000 p/rev A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

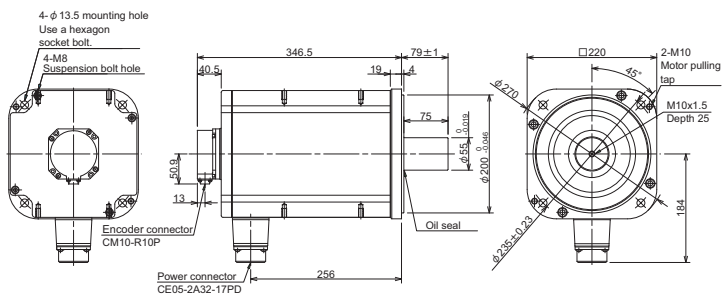
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.7
Static friction torque[N·m]	90
Release delay time (*1)[s]	0.3
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

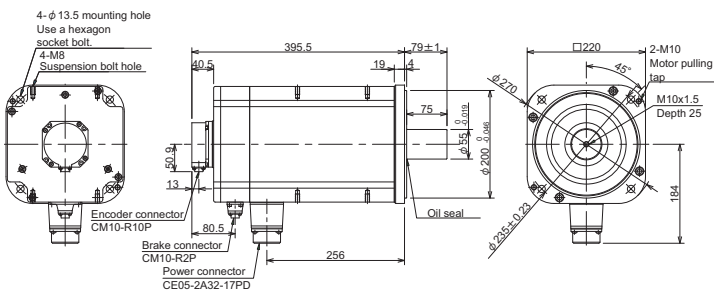
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

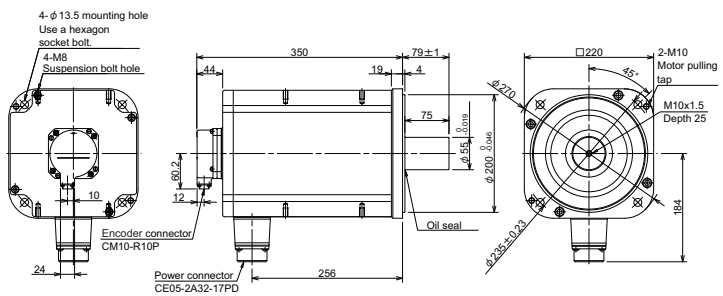
HP903S-A48



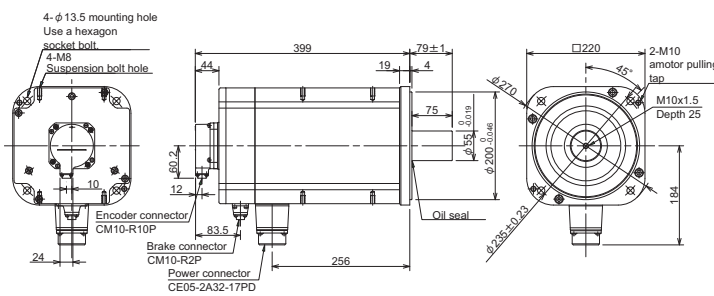
HP903BS-A48



HP903S-A51,-A74N



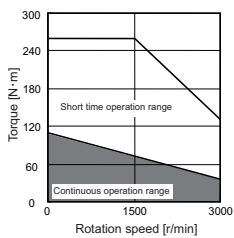
HP903BS-A51,-A74N



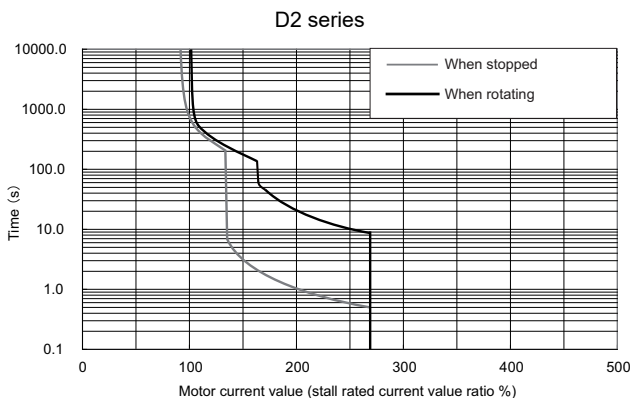
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
276.9±1.5 (94.5)	260.9±1.5 (76) (34)	276.9±1.5 (94.5)	260.9±1.5 (76) (34)	276.9±1.5 (103.8)	260.9±1.5 (85.3)	276.9±1.5 (103.8)	260.9±1.5 (85.3)
	84.9±1.5		84.9±1.5		84.9±1.5		84.9±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
110.0N·m	3000r/min	HP1103 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



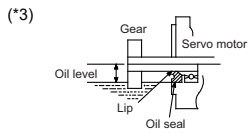
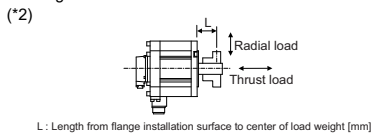
Servo overload protection characteristics



Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type MDS-D2-V1-320W 2-axis type - Regenerative resistor type -
Continuous characteristics	Rated output[kW] 11.0 Rated current[A] 24.6 Rated torque[N·m] 35.0 Stall current[A] 79.0 Stall torque[N·m] 110.0
Maximum momentary output (For power supply selection)[kW]	50.0
Rated rotation speed[r/min]	3000
Maximum rotation speed[r/min]	3000
Maximum current[A]	212.0
Maximum torque[N·m]	260.0
Power rate at continuous rated torque[kW/s]	48.0
Max. deceleration torque of dynamic brake(Tdp)[N·m]	158.09
Motor inertia[×10 ⁻⁴ kg·m ²]	255.0
(Brake inertia)[×10 ⁻⁴ kg·m ²]	279.0
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²] 900.0 General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²] 1500.0 Non-interpolation axis[×10 ⁻⁴ kg·m ²] 3000.0
Mass	(Without) [kg] 74.0 (With brake)[kg] 84.4
Heat-resistant class	155(F)
Degree of protection	IP67 (The shaft-through portion is excluded.)
Quakeproof level[m/s ²] ((G))	X:9.8(1), Y:9.8(1)
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm)) - Thrust load[N] -
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm)) 2700 (L=52.7) Thrust load[N] 1500
Oil level (*3)[mm]	30
Absolute position encoder	16,000,000 p/rev A74N 1,000,000 p/rev A51 260,000 p/rev A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

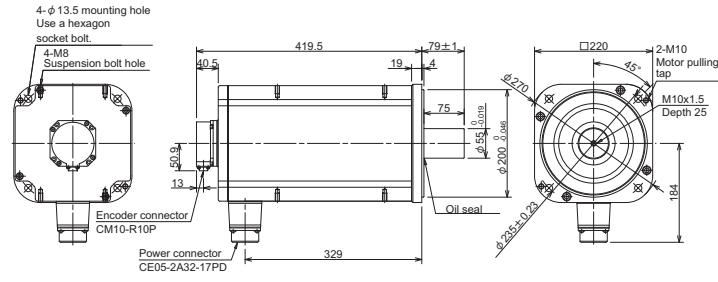
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.7
Static friction torque[N·m]	90
Release delay time (*1)[s]	0.3
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

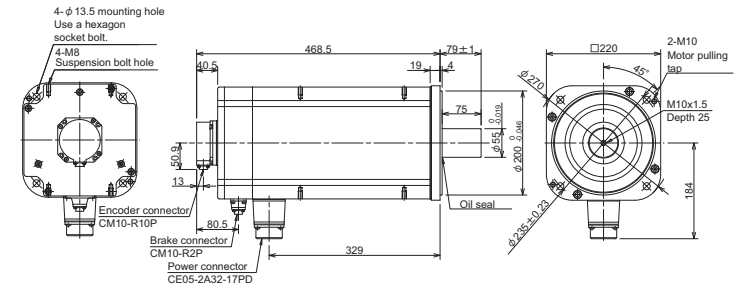
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

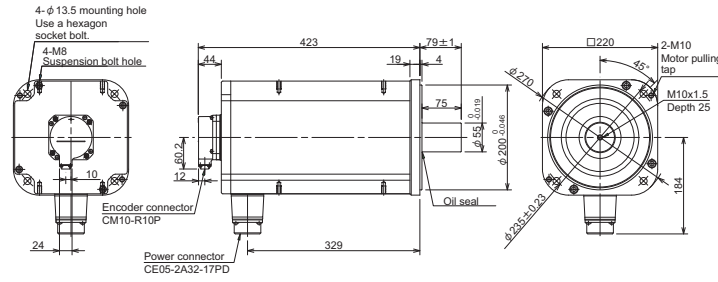
HP1103S-A48



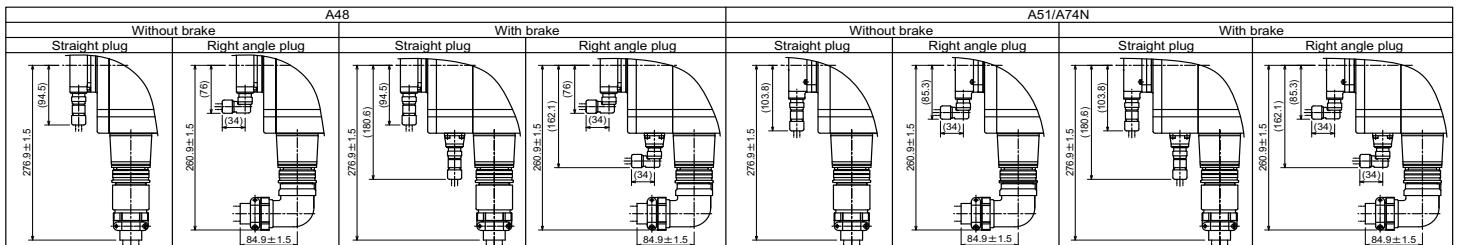
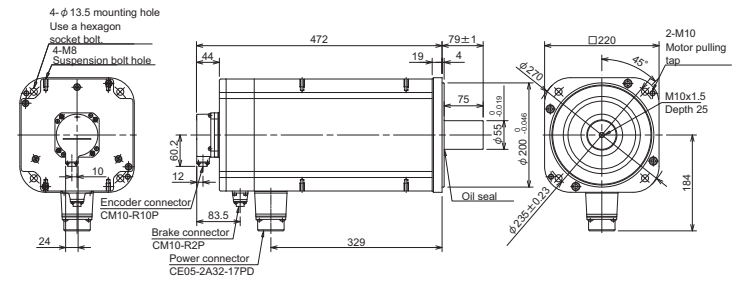
HP1103BS-A48



HP1103S-A51,-A74N

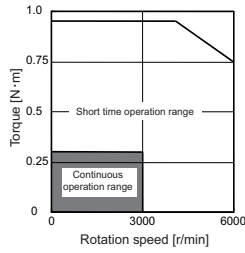


HP1103BS-A51,-A74N



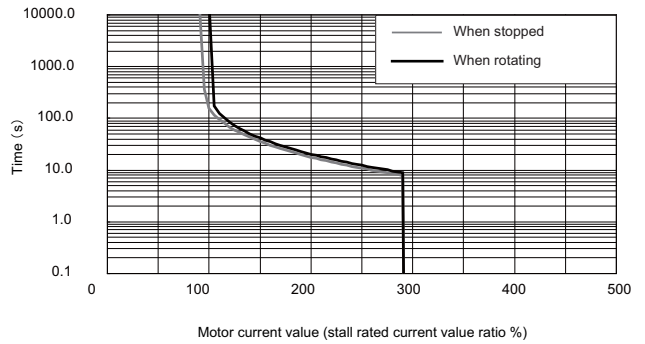
Stall torque 0.32N·m	Rated rotation speed 3000r/min	Servo motor type (1) HF-KP13 □J-S17	Explanation of type	
			(1) Magnetic brake	B with brake None without brake

Torque characteristics



Servo overload protection characteristics

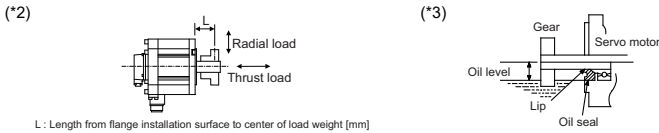
DJ series



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	-
	2-axis type	-
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-V1-10
Continuous characteristics	Rated output[kW]	0.1
	Rated current[A]	0.8
	Rated torque[N·m]	0.32
	Stall current[A]	0.8
	Stall torque[N·m]	0.32
Maximum momentary output (For power supply selection)[kW]	0.42	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	6000	
Maximum current[A]	2.31	
Maximum torque[N·m]	0.95	
Power rate at continuous rated torque[kW/s]	11.5	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	0.22	
Motor inertia[×10 ⁻⁴ kg·m ²]	0.088	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	0.090	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	-
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	-
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	1.32
Mass	(Without) [kg]	0.66
	(With brake)[kg]	0.96
Heat-resistant class	130(B)	
Degree of protection	IP65 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] (G)	X:49(5), Y:49(5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	88 (L=25)
	Thrust load[N]	59
Oil level (*3)[mm]	9.5	
Absolute position encoder (*4)	16,000,000 p/rev (A74N)	-
	1,000,000 p/rev (A51)	-
	260,000 p/rev (A48)	MDS-DJ-V1

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(*4) The motor-end encoder has absolute position specifications, but is not equipped with the capacitor for data backup. Thus, absolute position is lost immediately after disconnection of the encoder cable.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation:80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

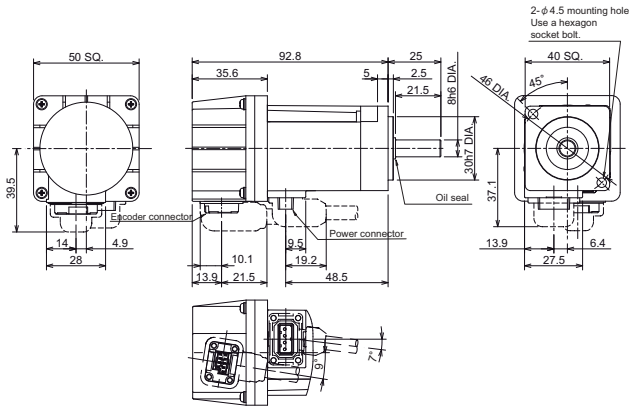
Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.26
Static friction torque[N·m]	0.002
Release delay time (*1)[s]	0.03
Braking delay time (DC OFF) (*1)[s]	0.01
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

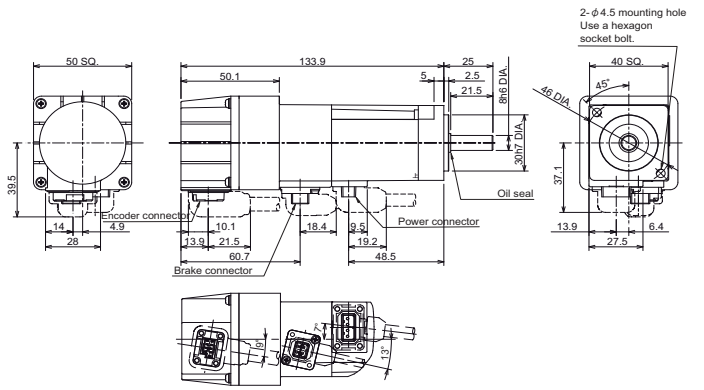
Outline dimension drawings [Unit : mm]

HF-KP13J-S17



(Note)Lead out in opposite direction of motor shaft cannot be used for power cable.

HF-KP13BJ-S17

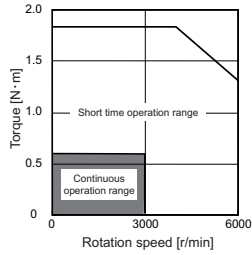


(Note)Lead out in opposite direction of motor shaft cannot be used for power cable.

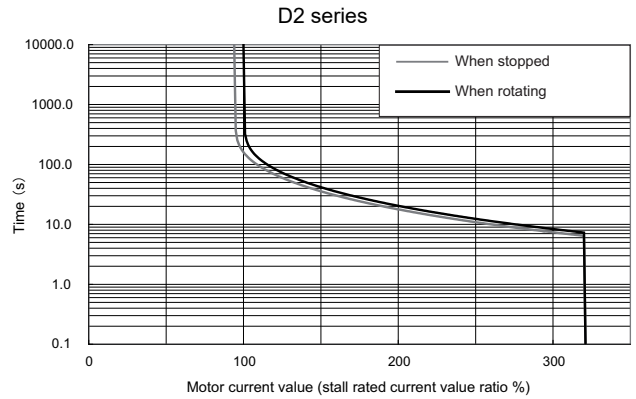
200V System Low Inertia Servo Motor HF-KP Series

Stall torque 0.64N·m	Rated rotation speed 3000r/min	Servo motor type (1) HF-KP23 □JW04-S6	Explanation of type (1) Magnetic brake B with brake None without brake
--------------------------------	--	--	---

Torque characteristics



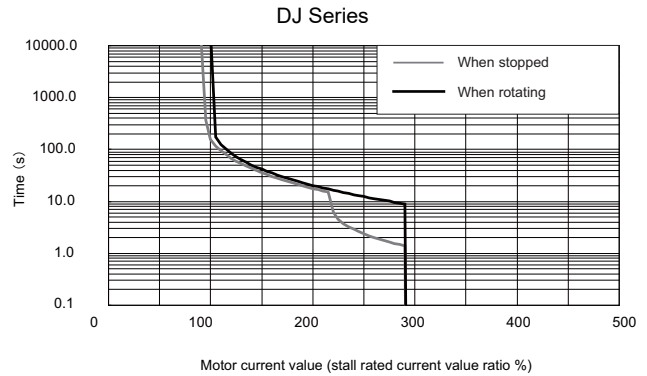
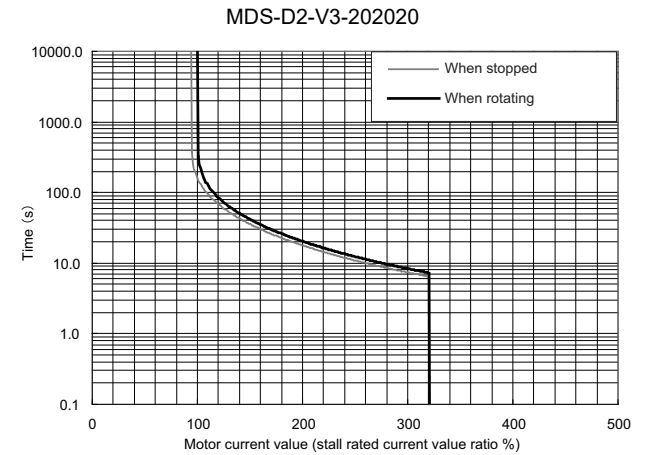
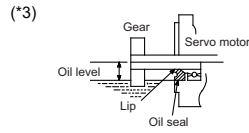
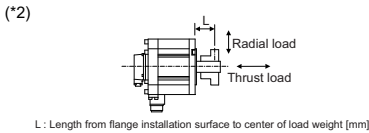
Servo overload protection characteristics



Specifications

Item	Specifications		
Compatible drive unit (*1)	1-axis type	-	MDS-D2-V1-20
	2-axis type	-	MDS-D2-V2-2020 (L,M) MDS-D2-V2-4020 (M)
	3-axis type	-	MDS-D2-V3-202020 (L,M,S)
	Multi axis integrated type	-	-
	Regenerative resistor type	MDS-DJ-V1-10	-
Continuous characteristics	Rated output[kW]	0.2	0.2
	Rated current[A]	1.4	1.4
	Rated torque[N·m]	0.64	0.64
	Stall current[A]	1.4	1.4
	Stall torque[N·m]	0.64	0.64
	Maximum momentary output (For power supply selection)[kW]	0.72	0.72
Rated rotation speed[r/min]	3000	3000	
Maximum rotation speed[r/min]	6000	6000	
Maximum current[A]	4.3	4.3	
Maximum torque[N·m]	1.9	1.9	
Power rate at continuous rated torque[kW/s]	16.9	16.9	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	0.52	1.04	
Motor inertia[×10 ⁻⁴ kg·m ²]	0.23	0.23	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	0.31	0.31	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	-	-
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	-	-
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	3.45	3.45
Mass	(Without) [kg]	1.2	1.2
	(With brake)[kg]	1.8	1.8
Heat-resistant class	130(B)	130(B)	
Degree of protection	IP65 (The shaft-through portion is excluded.)	IP65 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:49(5), Y:49(5)	X:49(5), Y:49(5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-	-
	Thrust load[N]	-	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	245 (L=30)	245 (L=30)
	Thrust load[N]	98	98
Oil level (*3)[mm]	12.5	12.5	
Absolute position encoder	16,000,000 p/rev (A74N)	-	-
	1,000,000 p/rev (A51)	-	-
	260,000 p/rev (A48)	MDS-DJ-V1	MDS-D2-V1/V2/V3

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

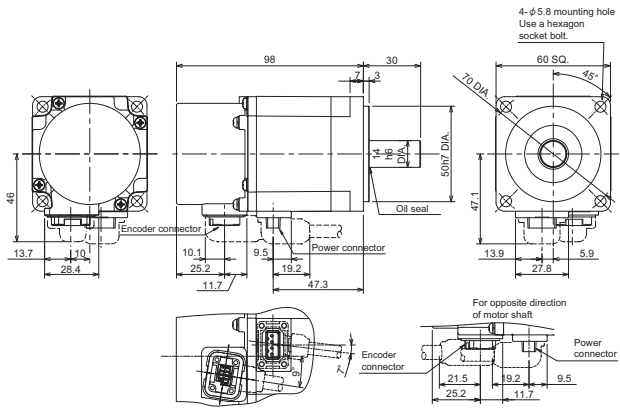
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.33
Static friction torque[N·m]	1.3
Release delay time (*1)[s]	0.03
Braking delay time (DC OFF) (*1)[s]	0.02
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

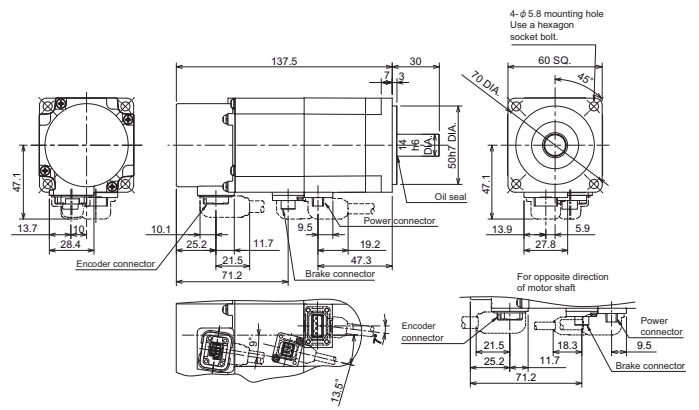
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

HF-KP23JW04-S6

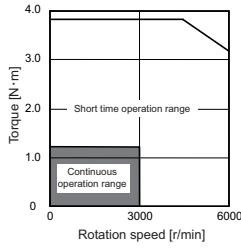


HF-KP23BJW04-S6

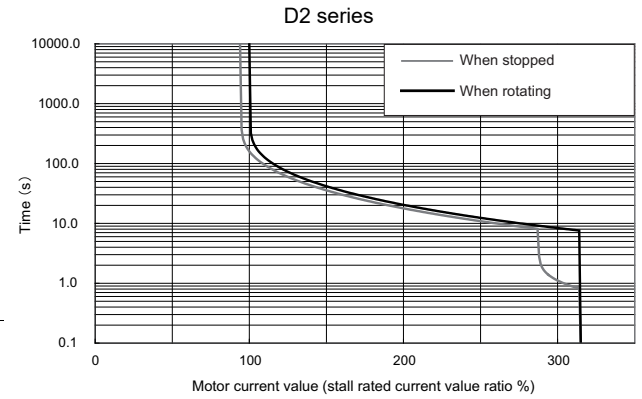


Stall torque	Rated rotation speed	Servo motor type	Explanation of type
1.3N·m	3000r/min	HF-KP43 □JW04-S6	(1) Magnetic brake
			B with brake
			None without brake

Torque characteristics



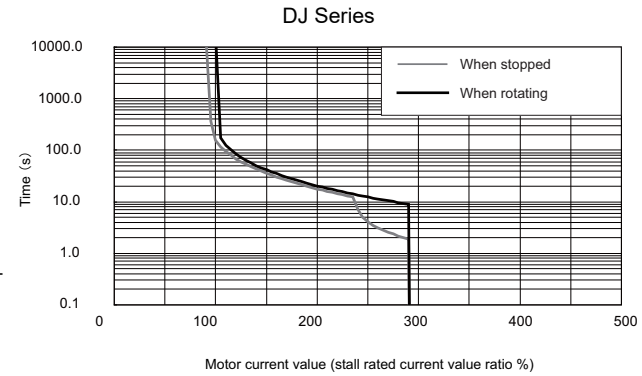
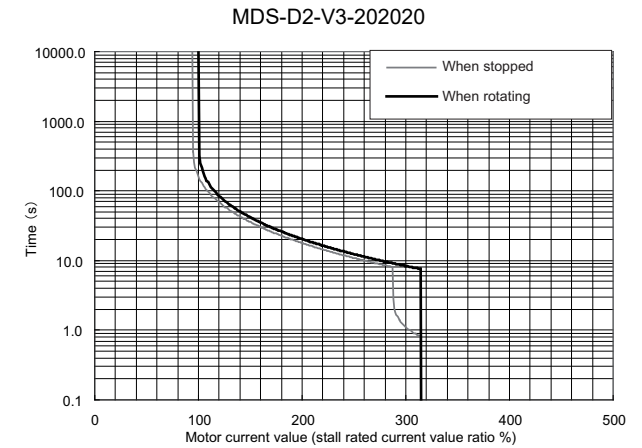
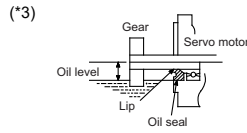
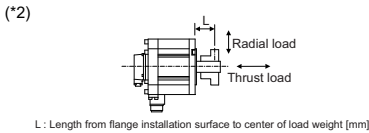
Servo overload protection characteristics



Specifications

Item	Specifications		
Compatible drive unit (*1)	1-axis type	-	MDS-D2-V1-20
	2-axis type	-	MDS-D2-V2-2020 (L,M) MDS-D2-V2-4020 (M)
	3-axis type	-	MDS-D2-V3-202020 (L,M,S)
	Multi axis integrated type	-	-
	Regenerative resistor type	MDS-DJ-V1-15	-
Continuous characteristics	Rated output[kW]	0.4	0.4
	Rated current[A]	2.9	2.9
	Rated torque[N·m]	1.3	1.3
	Stall current[A]	2.9	2.9
	Stall torque[N·m]	1.3	1.3
	Maximum momentary output (For power supply selection)[kW]	1.72	1.72
Rated rotation speed[r/min]	3000	3000	-
Maximum rotation speed[r/min]	6000	6000	-
Maximum current[A]	8.5	8.5	-
Maximum torque[N·m]	3.8	3.8	-
Power rate at continuous rated torque[kW/s]	38.6	38.6	-
Max. deceleration torque of dynamic brake(Tdp)[N·m]	1.30	2.60	-
Motor inertia[×10 ⁻⁴ kg·m ²]	0.42	0.42	-
(Brake inertia)[×10 ⁻⁴ kg·m ²]	0.50	0.50	-
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	-	-
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	-	-
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	6.3	6.3
Mass	(Without) [kg]	1.7	1.7
	(With brake)[kg]	2.3	2.3
Heat-resistant class	130(B)	130(B)	-
Degree of protection	IP65 (The shaft-through portion is excluded.)	IP65 (The shaft-through portion is excluded.)	-
Quakeproof level[m/s ²] ((G))	X:49(5), Y:49(5)	X:49(5), Y:49(5)	-
	-	-	-
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-	-
	Thrust load[N]	-	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	245 (L=30)	245 (L=30)
	Thrust load[N]	98	98
Oil level (*3)[mm]	12.5	12.5	-
Absolute position encoder	16,000,000 p/rev (A74N)	-	-
	1,000,000 p/rev (A51)	-	-
	260,000 p/rev (A48)	MDS-DJ-V1	MDS-D2-V1/V2/V3

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

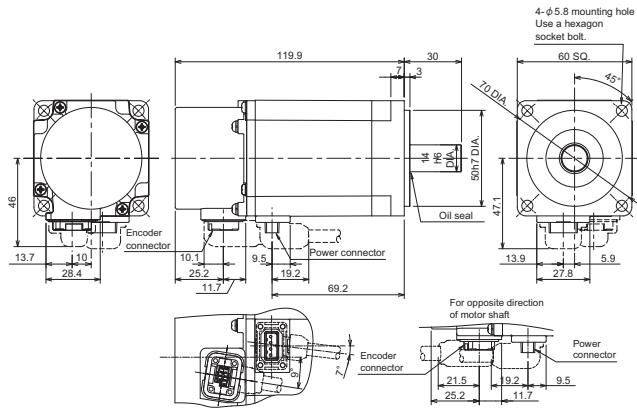
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.33
Static friction torque[N·m]	1.3
Release delay time (*1)[s]	0.03
Braking delay time (DC OFF) (*1)[s]	0.02
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

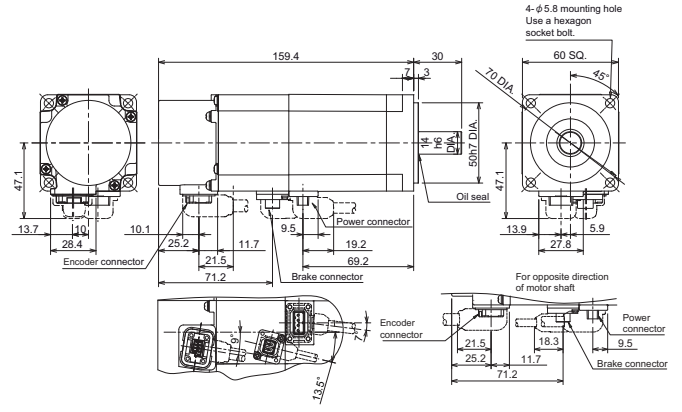
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

HF-KP43JW04-S6

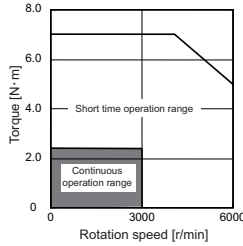


HF-KP43BJW04-S6



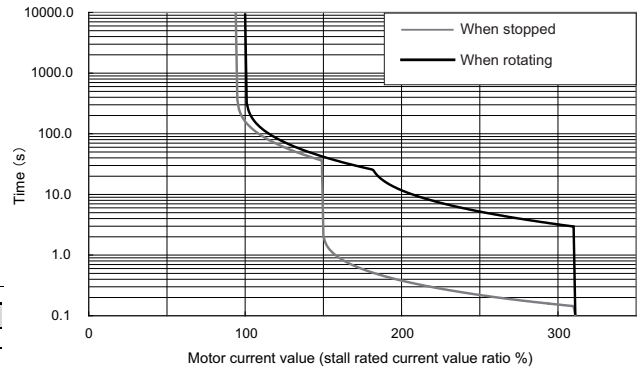
Stall torque 2.4N·m	Rated rotation speed 3000r/min	Servo motor type (1) HF-KP73 □JW04-S6	Explanation of type	
			(1) Magnetic brake	B with brake None without brake

Torque characteristics



Servo overload protection characteristics

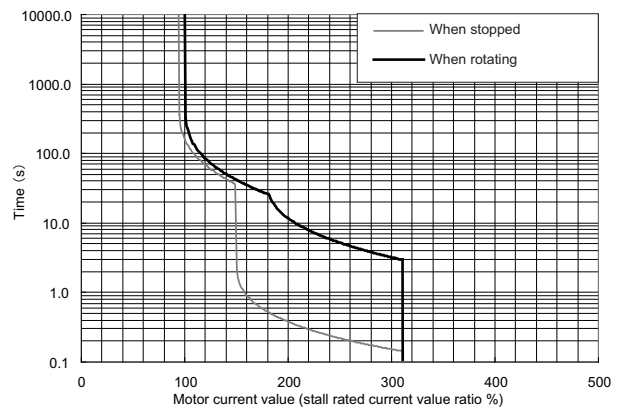
D2 series



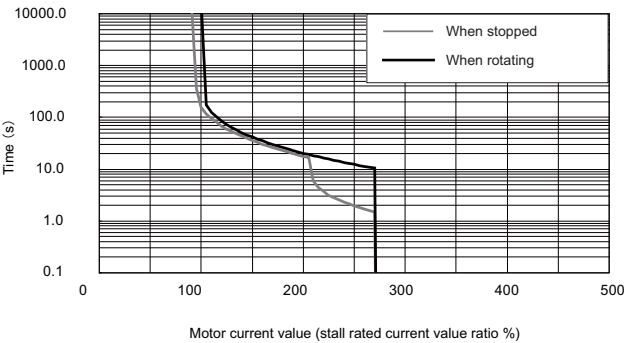
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	- MDS-D2-V1-20
	2-axis type	- MDS-D2-V2-2020 (L,M) MDS-D2-V2-4020 (M)
	3-axis type	- MDS-D2-V3-202020 (L,M,S)
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-V1-30 MDS-DJ-V2-3030 (L,M)
Continuous characteristics	Rated output[kW]	0.75 0.75
	Rated current[A]	5.2 5.2
	Rated torque[N·m]	2.4 2.4
	Stall current[A]	5.2 5.2
	Stall torque[N·m]	2.4 2.4
	Maximum momentary output (For power supply selection)[kW]	2.85 2.85
Rated rotation speed[r/min]	3000 3000	
Maximum rotation speed[r/min]	6000 6000	
Maximum current[A]	15.5 15.5	
Maximum torque[N·m]	7.2 7.2	
Power rate at continuous rated torque[kW/s]	39.9 39.9	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	1.48 2.96	
Motor inertia[×10 ⁻⁴ kg·m ²]	1.43 1.43	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	1.63 1.63	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	- -
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	- -
	Non-interpolation axis[×10 ⁻⁴ kg·m ²]	21.45 21.45
Mass	(Without) [kg]	2.9 2.9
	(With brake)[kg]	4.1 4.1
Heat-resistant class	130(B) 130(B)	
Degree of protection	IP65 (The shaft-through portion is excluded.) IP65 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:49(5), Y:49(5) X:49(5), Y:49(5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	- -
	Thrust load[N]	- -
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	392 (L=40) 392 (L=40)
	Thrust load[N]	147 147
Oil level (*3)[mm]	15 15	
Absolute position encoder	16,000,000 p/rev (A74N)	- -
	1,000,000 p/rev (A51)	- -
	260,000 p/rev (A48)	MDS-DJ-V1/V2 MDS-D2-V1/V2/V3

MDS-D2-V3-202020

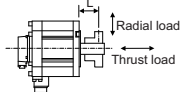


DJ Series



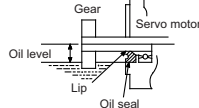
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

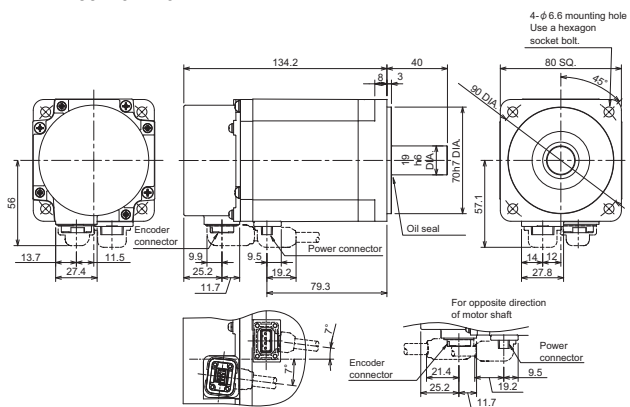
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.42
Static friction torque[N·m]	2.4
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.02
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

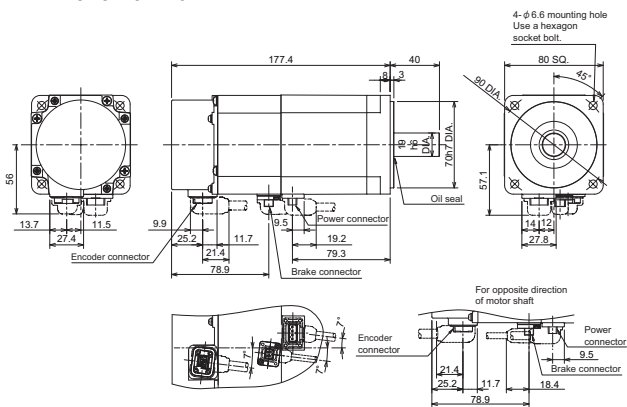
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

HF-KP73JW04-S6



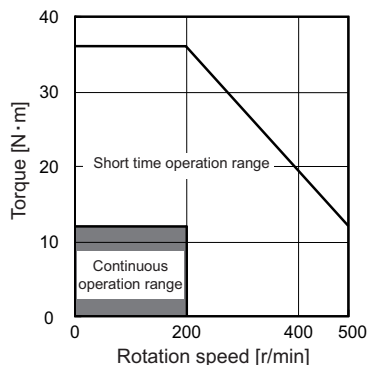
HF-KP73BJW04-S6



Direct Drive Motor

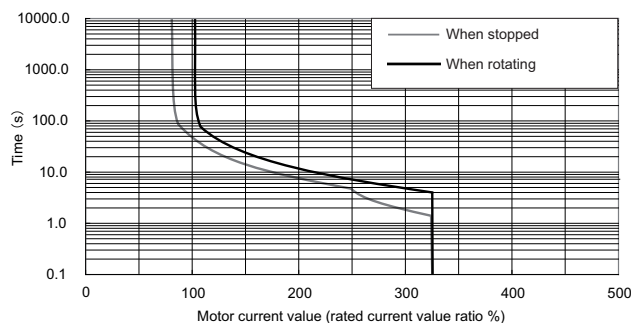
Rated torque	Rated rotation speed	Direct-drive motor type for primary side	
12N·m	200r/min	TM-RBP012C20	

Torque characteristics



Servo overload protection characteristics

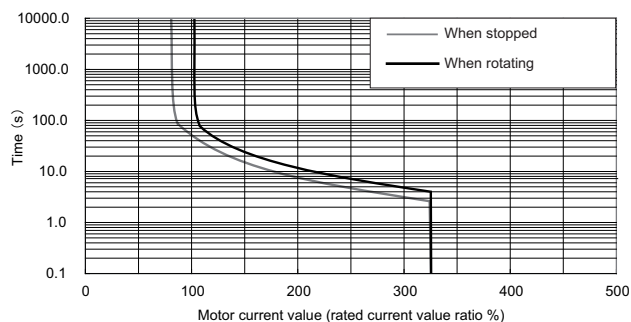
D2 series



Specifications

Item	Specifications	
Compatible servo drive unit type (*1)	1-axis type	MDS-D2-V1-40
	2-axis type	MDS-D2-V2-4020 (L) MDS-D2-V2-4040 (L,M) MDS-D2-V2-8040 (M)
	Regenerative resistor type	MDS-DJ-V1-40
Continuous characteristics	Rated output [W]	252
	Rated current [A]	6.1
	Rated torque [N·m]	12
Power facility capacity [kVA]	1.07	
Rated rotation speed [r/min]	200	
Maximum rotation speed [r/min]	500	
Maximum current [A]	18	
Maximum torque [N·m]	36	
Power rate at continuous rated torque [kW/s]	65.4	
Rotor inertia [kg·cm ²]	22	
Degree of protection	IP00	
Required cooling capacity [kW]	0.5	
Cooling water volume	Min: 5 l/min Max: 6 l/min at 20°C	
Dimensions [mm]	Primary side outer diameter	DIA 130
	Secondary side inner diameter	DIA 56
	Height	76
Mass [kg]	Primary side (coil)	3.9
	Secondary side (magnet)	1.7
Heat-resistant class	155(F)	

DJ series



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

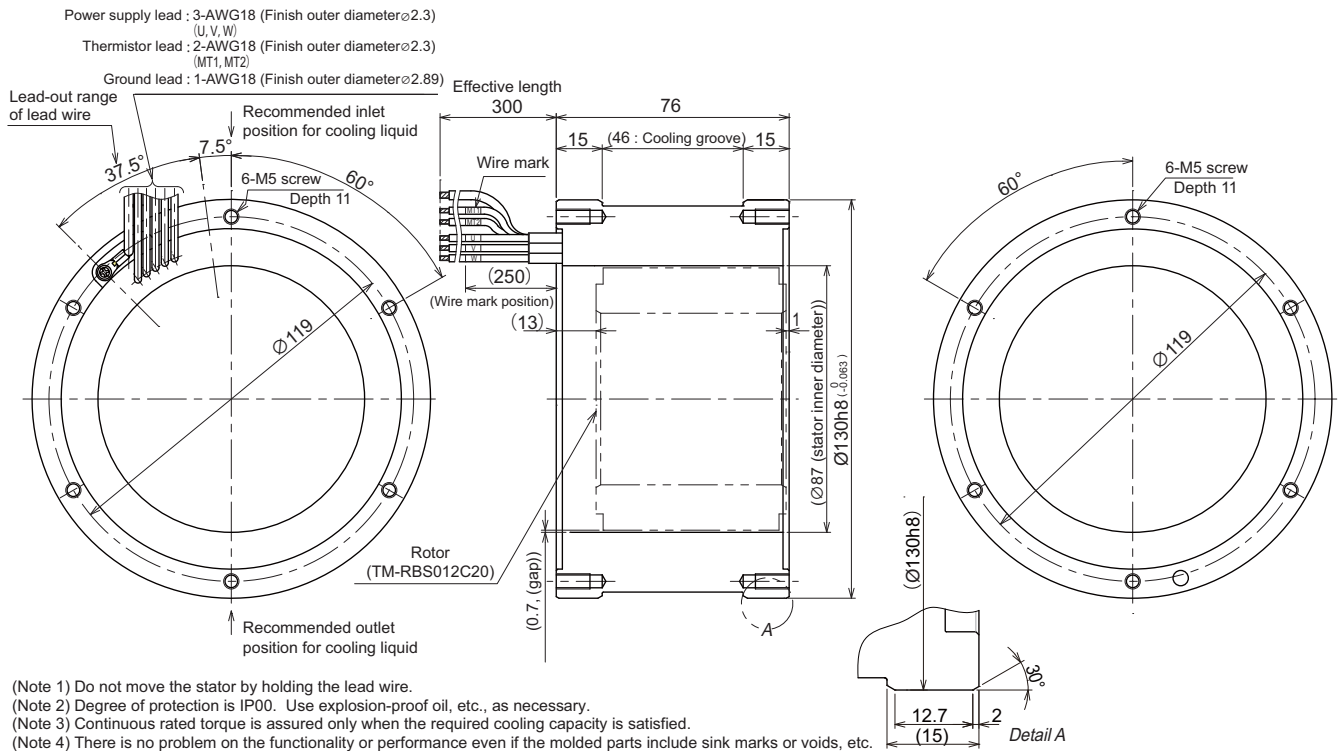
(*2) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

Environmental conditions

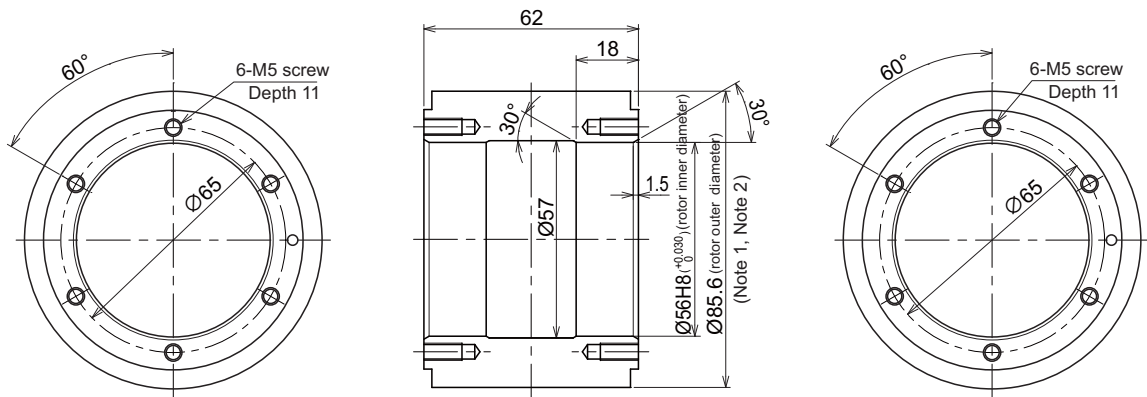
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas or dust No oil or water splash
Vibration	5G or less
Altitude	1000m or less above sea level

Outline dimension drawings [Unit : mm]

TM-RBP012C20



TM-RBS012C20

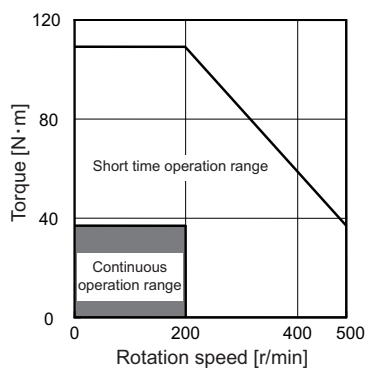


- (Note 1) Deliverable rotors are magnetized. Please note the magnetic attraction.
(Note 2) Take special care for the magnet part not to hit against a thing (A crack or chip may occur).
(Note 3) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
(Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

200V System Direct Drive Motor TM-RB Series

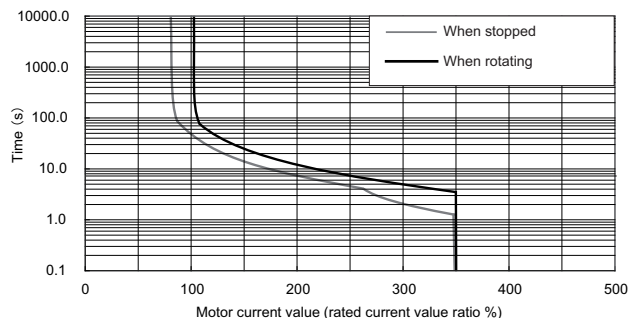
Rated torque	Rated rotation speed	Direct-drive motor type for primary side	
36N·m	200r/min	TM-RBP036E20	

Torque characteristics



Servo overload protection characteristics

D2 series



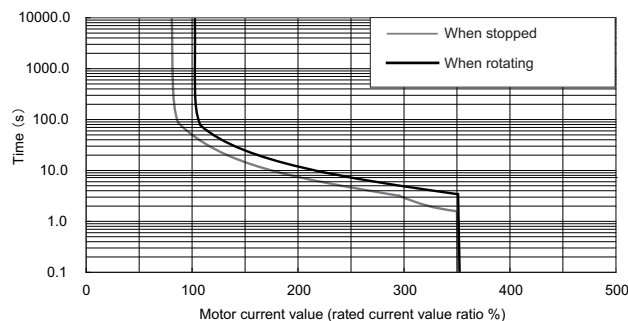
Specifications

Item	Specifications	
Compatible servo drive unit type (*1)	1-axis type	MDS-D2-V1-80
	2-axis type	MDS-D2-V2-8040 (L) MDS-D2-V2-8080 (L,M) MDS-D2-V2-16080 (M)
	Regenerative resistor type	MDS-DJ-V1-80
Continuous characteristics	Rated output [W]	754
	Rated current [A]	12
	Rated torque [N·m]	36
Power facility capacity [kVA]	2.08	
Rated rotation speed [r/min]	200	
Maximum rotation speed [r/min]	500	
Maximum current [A]	36	
Maximum torque [N·m]	108	
Power rate at continuous rated torque [kW/s]	102	
Rotor inertia [kg·cm ²]	127	
Degree of protection	IP00	
Required cooling capacity [kW]	0.7	
Cooling water volume	Min: 5 l/min Max: 6 l/min at 20°C	
Dimensions [mm]	Primary side outer diameter	DIA 180
	Secondary side inner diameter	DIA 100
	Height	91
Mass [kg]	Primary side (coil)	7.1
	Secondary side (magnet)	3.7
Heat-resistant class	155(F)	

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

DJ series

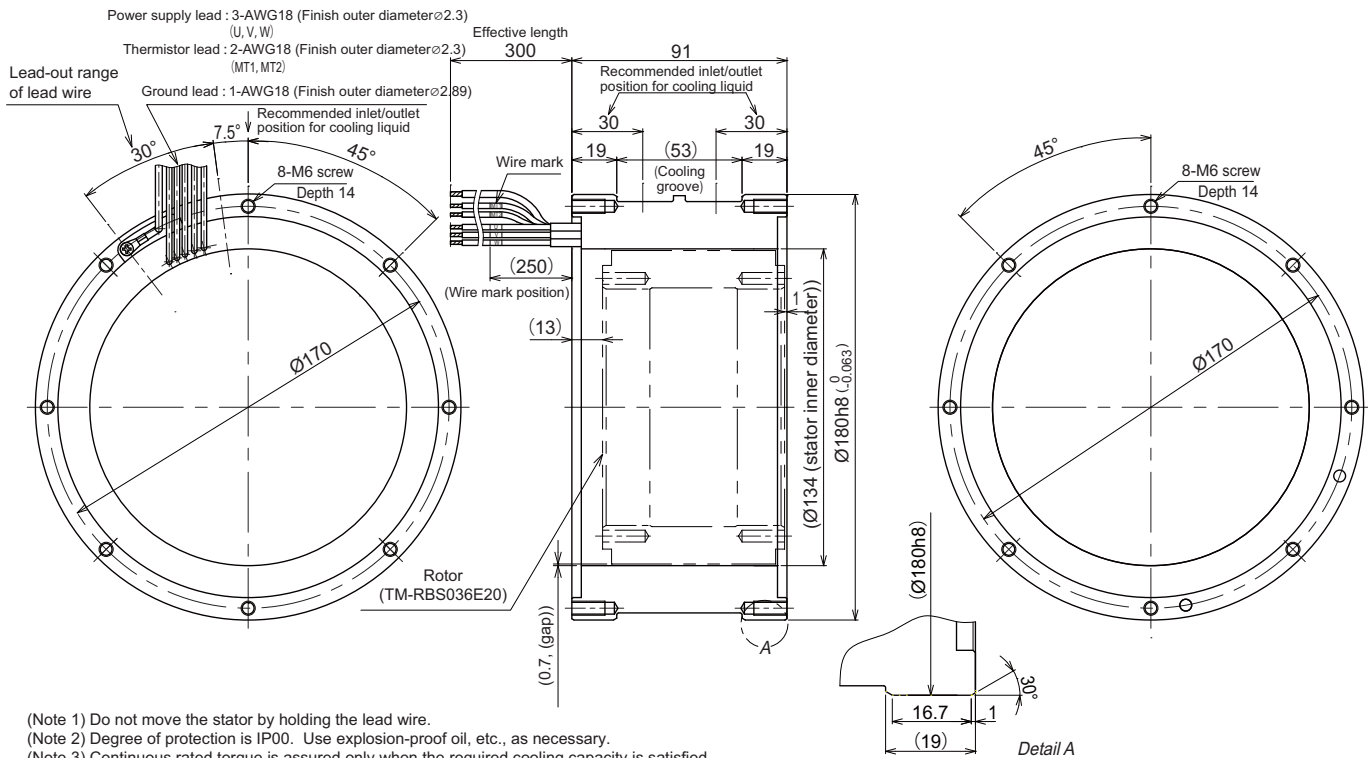


Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas or dust No oil or water splash
Vibration	5G or less
Altitude	1000m or less above sea level

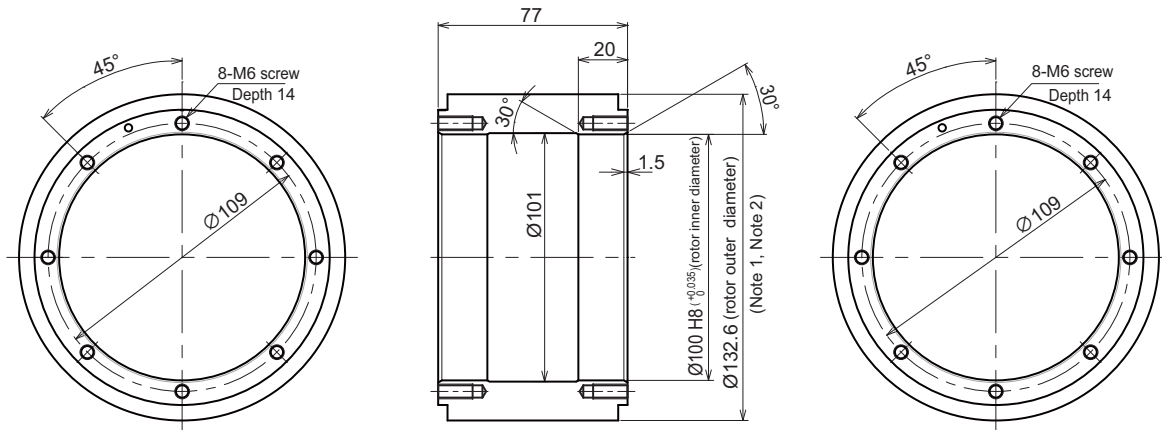
Outline dimension drawings [Unit : mm]

TM-RBP036E20



- (Note 1) Do not move the stator by holding the lead wire.
- (Note 2) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 3) Continuous rated torque is assured only when the required cooling capacity is satisfied.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

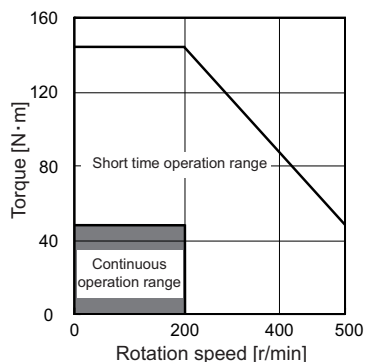
TM-RBS036E20



- (Note 1) Deliverable rotors are magnetized. Please note the magnetic attraction.
- (Note 2) Take special care for the magnet part not to hit against a thing (A crack or chip may occur).
- (Note 3) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

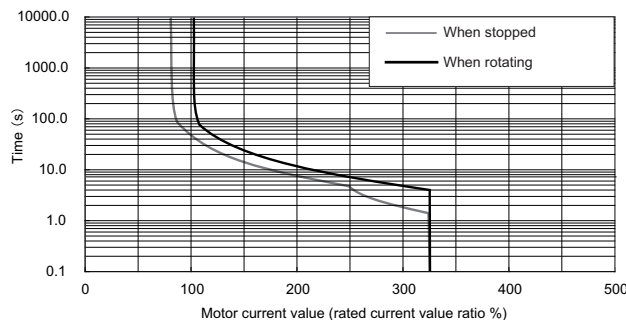
Rated torque	Rated rotation speed	Direct-drive motor type for primary side	
48N•m	200r/min	TM-RBP048G20	

Torque characteristics



Servo overload protection characteristics

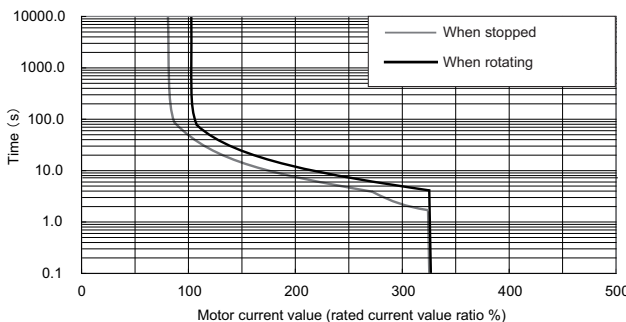
D2 series



Specifications

Item	Specifications	
Compatible servo drive unit type (*1)	1-axis type	MDS-D2-V1-80
	2-axis type	MDS-D2-V2-8040 (L) MDS-D2-V2-8080 (L,M) MDS-D2-V2-16080 (M)
	Regenerative resistor type	MDS-DJ-V1-80
Continuous characteristics	Rated output [W]	1005
	Rated current [A]	12
	Rated torque [N•m]	48
Power facility capacity [kVA]	2.01	
Rated rotation speed [r/min]	200	
Maximum rotation speed [r/min]	500	
Maximum current [A]	36	
Maximum torque [N•m]	144	
Power rate at continuous rated torque [kW/s]	82.2	
Rotor inertia [kg•cm ²]	280	
Degree of protection	IP00	
Required cooling capacity [kW]	0.4	
Cooling water volume	Min: 5 l/min Max: 6 l/min at 20°C	
Dimensions [mm]	Primary side outer diameter	DIA 230
	Secondary side inner diameter	DIA 130
	Height	80
Mass [kg]	Primary side (coil)	10
	Secondary side (magnet)	5
Heat-resistant class	155(F)	

DJ series



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

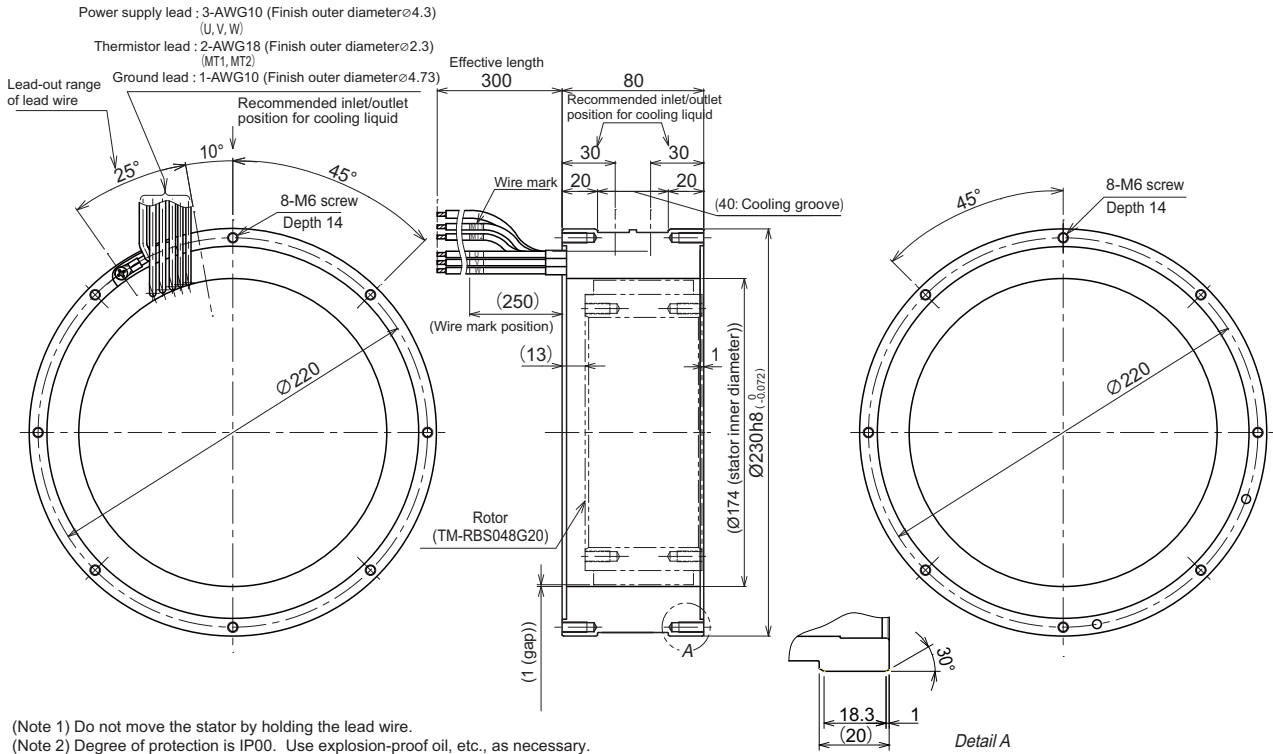
(*2) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas or dust No oil or water splash
Vibration	5G or less
Altitude	1000m or less above sea level

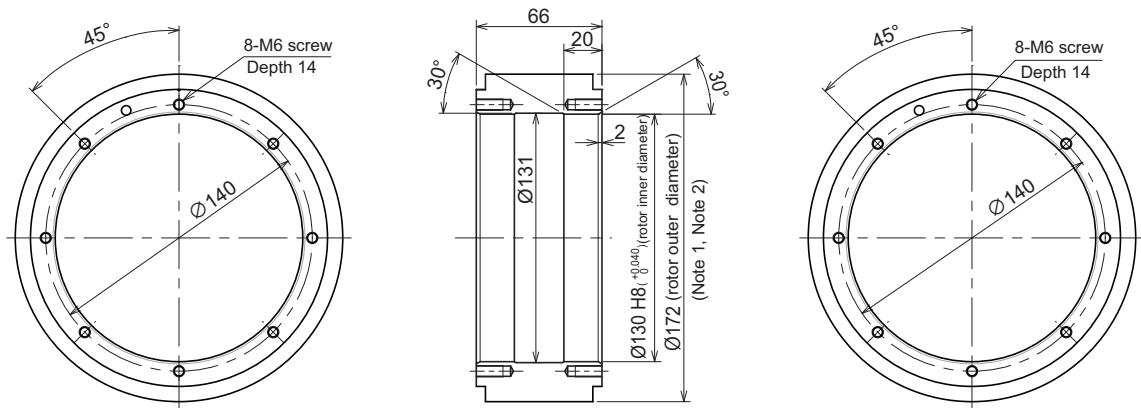
Outline dimension drawings [Unit : mm]

TM-RBP048G20



- (Note 1) Do not move the stator by holding the lead wire.
- (Note 2) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 3) Continuous rated torque is assured only when the required cooling capacity is satisfied.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

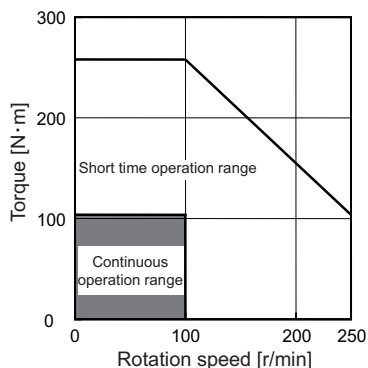
TM-RBS048G20



- (Note 1) Deliverable rotors are magnetized. Please note the magnetic attraction.
- (Note 2) Take special care for the magnet part not to hit against a thing (A crack or chip may occur).
- (Note 3) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

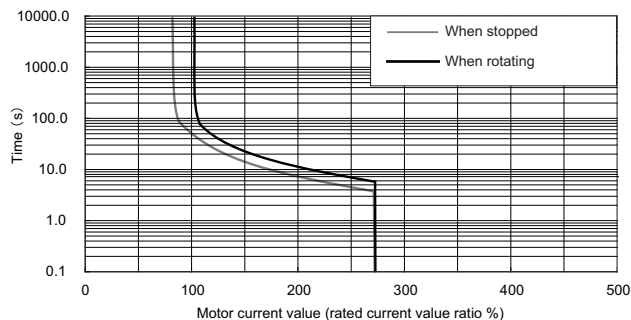
Rated torque	Rated rotation speed	Direct-drive motor type for primary side	
105N·m	100r/min	TM-RBP105G10	

Torque characteristics



Servo overload protection characteristics

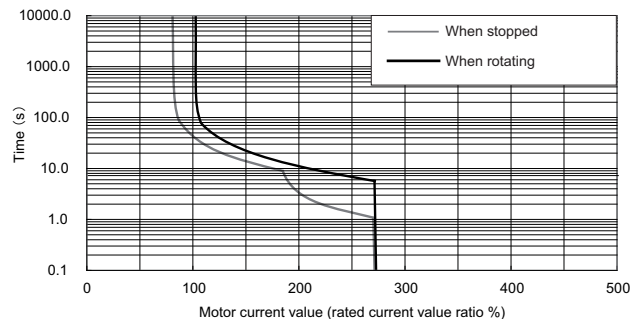
D2 series



Specifications

Item	Specifications	
Compatible servo drive unit type (*1)	1-axis type	MDS-D2-V1-160
	2-axis type	MDS-D2-V2-16080 (L) MDS-D2-V2-160160 (L,M)
	Regenerative resistor type	MDS-DJ-V1-100
Continuous characteristics	Rated output [W]	1100
	Rated current [A]	21
	Rated torque [N·m]	105
Power facility capacity [kVA]	3.86	
Rated rotation speed [r/min]	100	
Maximum rotation speed [r/min]	250	
Maximum current [A]	52	
Maximum torque [N·m]	260	
Power rate at continuous rated torque [kW/s]	279	
Rotor inertia [kg·cm ²]	395	
Degree of protection	IP00	
Required cooling capacity [kW]	1.6	
Cooling water volume	Min: 5 l/min Max: 6 l/min at 20°C	
Dimensions [mm]	Primary side outer diameter	DIA 230
	Secondary side inner diameter	DIA 130
	Height	105
Mass [kg]	Primary side (coil)	13
	Secondary side (magnet)	7
Heat-resistant class	155(F)	

DJ series



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

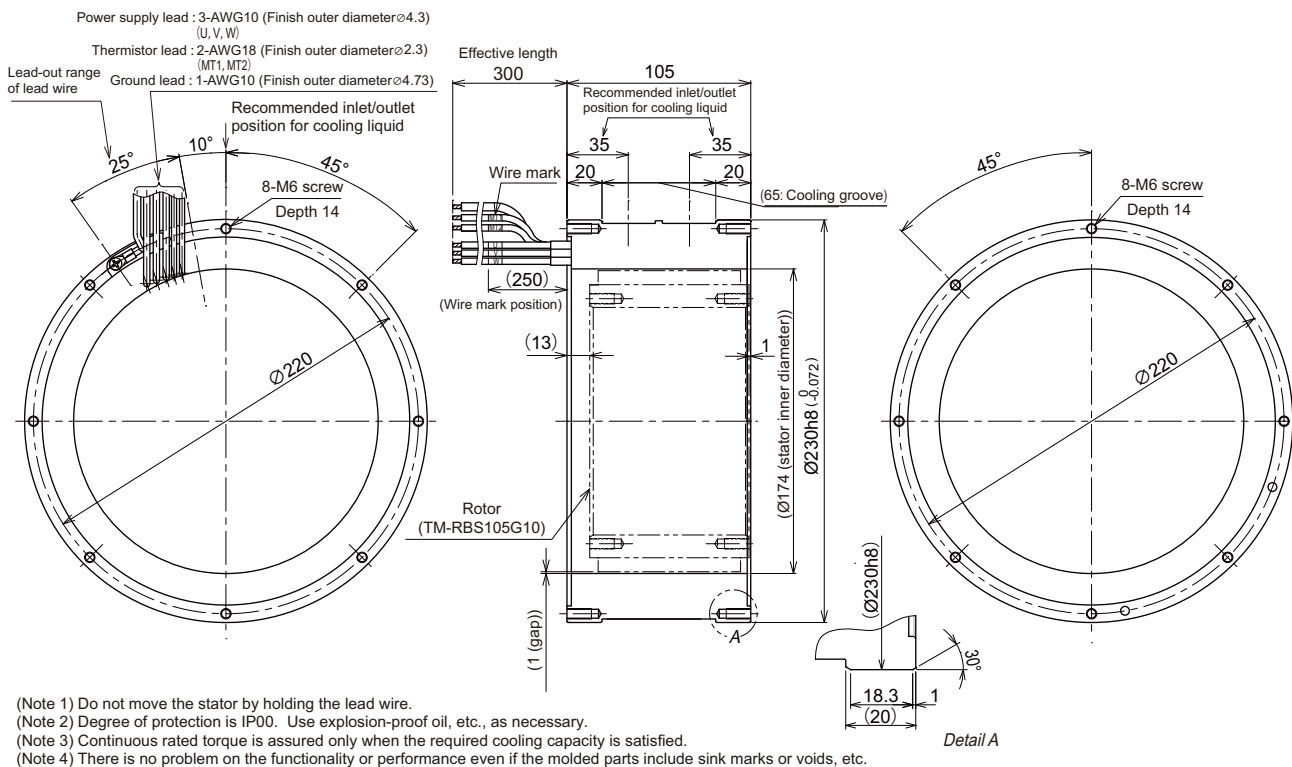
(*2) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

Environmental conditions

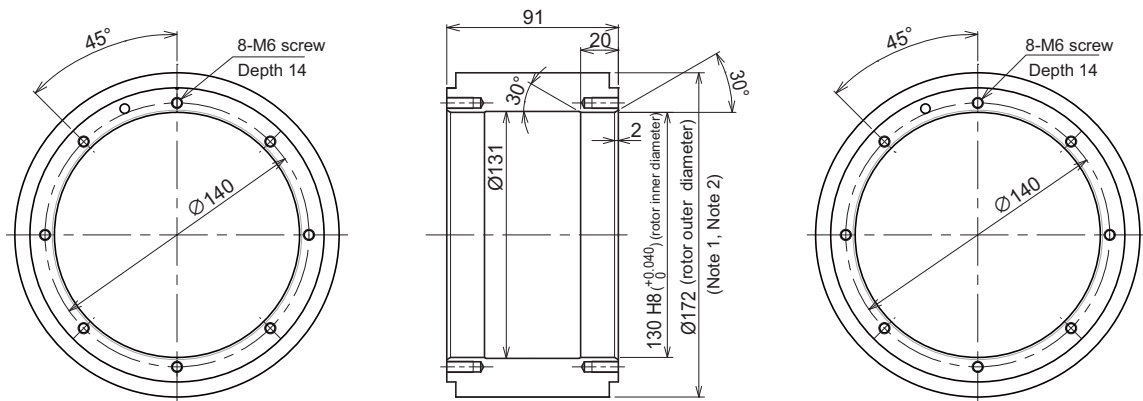
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas or dust No oil or water splash
Vibration	5G or less
Altitude	1000m or less above sea level

Outline dimension drawings [Unit : mm]

TM-RBP105G10

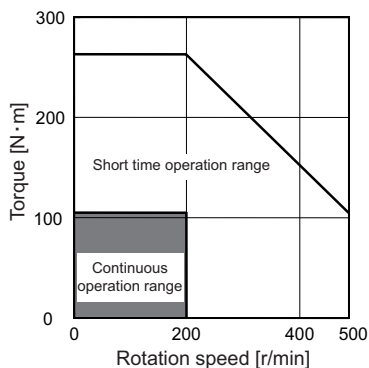


TM-RBS105G10

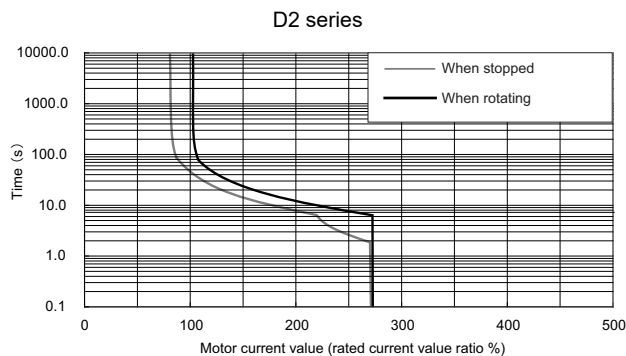


Rated torque	Rated rotation speed	Direct-drive motor type for primary side	
105N·m	200r/min	TM-RBP105G20	

Torque characteristics



Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible servo drive unit type (*1)	1-axis type	MDS-D2-V1-160
	2-axis type	MDS-D2-V2-16080 (L) MDS-D2-V2-160160 (L,M)
	Regenerative resistor type	-
Continuous characteristics	Rated output [W]	2199
	Rated current [A]	25
	Rated torque [N·m]	105
Power facility capacity [kVA]	5.00	
Rated rotation speed [r/min]	200	
Maximum rotation speed [r/min]	500	
Maximum current [A]	63	
Maximum torque [N·m]	260	
Power rate at continuous rated torque [kW/s]	279	
Rotor inertia [kg·cm ²]	395	
Degree of protection	IP00	
Required cooling capacity [kW]	1.3	
Cooling water volume	Min: 5 l/min Max: 6 l/min at 20°C	
Dimensions [mm]	Primary side outer diameter	DIA 230
	Secondary side inner diameter	DIA 130
	Height	105
Mass [kg]	Primary side (coil)	13
	Secondary side (magnet)	7
Heat-resistant class	155(F)	

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

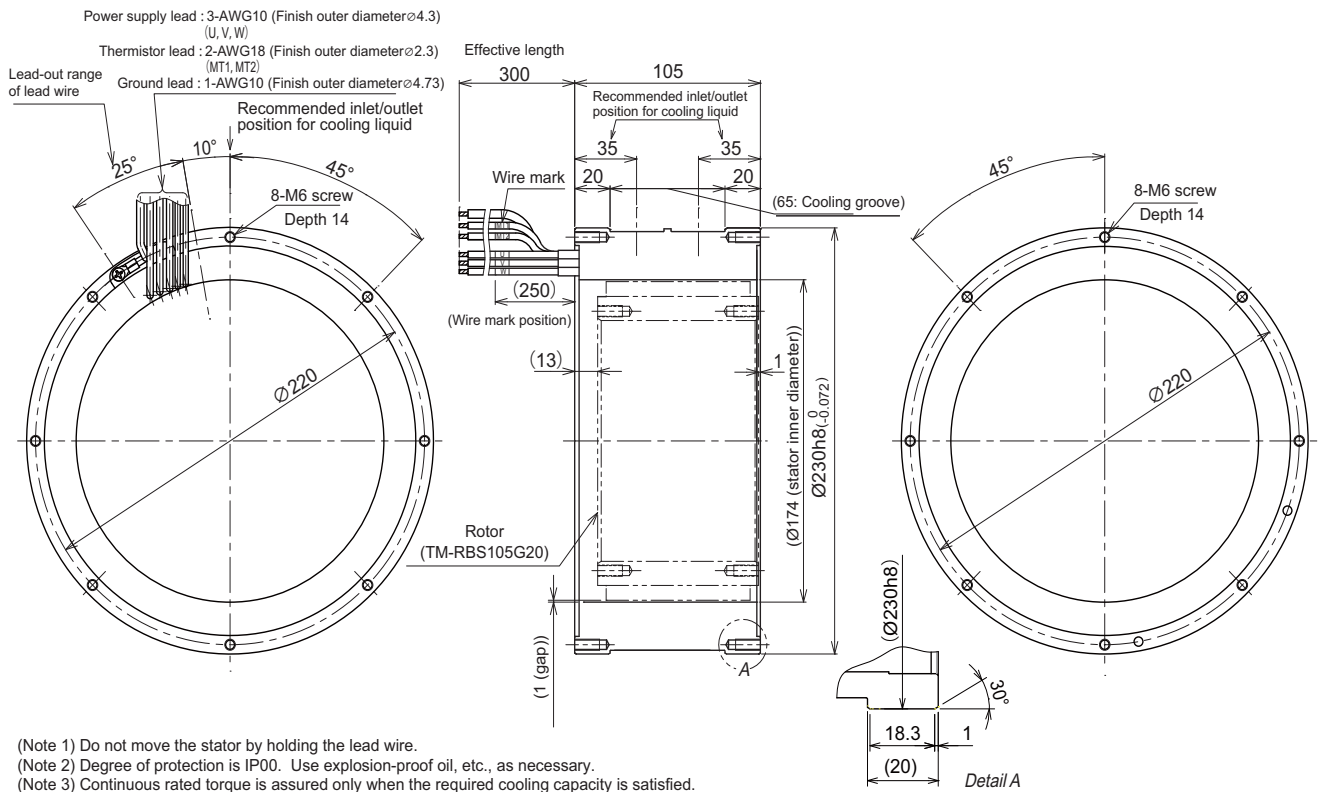
(*2) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas or dust No oil or water splash
Vibration	5G or less
Altitude	1000m or less above sea level

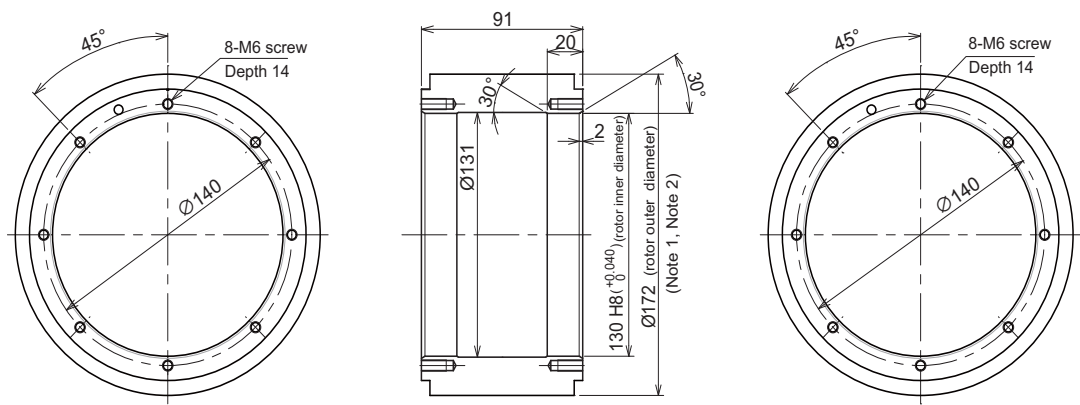
Outline dimension drawings [Unit : mm]

TM-RBP105G20



- (Note 1) Do not move the stator by holding the lead wire.
- (Note 2) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 3) Continuous rated torque is assured only when the required cooling capacity is satisfied.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

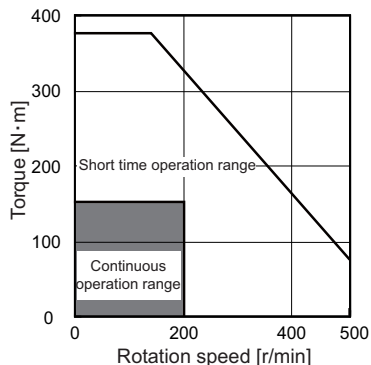
TM-RBS105G20



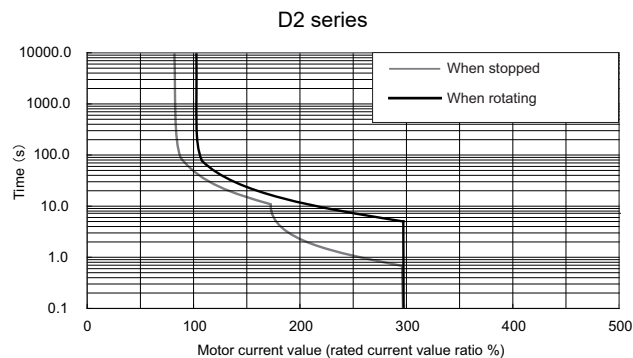
- (Note 1) Deliverable rotors are magnetized. Please note the magnetic attraction.
- (Note 2) Take special care for the magnet part not to hit against a thing (A crack or chip may occur).
- (Note 3) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

Rated torque	Rated rotation speed	Direct-drive motor type for primary side	
150N·m	200r/min	TM-RBP150G20	

Torque characteristics



Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible servo drive unit type (*1)	1-axis type	MDS-D2-V1-160
	2-axis type	MDS-D2-V2-160160 (L,M)
	Regenerative resistor type	-
Continuous characteristics	Rated output [W]	3141
	Rated current [A]	33
	Rated torque [N·m]	150
Power facility capacity [kVA]	7.20	
Rated rotation speed [r/min]	200	
Maximum rotation speed [r/min]	500	
Maximum current [A]	83	
Maximum torque [N·m]	375	
Power rate at continuous rated torque [kW/s]	441	
Rotor inertia [kg·cm ²]	510	
Degree of protection	IP00	
Required cooling capacity [kW]	1.9	
Cooling water volume	Min: 5 l/min Max: 6 l/min at 20°C	
Dimensions [mm]	Primary side outer diameter	DIA 230
	Secondary side inner diameter	DIA 130
	Height	130
Mass [kg]	Primary side (coil)	16
	Secondary side (magnet)	9
Heat-resistant class	155(F)	

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

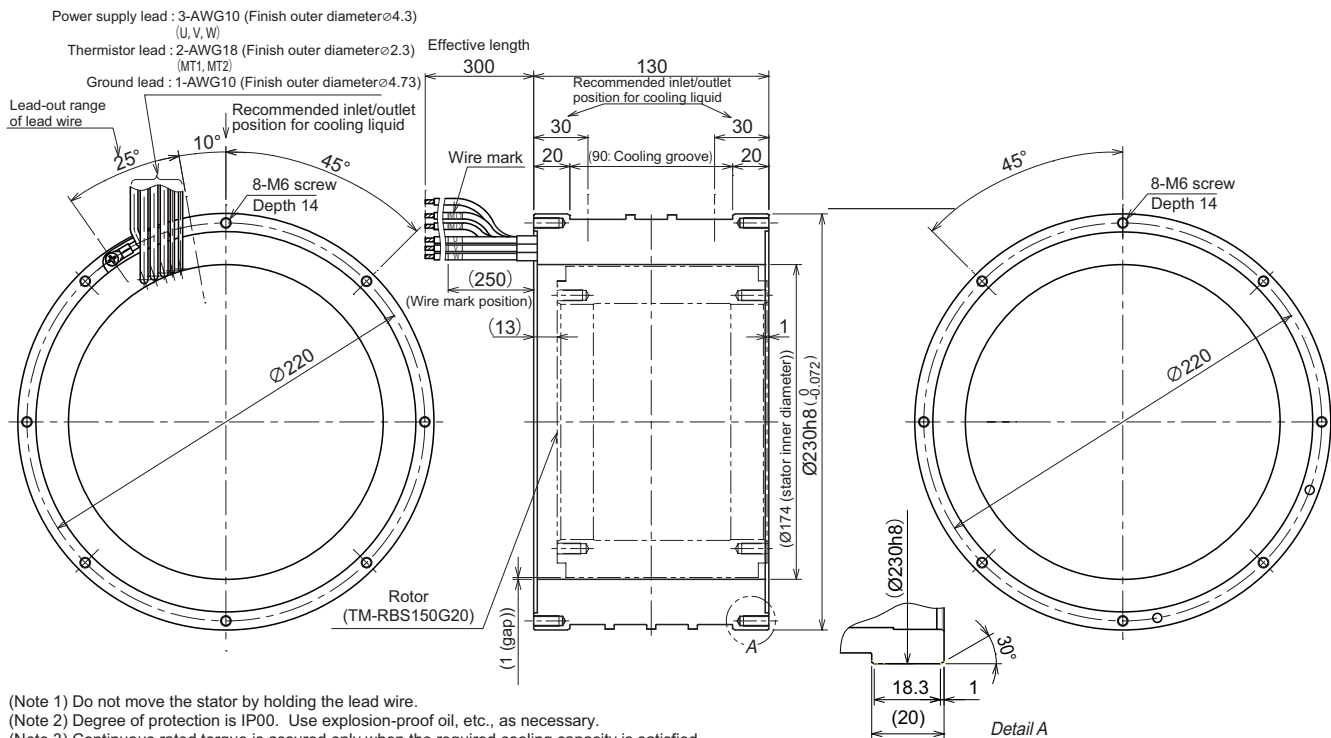
(*2) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

Environmental conditions

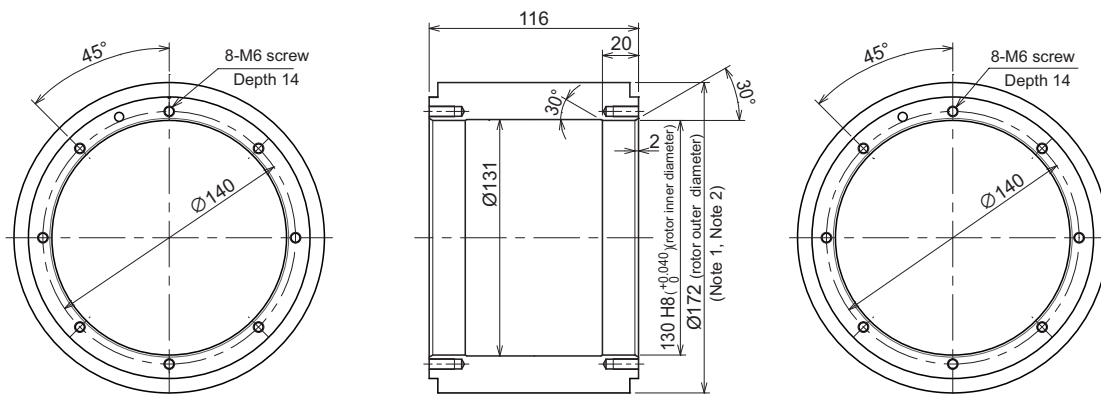
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas or dust No oil or water splash
Vibration	5G or less
Altitude	1000m or less above sea level

Outline dimension drawings [Unit : mm]

TM-RBP150G20

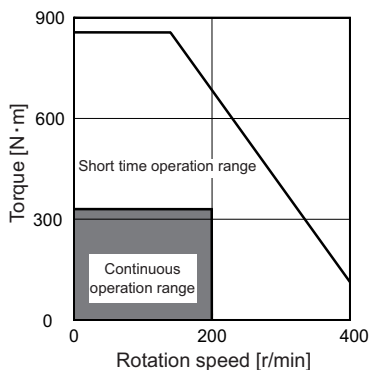


TM-RBS150G20

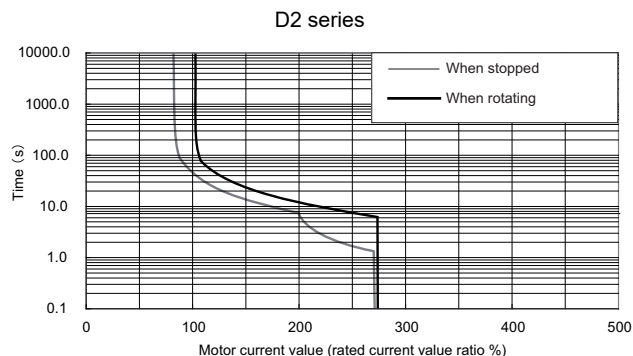


Rated torque	Rated rotation speed	Direct-drive motor type for primary side	
340N·m	200r/min	TM-RBP340J20	

Torque characteristics



Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible servo drive unit type (*1)	1-axis type	MDS-D2-V1-320
	2-axis type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output [W]	7120
	Rated current [A]	54
	Rated torque [N·m]	340
Power facility capacity [kVA]	14.03	
Rated rotation speed [r/min]	200	
Maximum rotation speed [r/min]	400	
Maximum current [A]	135	
Maximum torque [N·m]	850	
Power rate at continuous rated torque [kW/s]	416	
Rotor inertia [kg·cm ²]	2778	
Degree of protection	IP00	
Required cooling capacity [kW]	2.7	
Cooling water volume	Min: 5 l/min Max: 6 l/min at 20°C	
Dimensions [mm]	Primary side outer diameter	DIA 330
	Secondary side inner diameter	DIA 205
	Height	154
Mass [kg]	Primary side (coil)	33
	Secondary side (magnet)	20
Heat-resistant class	155(F)	

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

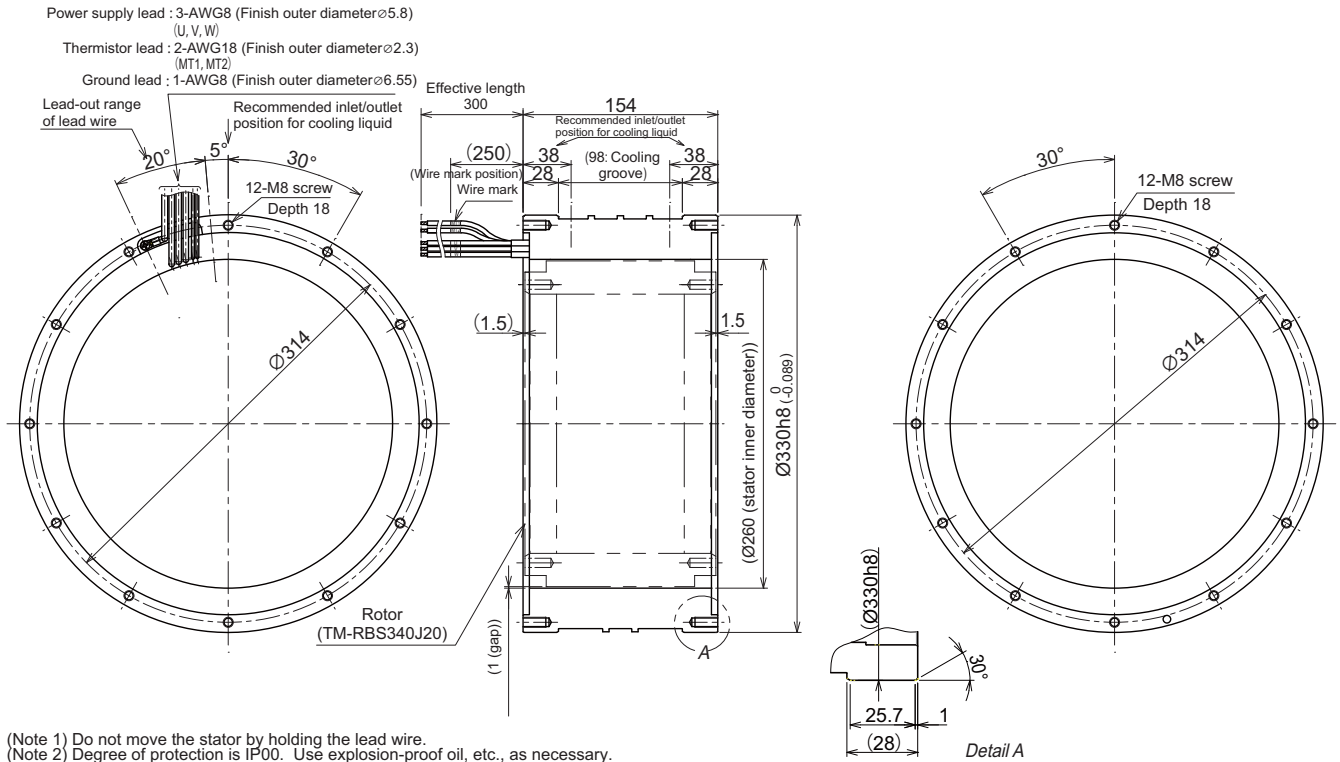
(*2) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas or dust No oil or water splash
Vibration	2.5G or less
Altitude	1000m or less above sea level

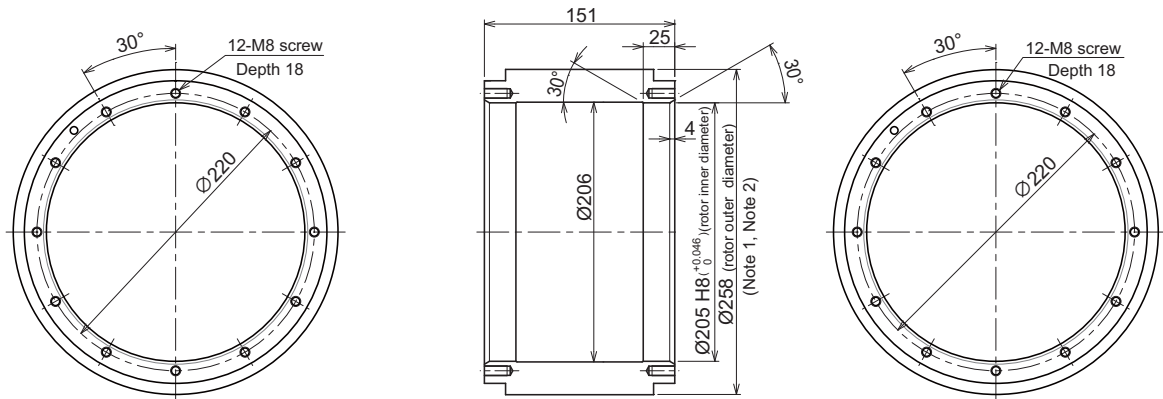
Outline dimension drawings [Unit : mm]

TM-RBP340J20



- (Note 1) Do not move the stator by holding the lead wire.
- (Note 2) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 3) Continuous rated torque is assured only when the required cooling capacity is satisfied.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

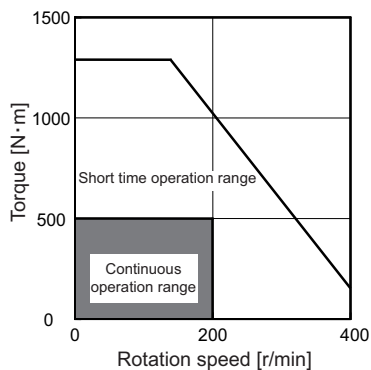
TM-RBS340J20



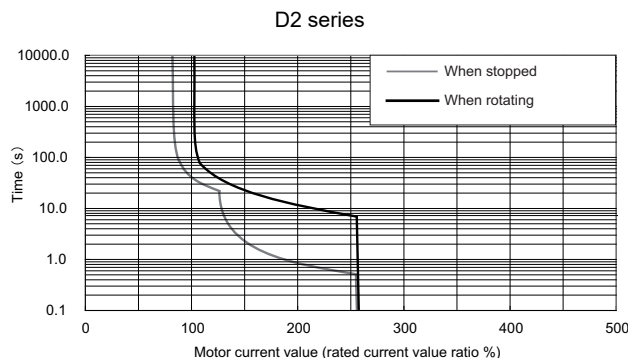
- (Note 1) Deliverable rotors are magnetized. Please note the magnetic attraction.
- (Note 2) Take special care for the magnet part not to hit against a thing (A crack or chip may occur).
- (Note 3) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

Rated torque	Rated rotation speed	Direct-drive motor type for primary side	
500N·m	200r/min	TM-RBP500J20	

Torque characteristics



Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible servo drive unit type (*1)	1-axis type	MDS-D2-V1-320W
	2-axis type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output [W]	10471
	Rated current [A]	82
	Rated torque [N·m]	500
Power facility capacity [kVA]	20.82	
Rated rotation speed [r/min]	200	
Maximum rotation speed [r/min]	400	
Maximum current [A]	210	
Maximum torque [N·m]	1280	
Power rate at continuous rated torque [kW/s]	707	
Rotor inertia [kg·cm ²]	3538	
Degree of protection	IP00	
Required cooling capacity [kW]	4.1	
Cooling water volume	Min: 5 l/min Max: 6 l/min at 20°C	
Dimensions [mm]	Primary side outer diameter	DIA 330
	Secondary side inner diameter	DIA 205
	Height	191
Mass [kg]	Primary side (coil)	41
	Secondary side (magnet)	26
Heat-resistant class	155(F)	

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

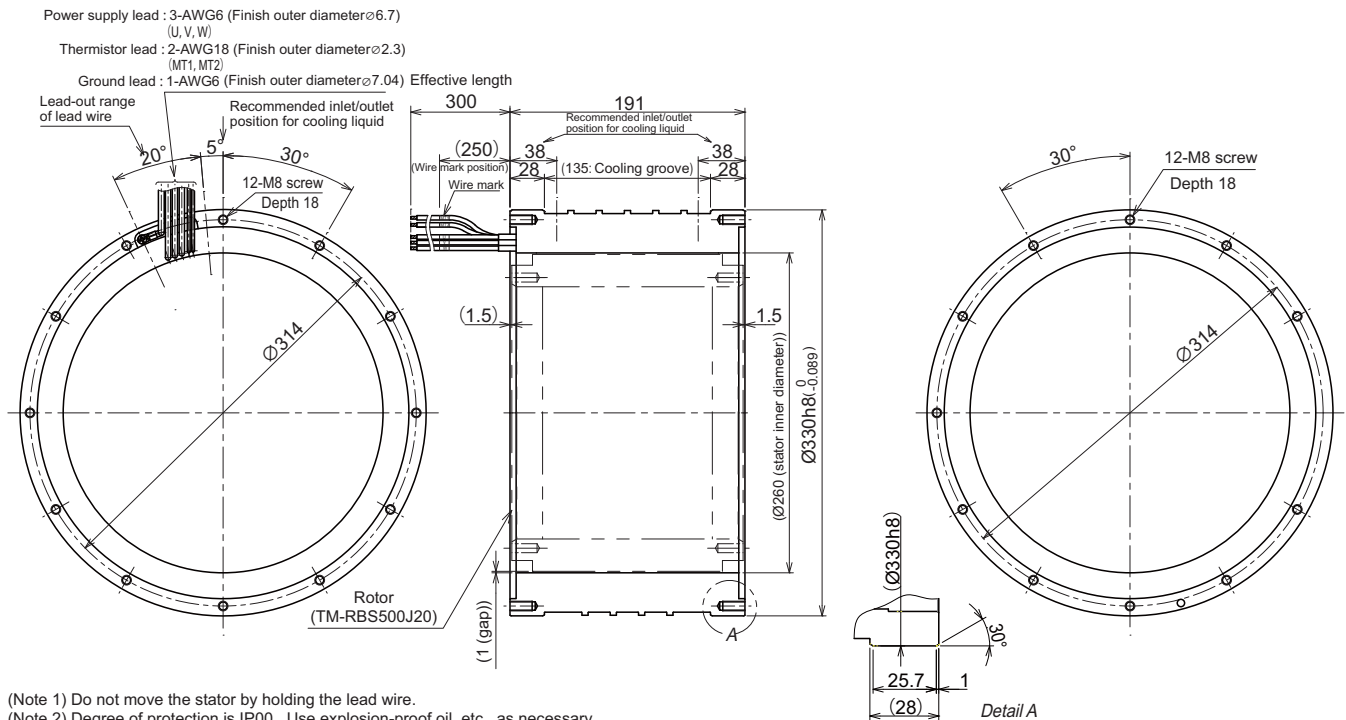
(*2) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas or dust No oil or water splash
Vibration	2.5G or less
Altitude	1000m or less above sea level

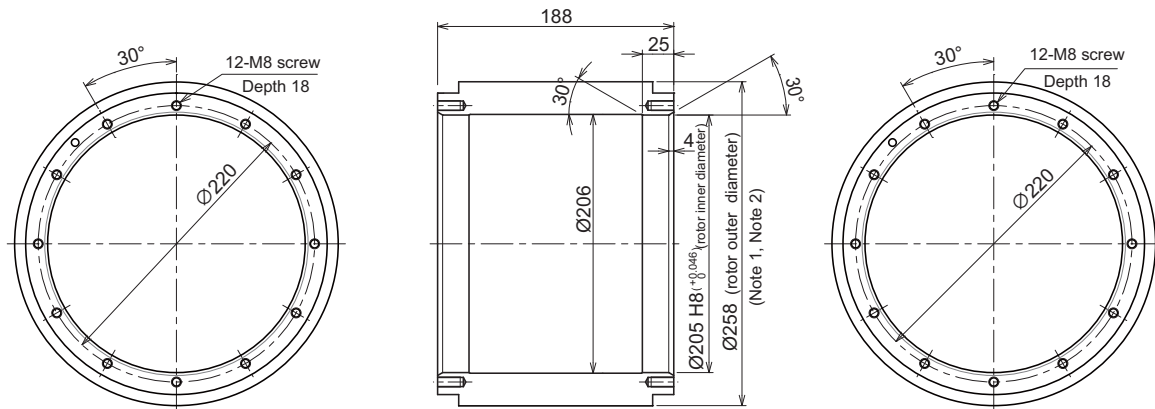
Outline dimension drawings [Unit : mm]

TM-RBP500J20



- (Note 1) Do not move the stator by holding the lead wire.
- (Note 2) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 3) Continuous rated torque is assured only when the required cooling capacity is satisfied.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

TM-RBS500J20

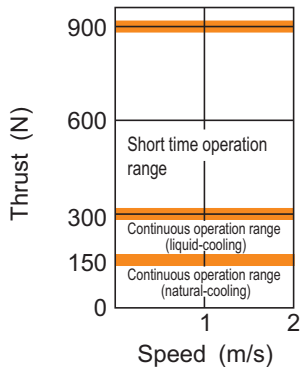


- (Note 1) Deliverable rotors are magnetized. Please note the magnetic attraction.
- (Note 2) Take special care for the magnet part not to hit against a thing (A crack or chip may occur).
- (Note 3) Degree of protection is IP00. Use explosion-proof oil, etc., as necessary.
- (Note 4) There is no problem on the functionality or performance even if the molded parts include sink marks or voids, etc.

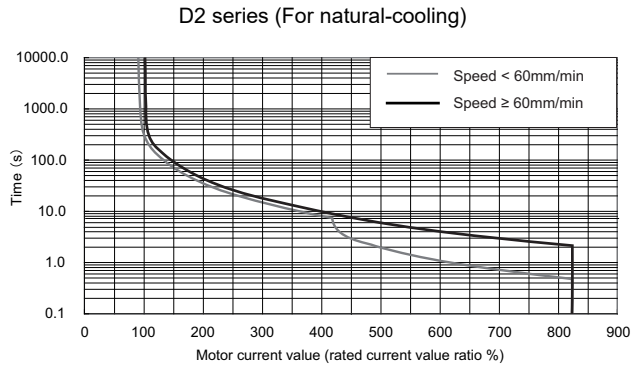
Linear Motor

Thrust		Linear servo motor type		Explanation of type	
Rated (natural-cooling)	150N	Primary side (coil)	LM-FP2A-03M -1WW0		
Rated (liquid-cooling)	300N	Secondary side (magnet)			
Maximum	900N				
					480
					576

Thrust Characteristics



Servo overload protection characteristics



Specifications

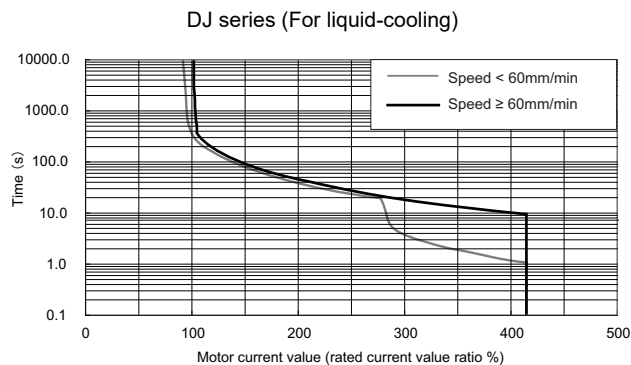
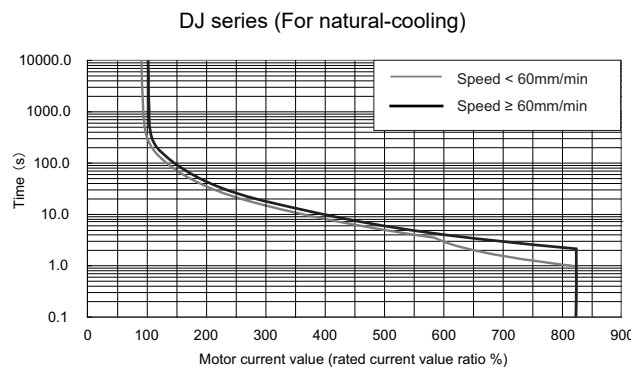
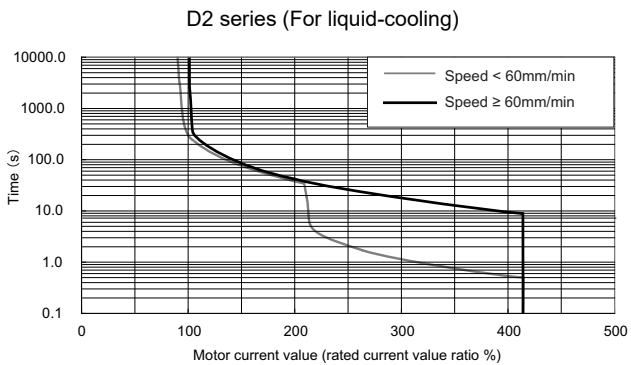
Item	Specifications		
		Standard	Drive with one unit and two motors
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-40	MDS-D2-V1-80
	2-axis type	MDS-D2-V2-4020 (L)	MDS-D2-V2-8040 (L)
		MDS-D2-V2-4040	MDS-D2-V2-8080
	3-axis type	MDS-D2-V2-8040 (M)	MDS-D2-V2-16080 (M)
	Regenerative resistor type	MDS-D2-V3-404040	-
Power facility capacity [kVA]		2.0	4.0
Current	Rated (natural-cooling) [Arms]	3.5	6.9
	Rated (liquid-cooling) [Arms]	6.9	13.8
	Maximum [Arms]	26.1	52.2
Cooling method	Natural-cooling, liquid-cooling		
Thrust	Rated (natural-cooling) [N]	150	300
	Rated (liquid-cooling) [N]	300	600
	Maximum [N]	900	1800
Maximum speed [m/s] (*2)	2.0		
Magnetic attraction force [N]	2500		
Mass	Primary side [kg]	5	5×2
	Secondary side [kg]	5.8 (384mm)	
		7.1 (480mm)	
9.0 (576mm)			
Recommended load mass ratio	15 times linear servo motor primary side mass maximum		
Structure	Open (Degree of protection IP00)		

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above value may be limited by the maximum speed of the linear scale.

Environmental conditions

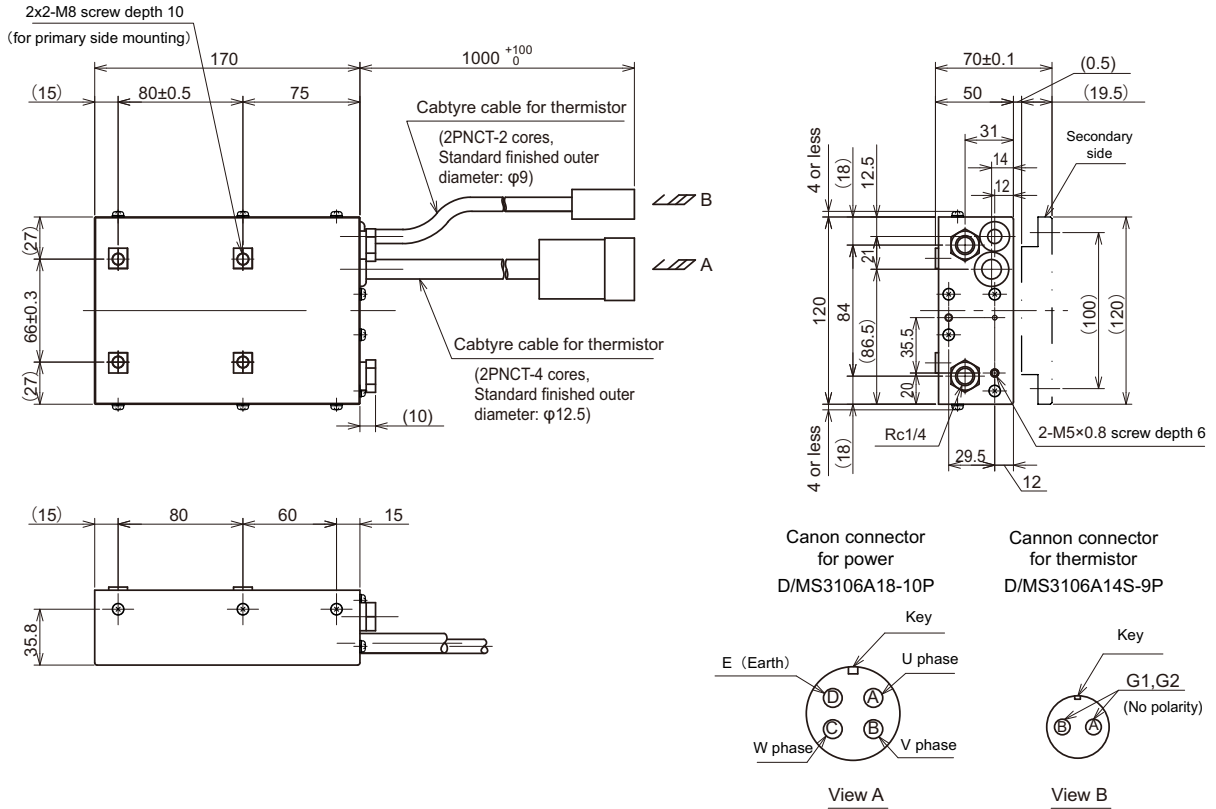
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to 55°C (with no freezing)
Ambient humidity	Operation: 80%RH or less (with no dew condensation) Storage: 90%RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Vibration	49m/s ² or less
Altitude	1000 meters or less above sea level



Outline dimension drawings [Unit : mm]

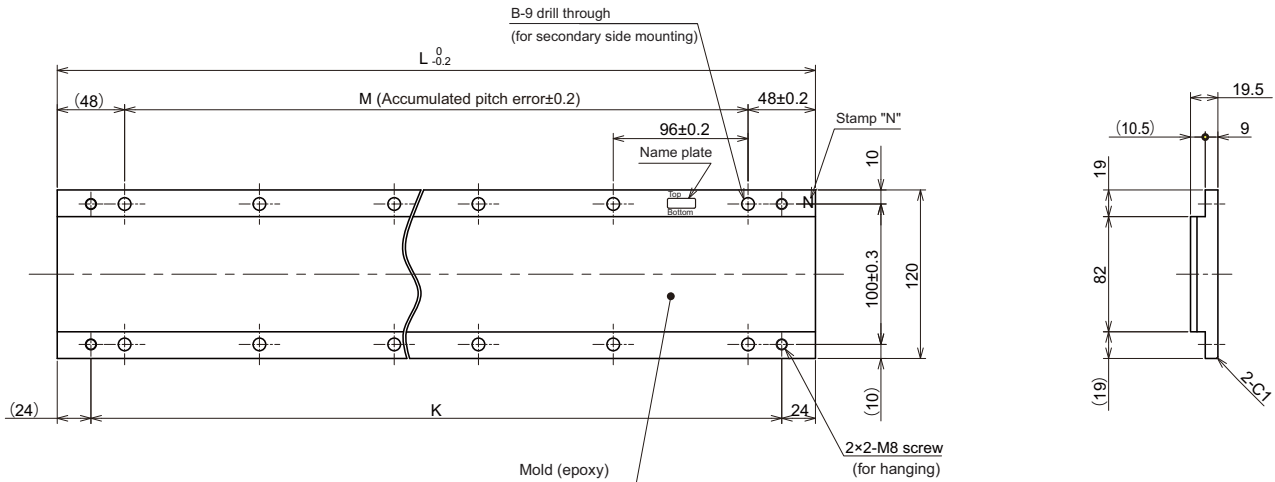
< Primary side >

LM-FP2A-03M-1WW0



< Secondary side >

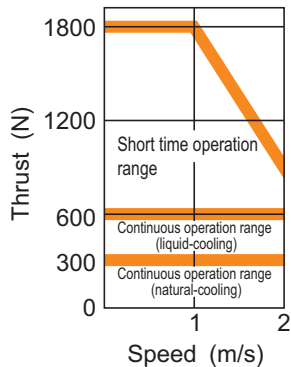
LM-FS20-□-1WW0



Model	Variable dimensions			
	L	M	K	B
LM-FS20-384-1WW0	384	3X96(=288)	336	4×2
LM-FS20-480-1WW0	480	4X96(=384)	432	5×2
LM-FS20-576-1WW0	576	5X96(=480)	528	6×2

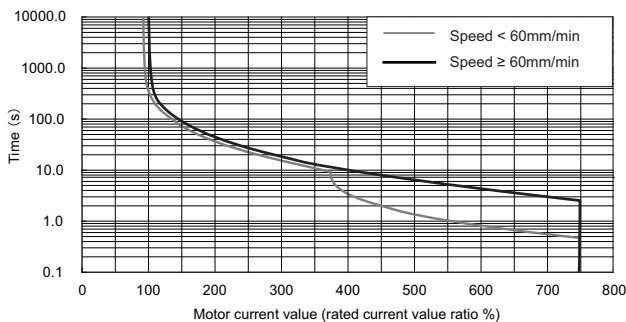
Thrust		Linear servo motor type		Explanation of type		
Rated (natural-cooling)	300N	Primary side (coil)	LM-FP2B-06M -1WW0	(1) Length [mm]	384	
Rated (liquid-cooling)	600N	Secondary side (magnet)				
Maximum	1800N					(1) LM-FS20 -□-1WW0
						576

Thrust Characteristics



Servo overload protection characteristics

D2 series (For natural-cooling)



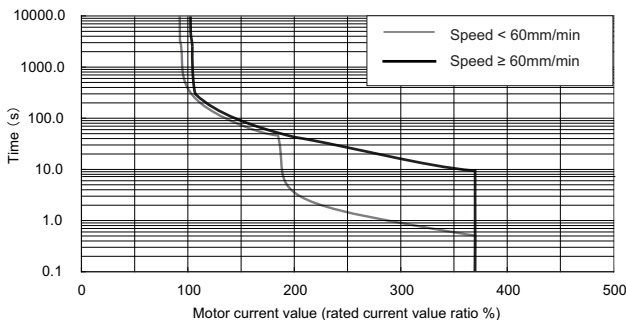
Specifications

Item		Specifications	
		Standard	Drive with one unit and two motors
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-40	MDS-D2-V1-80
	2-axis type	MDS-D2-V2-4020 (L)	MDS-D2-V2-8040 (L)
		MDS-D2-V2-4040	MDS-D2-V2-8080
		MDS-D2-V2-8040 (M)	MDS-D2-V2-16080 (M)
3-axis type	MDS-D2-V3-404040	-	
	Regenerative resistor type	MDS-DJ-V1-40	MDS-DJ-V1-80
Power facility capacity [kVA]		3.5	7.0
Current	Rated (natural-cooling) [Arms]	3.9	7.8
	Rated (liquid-cooling) [Arms]	7.8	15.6
	Maximum [Arms]	28.1	56.2
Cooling method		Natural-cooling, liquid-cooling	
Thrust	Rated (natural-cooling) [N]	300	600
	Rated (liquid-cooling) [N]	600	1200
	Maximum [N]	1800	3600
Maximum speed [m/s] (*2)		2.0	
Magnetic attraction force [N]		4500	
Mass	Primary side [kg]	9	9×2
	Secondary side [kg]	5.8 (384mm) 7.1 (480mm) 9.0 (576mm)	
Recommended load mass ratio		15 times linear servo motor primary side mass maximum	
Structure		Open (Degree of protection IP00)	

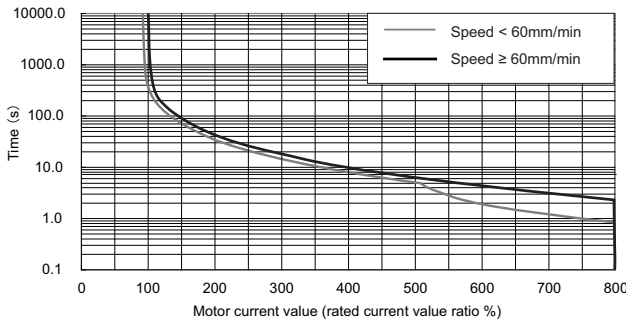
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above value may be limited by the maximum speed of the linear scale.

D2 series (For liquid-cooling)



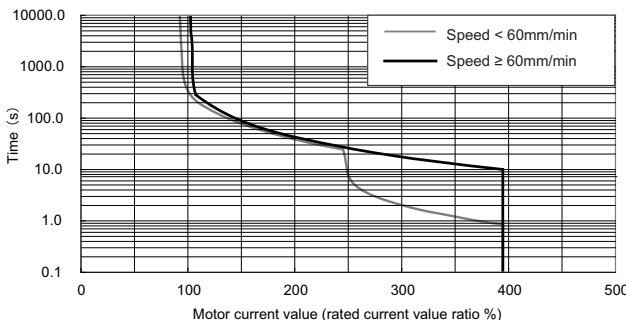
DJ series (For natural-cooling)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to 55°C (with no freezing)
Ambient humidity	Operation: 80%RH or less (with no dew condensation) Storage: 90%RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Vibration	49m/s ² or less
Altitude	1000 meters or less above sea level

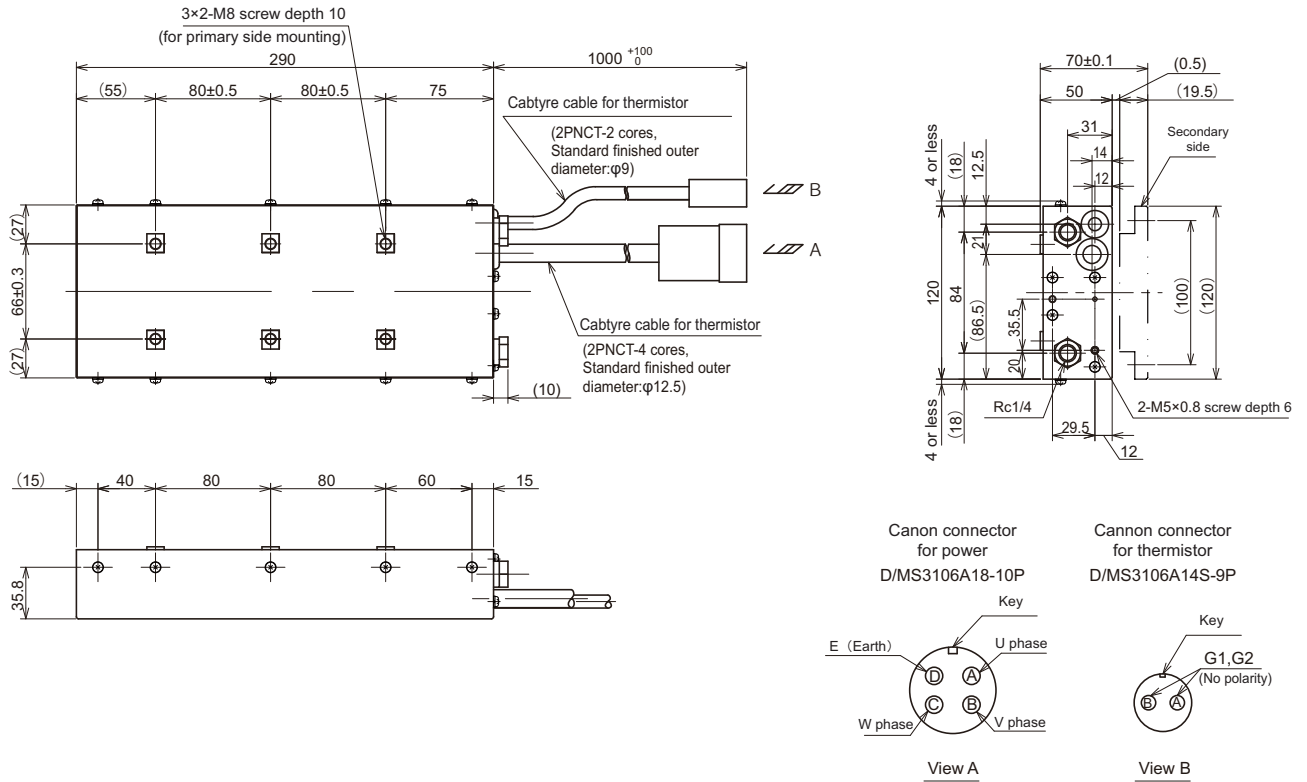
DJ series (For liquid-cooling)



Outline dimension drawings [Unit : mm]

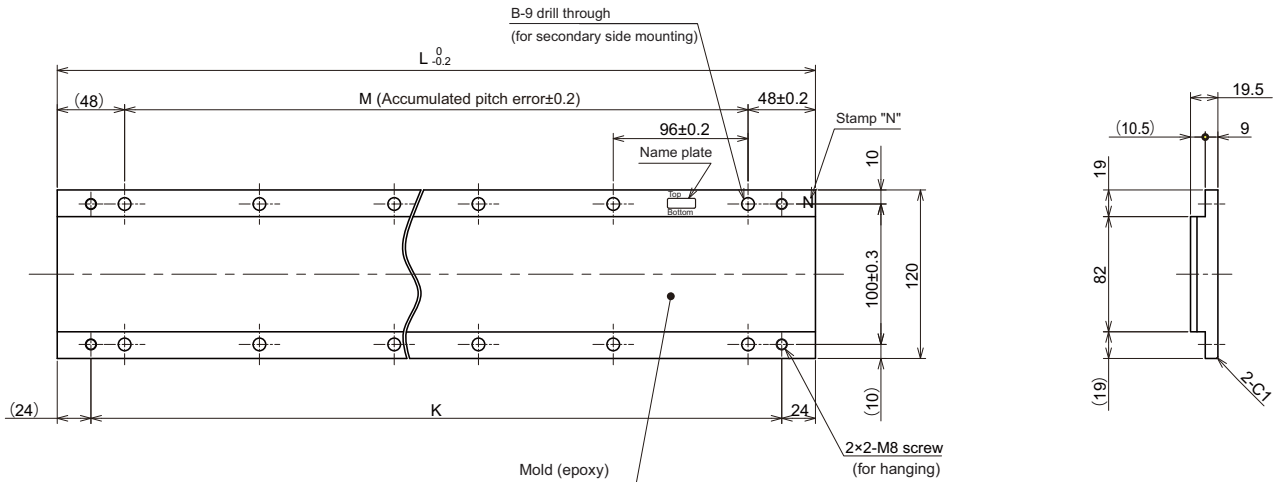
< Primary side >

LM-FP2B-06M-1WW0



< Secondary side >

LM-FS20-□-1WW0

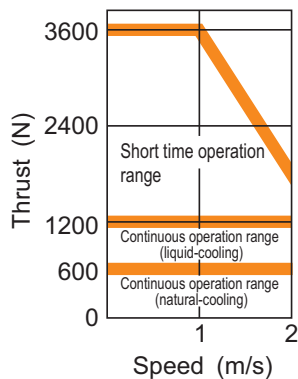


Model	Variable dimensions			
	L	M	K	B
LM-FS20-384-1WW0	384	3X96(=288)	336	4x2
LM-FS20-480-1WW0	480	4X96(=384)	432	5x2
LM-FS20-576-1WW0	576	5X96(=480)	528	6x2

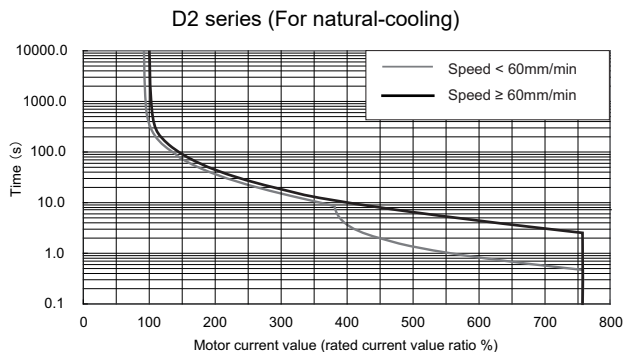
200V System Linear Motor LM-F Series

Thrust		Linear servo motor type		Explanation of type	
Rated (natural-cooling)	600N	Primary side (coil)	LM-FP2D-12M -1WW0		
Rated (liquid-cooling)	1200N	Secondary side (magnet)	LM-FS20 -□-1WW0	(1) Length [mm]	384
Maximum	3600N				480
					576

Thrust Characteristics



Servo overload protection characteristics



Specifications

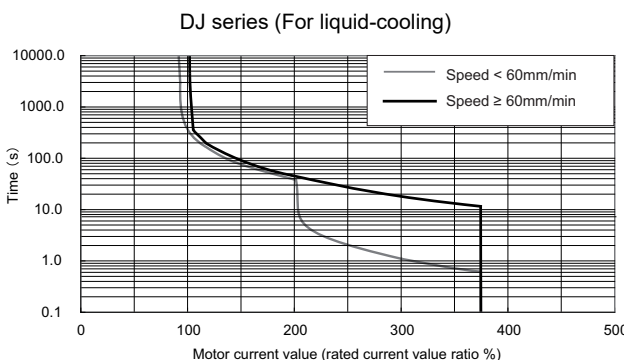
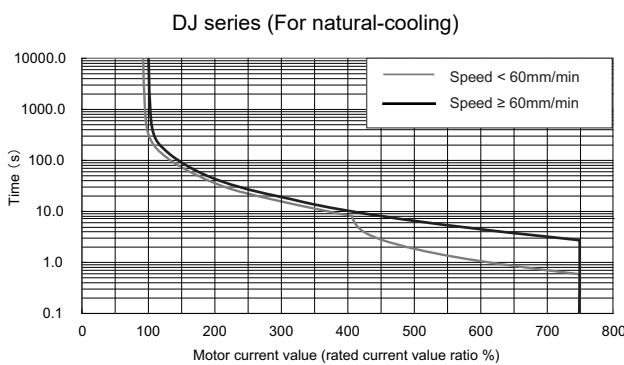
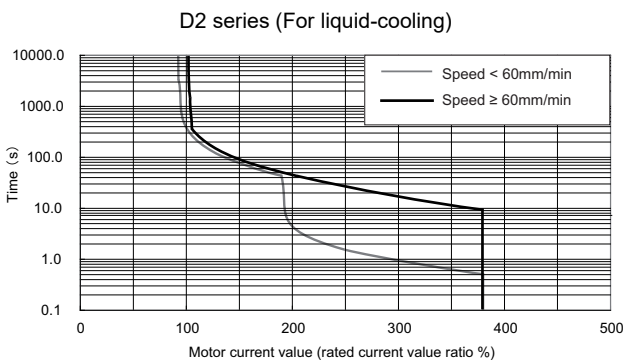
Item		Specifications	
		Standard	Drive with one unit and two motors
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-80	MDS-D2-V1-160
	2-axis type	MDS-D2-V2-8040 (L) MDS-D2-V2-8080	MDS-D2-V2-16080 (L) MDS-D2-V2-160160
	3-axis type	-	-
	Regenerative resistor type	MDS-DJ-V1-80	-
Power facility capacity [kVA]		5.5	11.0
Current	Rated (natural-cooling) [Arms]	7.7	15.3
	Rated (liquid-cooling) [Arms]	15.3	30.5
	Maximum [Arms]	57.8	115.7
Cooling method		Natural-cooling, liquid-cooling	
Thrust	Rated (natural-cooling) [N]	600	1200
	Rated (liquid-cooling) [N]	1200	2400
	Maximum [N]	3600	7200
Maximum speed [m/s] (*2)		2.0	
Magnetic attraction force [N]		9000	
Mass	Primary side [kg]	18	18×2
	Secondary side [kg]		5.8 (384mm) 7.1 (480mm) 9.0 (576mm)
Recommended load mass ratio		15 times linear servo motor primary side mass maximum	
Structure		Open (Degree of protection IP00)	

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above value may be limited by the maximum speed of the linear scale.

Environmental conditions

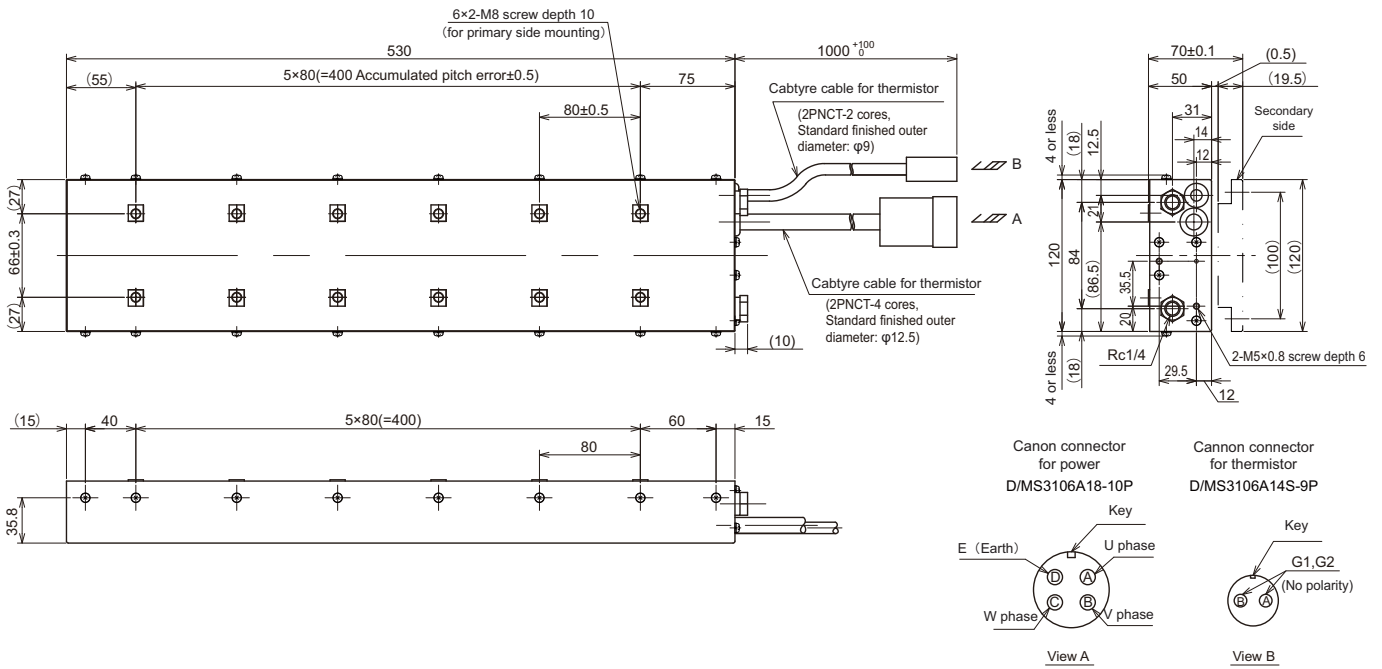
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to 55°C (with no freezing)
Ambient humidity	Operation: 80%RH or less (with no dew condensation) Storage: 90%RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Vibration	49m/s ² or less
Altitude	1000 meters or less above sea level



Outline dimension drawings [Unit : mm]

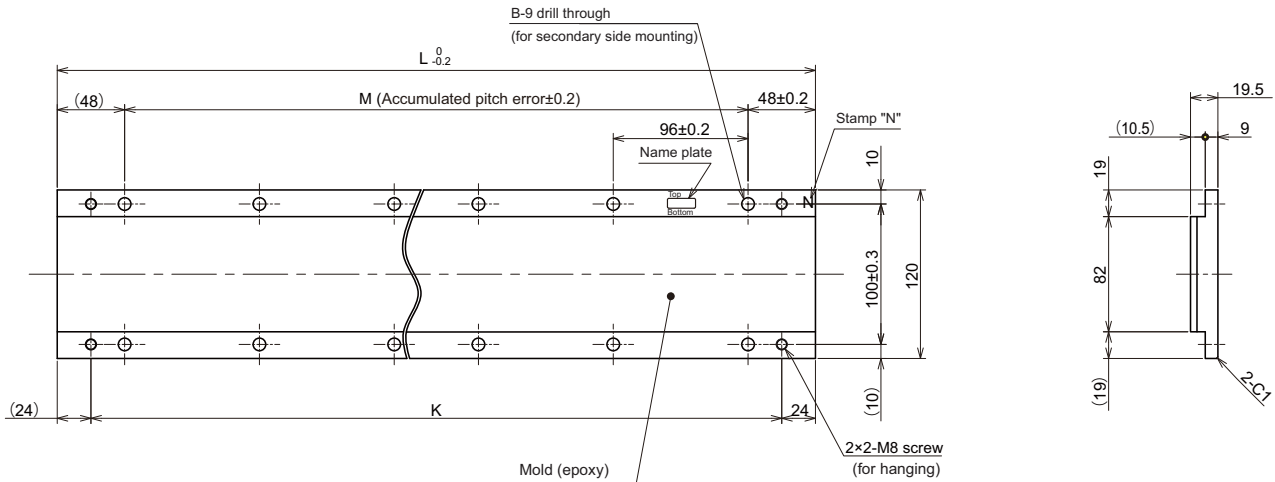
< Primary side >

LM-FP2D-12M-1WW0



< Secondary side >

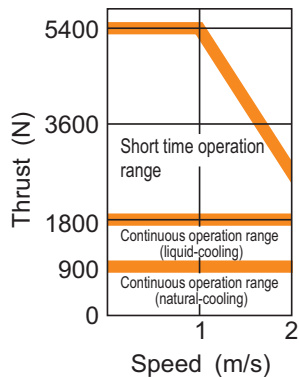
LM-FS20-□-1WW0



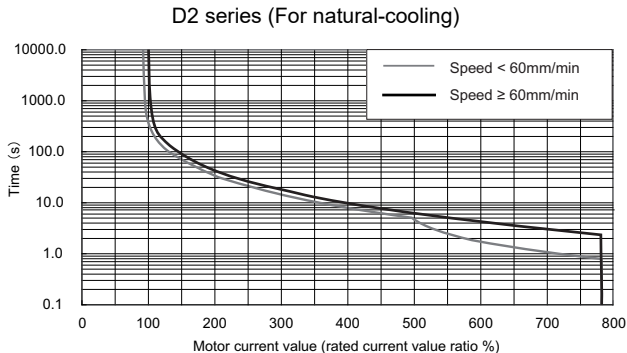
Model	Variable dimensions			
	L	M	K	B
LM-FS20-384-1WW0	384	3X96(=288)	336	4x2
LM-FS20-480-1WW0	480	4X96(=384)	432	5x2
LM-FS20-576-1WW0	576	5X96(=480)	528	6x2

Thrust		Linear servo motor type		Explanation of type	
Rated (natural-cooling)	900N	Primary side (coil)	LM-FP2F-18M -1WW0		
Rated (liquid-cooling)	1800N	Secondary side (magnet)			
Maximum	5400N				
			(1) Length [mm]	384	
				480	
				576	

Thrust Characteristics

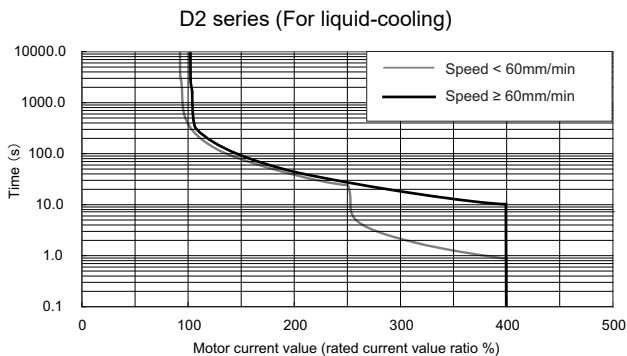


Servo overload protection characteristics



Specifications

Item	Specifications	
	Standard	Drive with one unit and two motors
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-160
	2-axis type	MDS-D2-V2-16080 (L) MDS-D2-V2-160160
	3-axis type	-
	Regenerative resistor type	-
Power facility capacity [kVA]	10	20.0
Current	Rated (natural-cooling) [Arms]	11.9
	Rated (liquid-cooling) [Arms]	23.2
	Maximum [Arms]	84.7
Cooling method	Natural-cooling, liquid-cooling	
Thrust	Rated (natural-cooling) [N]	900
	Rated (liquid-cooling) [N]	1800
	Maximum [N]	5400
Maximum speed [m/s] (*2)	2.0	
Magnetic attraction force [N]	13500	
Mass	Primary side [kg]	27
	Secondary side [kg]	5.8 (384mm)
		7.1 (480mm)
9.0 (576mm)		
Recommended load mass ratio	15 times linear servo motor primary side mass maximum	
Structure	Open (Degree of protection IP00)	



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above value may be limited by the maximum speed of the linear scale.

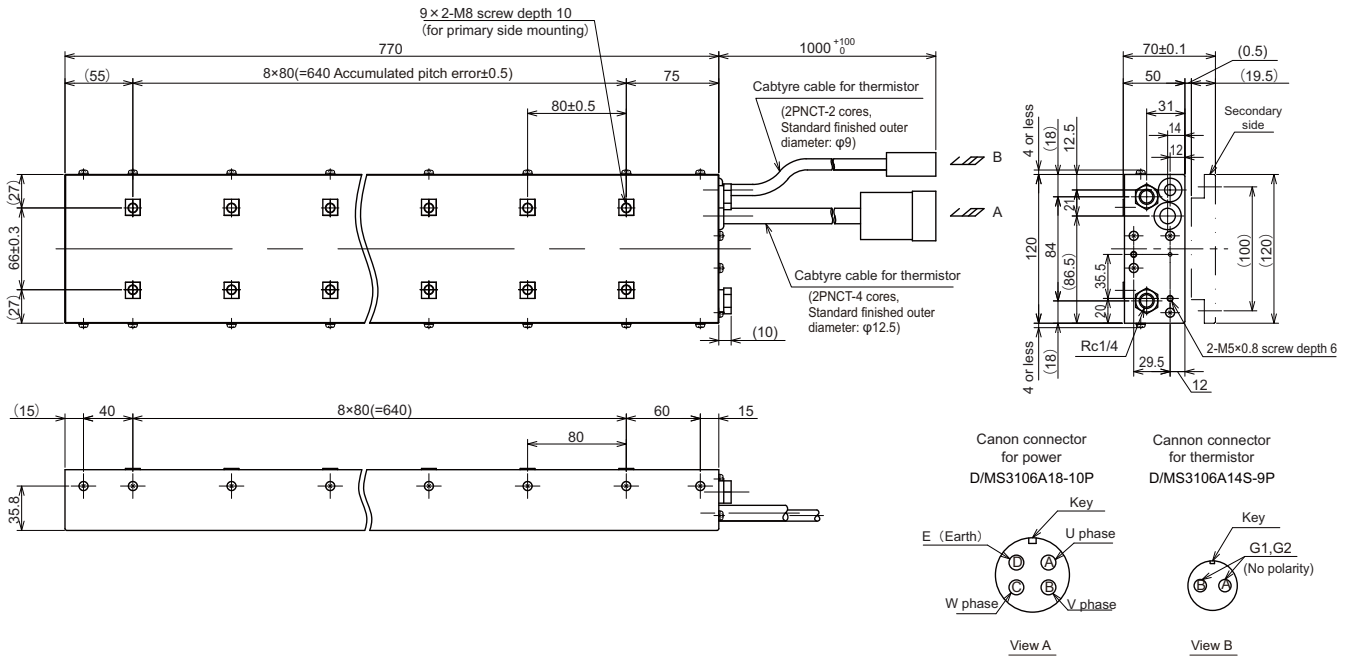
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to 55°C (with no freezing)
Ambient humidity	Operation: 80%RH or less (with no dew condensation) Storage: 90%RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Vibration	49m/s ² or less
Altitude	1000 meters or less above sea level

Outline dimension drawings [Unit : mm]

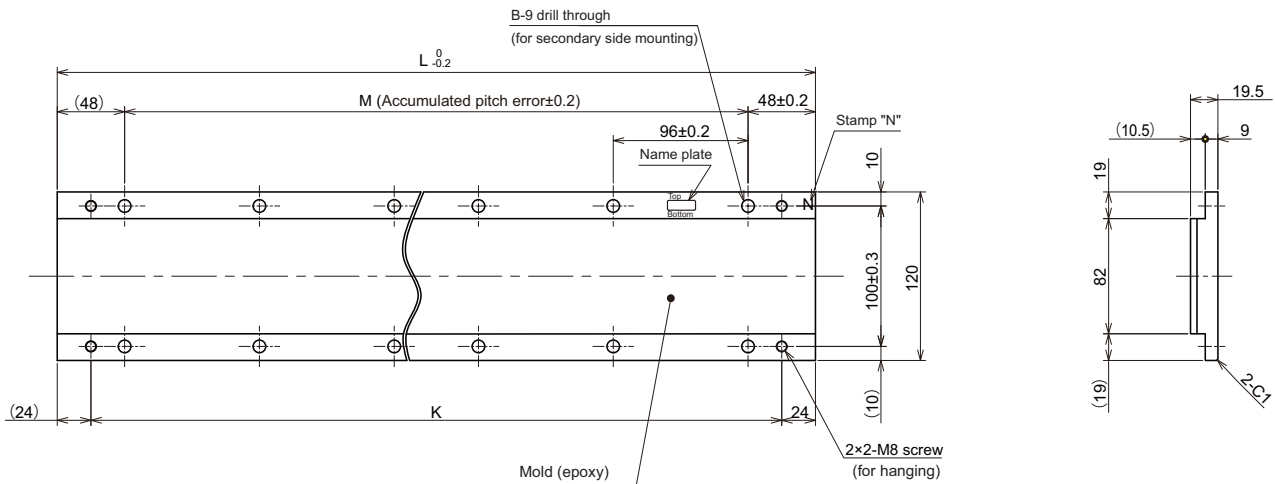
< Primary side >

LM-FP2F-18M-1WW0



< Secondary side >

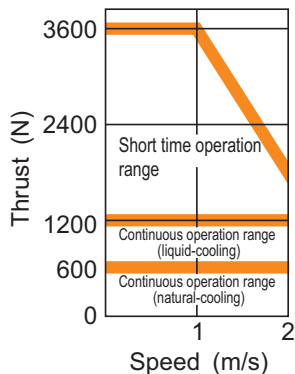
LM-FS20-□-1WW0



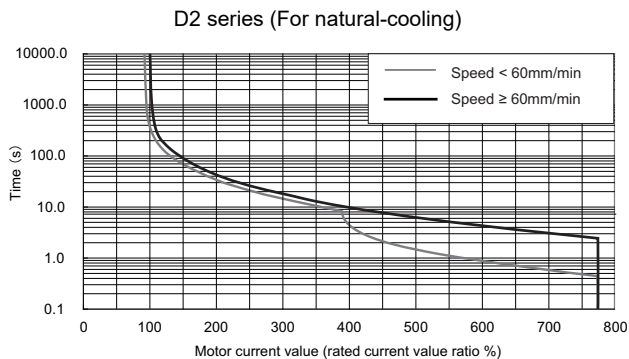
Model	Variable dimensions			
	L	M	K	B
LM-FS20-384-1WW0	384	3X96(=288)	336	4x2
LM-FS20-480-1WW0	480	4X96(=384)	432	5x2
LM-FS20-576-1WW0	576	5X96(=480)	528	6x2

Thrust		Linear servo motor type		Explanation of type	
Rated (natural-cooling)	600N	Primary side (coil)	LM-FP4B-12M -1WW0	(1) Length [mm]	480
Rated (liquid-cooling)	1200N	Secondary side (magnet)			
Maximum	3600N				

Thrust Characteristics



Servo overload protection characteristics



Specifications

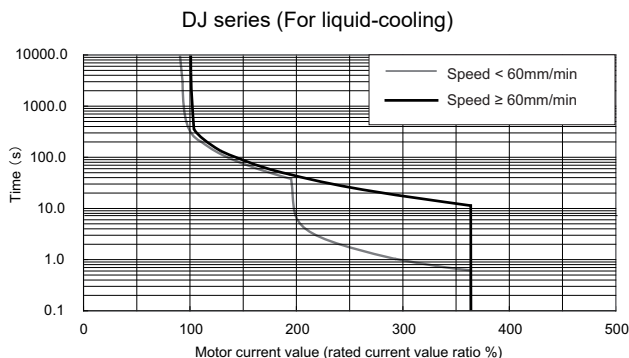
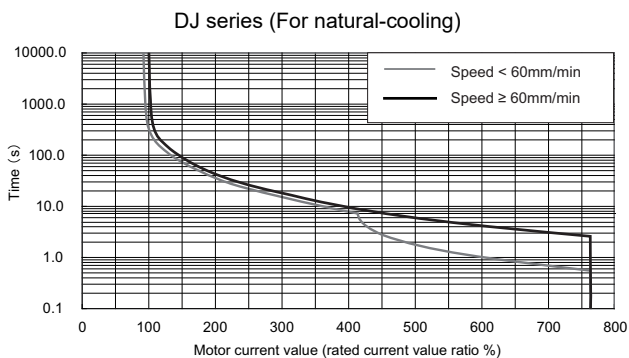
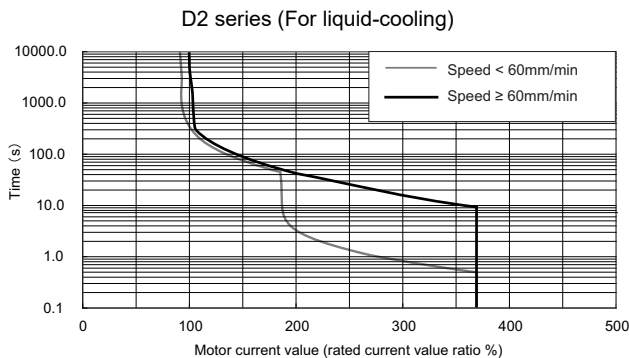
Item		Specifications	
		Standard	Drive with one unit and two motors
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-80	MDS-D2-V1-160
	2-axis type	MDS-D2-V2-8040 (L)	MDS-D2-V2-16080 (L)
		MDS-D2-V2-8080	MDS-D2-V2-160160
	3-axis type	-	-
	Regenerative resistor type	MDS-DJ-V1-80	-
Power facility capacity [kVA]		7.5	15.0
Current	Rated (natural-cooling) [Arms]	7.5	15.1
	Rated (liquid-cooling) [Arms]	15.7	31.4
	Maximum [Arms]	55.7	111.4
Cooling method		Natural-cooling, liquid-cooling	
Thrust	Rated (natural-cooling) [N]	600	1200
	Rated (liquid-cooling) [N]	1200	2400
	Maximum [N]	3600	7200
Maximum speed [m/s] (*2)		2.0	
Magnetic attraction force [N]		9000	
Mass	Primary side [kg]	14	14×2
	Secondary side [kg]	13.5 (480mm) 16.0 (576mm)	
Recommended load mass ratio		15 times linear servo motor primary side mass maximum	
Structure		Open (Degree of protection IP00)	

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above value may be limited by the maximum speed of the linear scale.

Environmental conditions

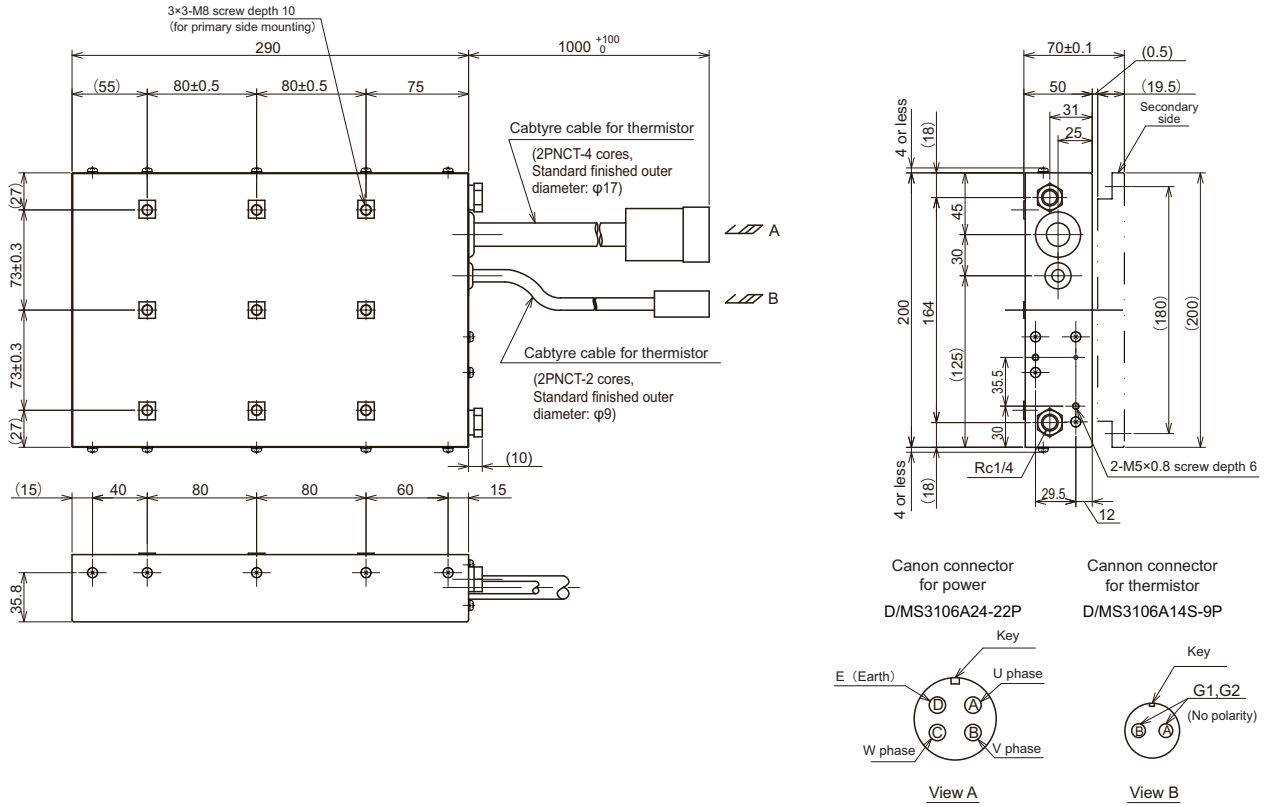
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to 55°C (with no freezing)
Ambient humidity	Operation: 80%RH or less (with no dew condensation) Storage: 90%RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Vibration	49m/s ² or less
Altitude	1000 meters or less above sea level



Outline dimension drawings [Unit : mm]

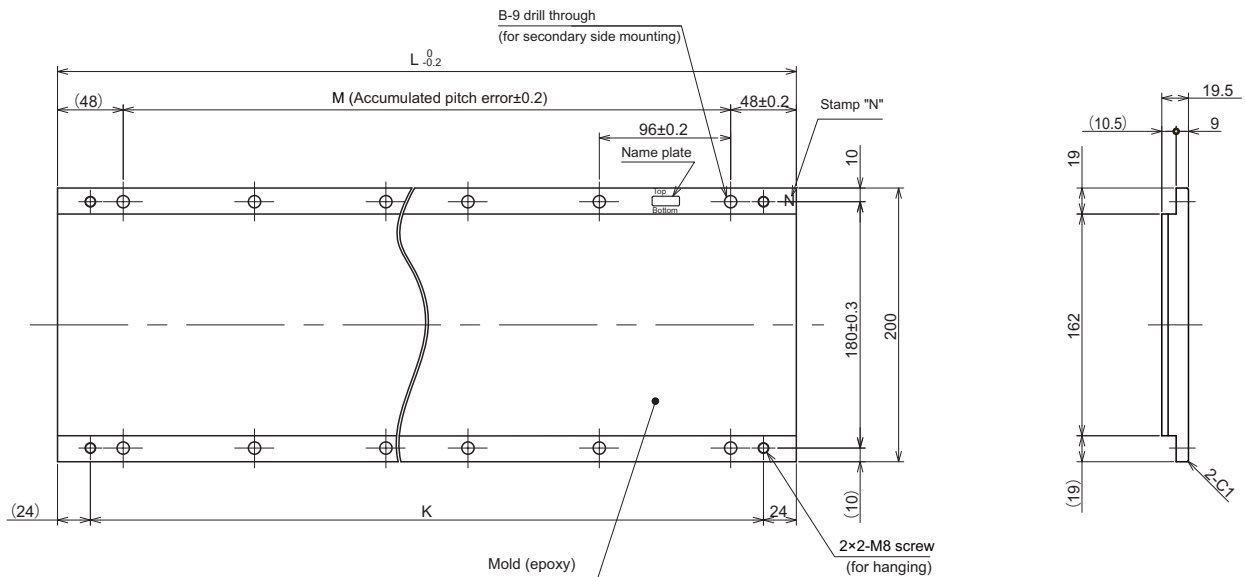
< Primary side >

LM-FP4B-12M-1WW0



< Secondary side >

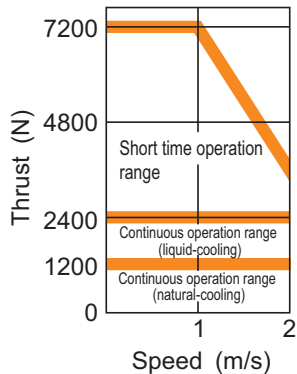
LM-FS40-□-1WW0



Model	Variable dimensions			
	L	M	K	B
LM-FS40-480-1WW0	480	4X96(=384)	432	5×2
LM-FS40-576-1WW0	576	5X96(=480)	528	6×2

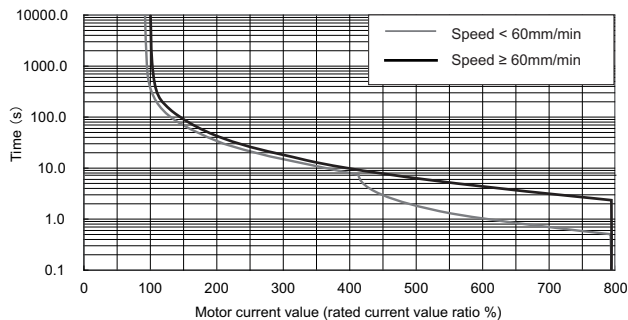
Thrust		Linear servo motor type		Explanation of type	
Rated (natural-cooling)	1200N	Primary side (coil)	LM-FP4D-24M -1WW0		
Rated (liquid-cooling)	2400N	Secondary side (magnet)			
Maximum	7200N				
			LM-FS40 -□-1WW0		576

Thrust Characteristics



Servo overload protection characteristics

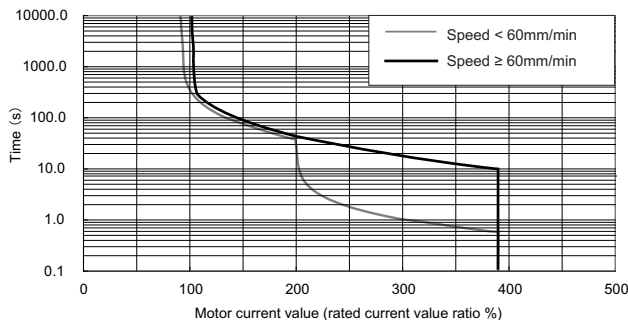
D2 series (For natural-cooling)



Specifications

Item	Specifications		
		Standard	Drive with one unit and two motors
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-160	MDS-D2-V1-320
	2-axis type	MDS-D2-V2-16080 (L) MDS-D2-V2-160160	-
	3-axis type	-	-
	Regenerative resistor type	-	-
Power facility capacity [kVA]		18	36.0
Current	Rated (natural-cooling) [Arms]	14.1	28.3
	Rated (liquid-cooling) [Arms]	28.6	57.3
	Maximum [Arms]	101.9	203.9
Cooling method		Natural-cooling, liquid-cooling	
Thrust	Rated (natural-cooling) [N]	1200	2400
	Rated (liquid-cooling) [N]	2400	4800
	Maximum [N]	7200	14400
Maximum speed [m/s] (*2)		2.0	
Magnetic attraction force [N]		18000	
Mass	Primary side [kg]	28	28×2
	Secondary side [kg]	13.5 (480mm) 16.0 (576mm)	
Recommended load mass ratio		15 times linear servo motor primary side mass maximum	
Structure		Open (Degree of protection IP00)	

D2 series (For liquid-cooling)



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above value may be limited by the maximum speed of the linear scale.

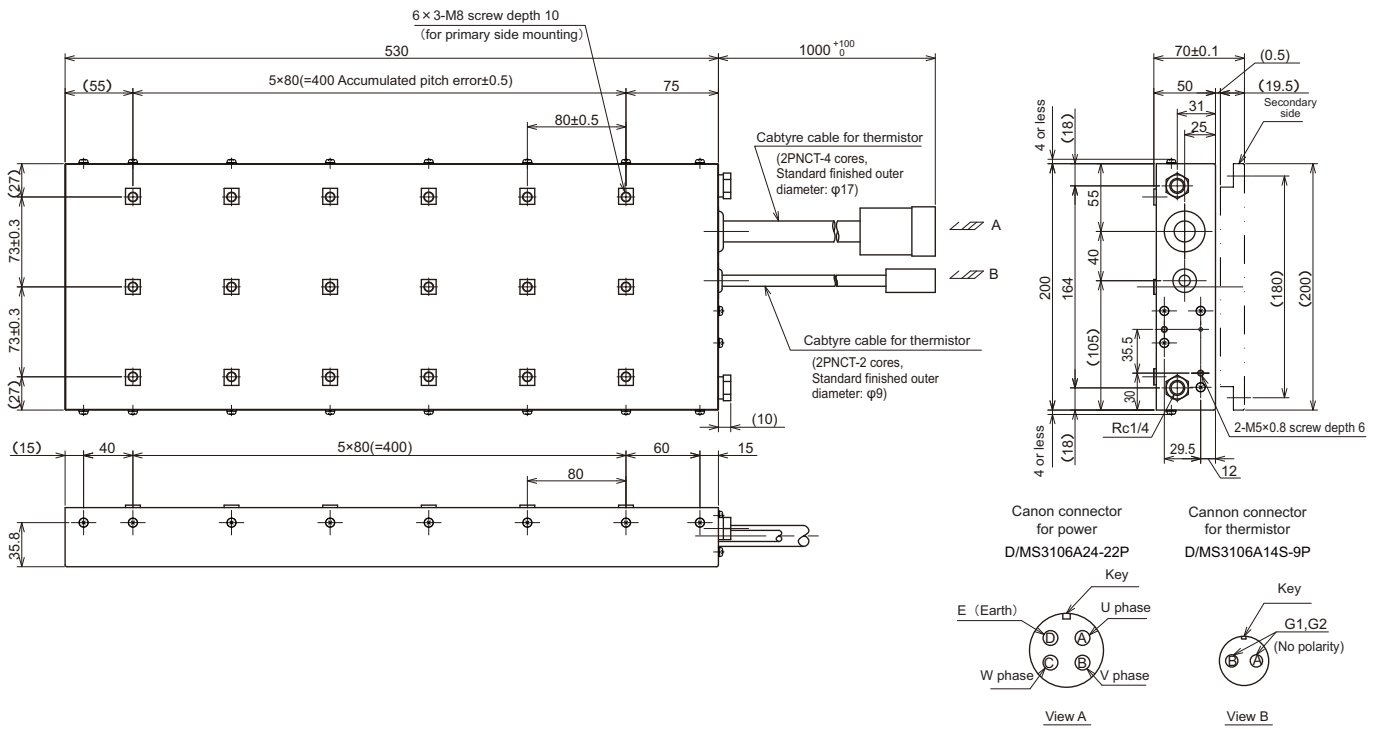
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to 55°C (with no freezing)
Ambient humidity	Operation: 80%RH or less (with no dew condensation) Storage: 90%RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Vibration	49m/s ² or less
Altitude	1000 meters or less above sea level

Outline dimension drawings [Unit : mm]

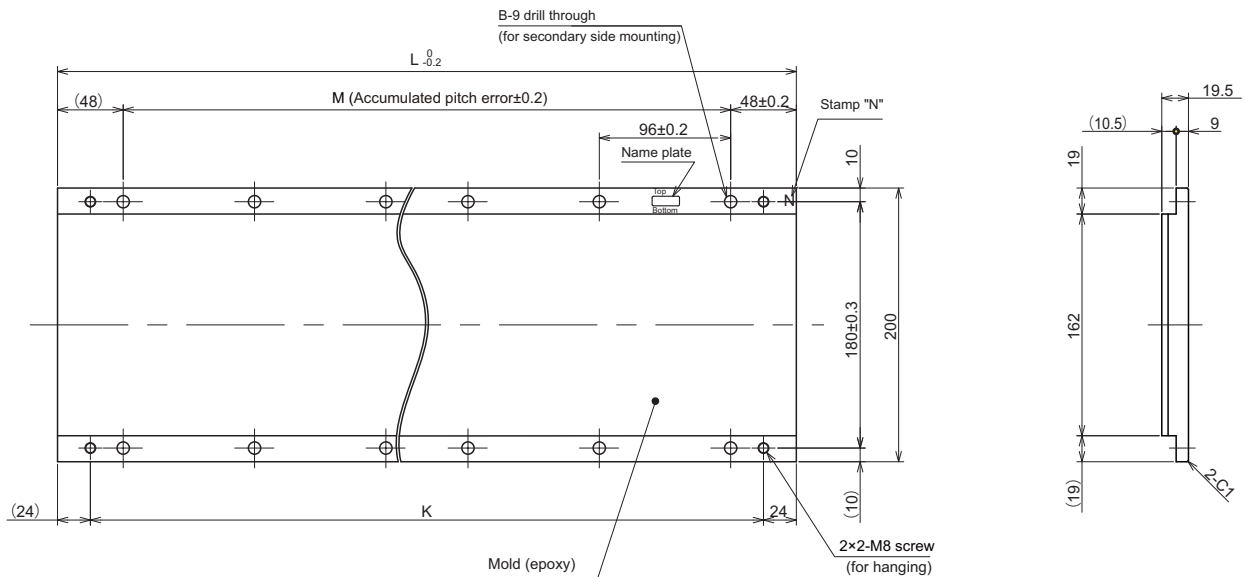
< Primary side >

LM-FP4D-24M-1WW0



< Secondary side >

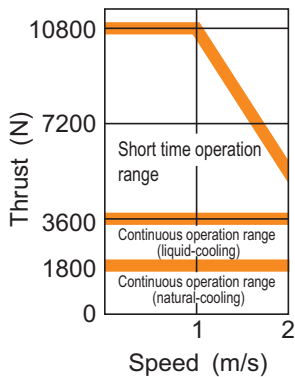
LM-FS40-□-1WW0



Model	Variable dimensions			
	L	M	K	B
LM-FS40-480-1WW0	480	4X96(=384)	432	5x2
LM-FS40-576-1WW0	576	5X96(=480)	528	6x2

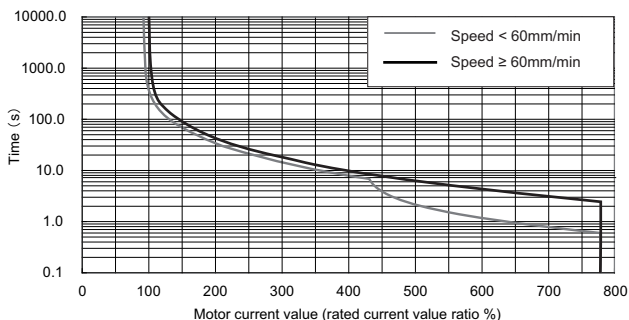
Thrust		Linear servo motor type		Explanation of type	
Rated (natural-cooling)	1800N	Primary side (coil)	LM-FP4F-36M -1WW0		
Rated (liquid-cooling)	3600N	Secondary side (magnet)			
Maximum	10800N				
			LM-FS40 -□-1WW0		576

Thrust Characteristics



Servo overload protection characteristics

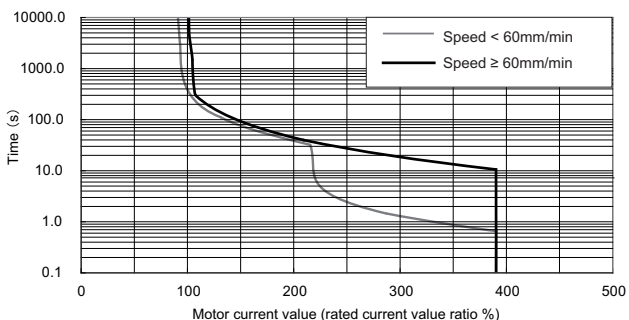
D2 series (For natural-cooling)



Specifications

Item		Specifications
		Standard
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-320
	2-axis type	-
	3-axis type	-
	Regenerative resistor type	-
Power facility capacity [kVA]		18
Current	Rated (natural-cooling) [Arms]	24.7
	Rated (liquid-cooling) [Arms]	49.2
	Maximum [Arms]	174.9
Cooling method		Natural-cooling, liquid-cooling
Thrust	Rated (natural-cooling) [N]	1800
	Rated (liquid-cooling) [N]	3600
	Maximum [N]	10800
Maximum speed [m/s] (*2)		2.0
Magnetic attraction force [N]		27000
Mass	Primary side [kg]	42
	Secondary side [kg]	13.5 (480mm) 16.0 (576mm)
Recommended load mass ratio		15 times linear servo motor primary side mass maximum
Structure		Open (Degree of protection IP00)

D2 series (For liquid-cooling)



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above value may be limited by the maximum speed of the linear scale.

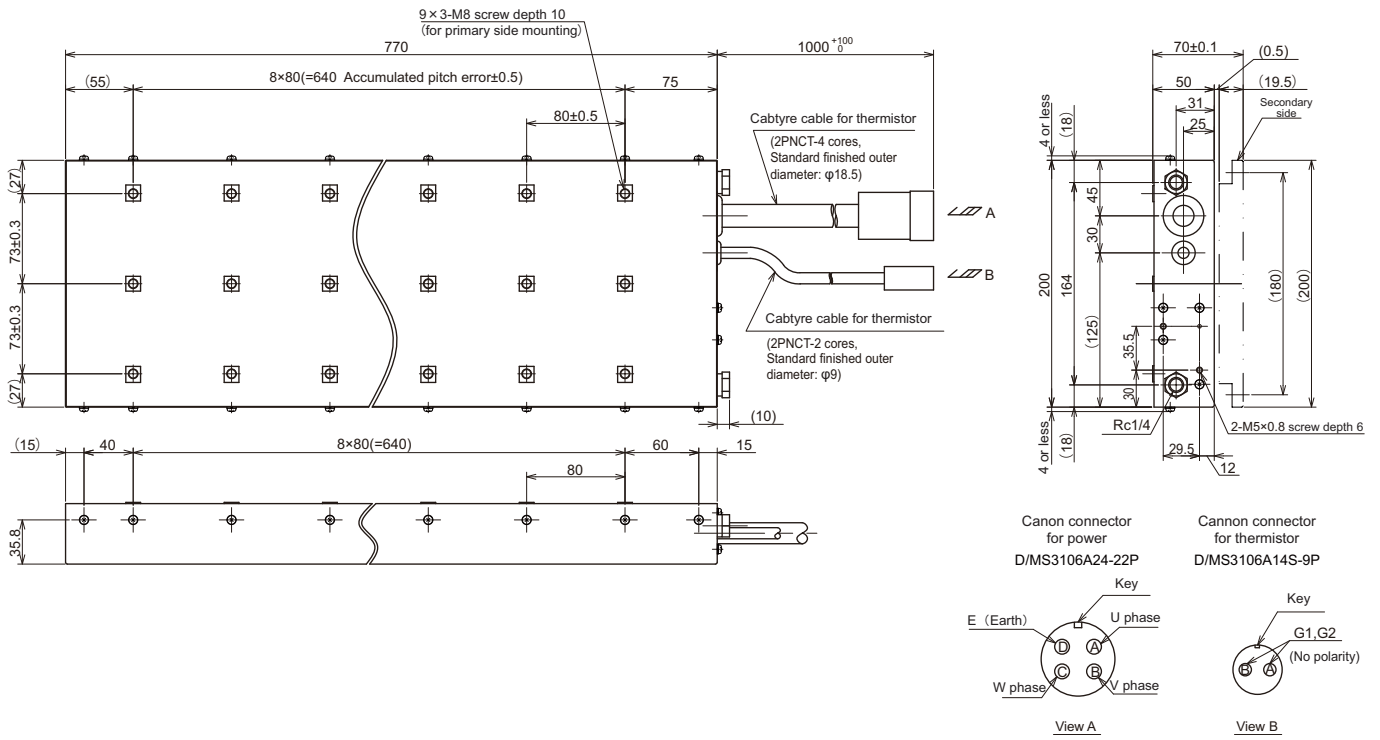
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to 55°C (with no freezing)
Ambient humidity	Operation: 80%RH or less (with no dew condensation) Storage: 90%RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Vibration	49m/s ² or less
Altitude	1000 meters or less above sea level

Outline dimension drawings [Unit : mm]

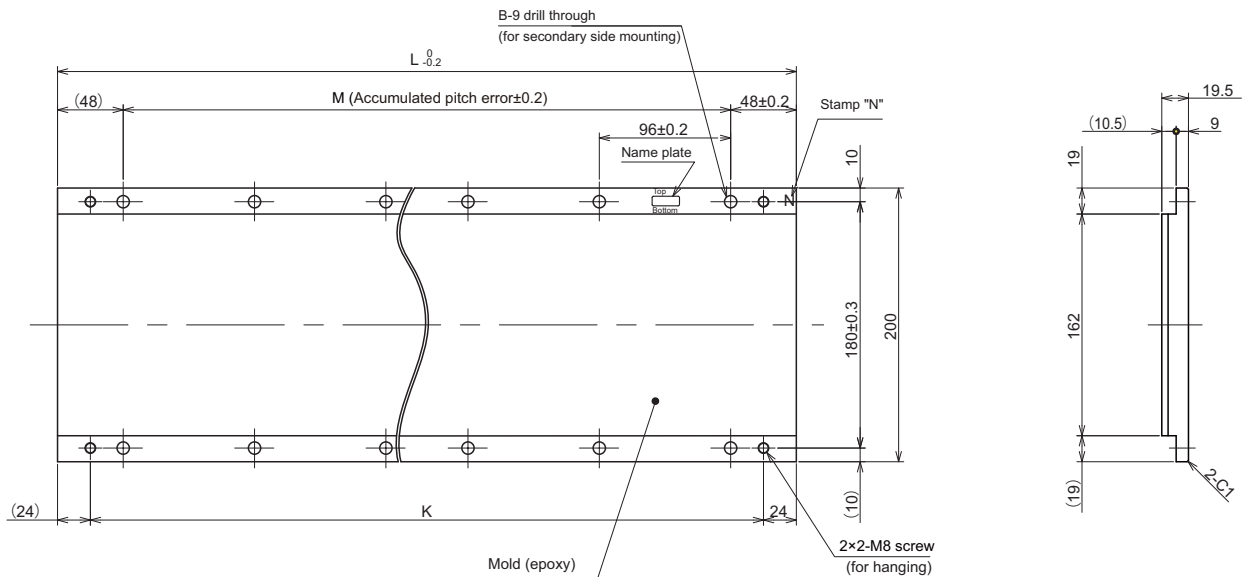
< Primary side >

LM-FP4F-36M-1WW0



< Secondary side >

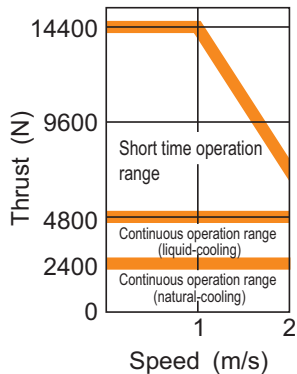
LM-FS40-□-1WW0



Model	Variable dimensions			
	L	M	K	B
LM-FS40-480-1WW0	480	4X96(=384)	432	5x2
LM-FS40-576-1WW0	576	5X96(=480)	528	6x2

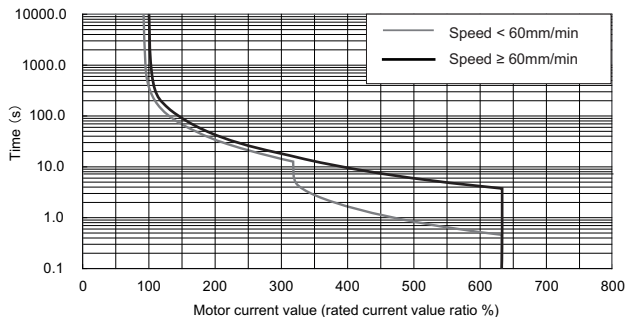
Thrust		Linear servo motor type		Explanation of type	
Rated (natural-cooling)	2400N	Primary side (coil)	LM-FP4H-48M -1WW0		
Rated (liquid-cooling)	4800N	Secondary side (magnet)			
Maximum	14400N				
			LM-FS40 -□-1WW0		576

Thrust Characteristics

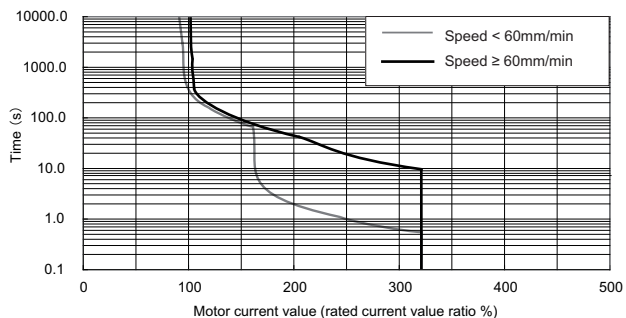


Servo overload protection characteristics

D2 series (For natural-cooling)



D2 series (For liquid-cooling)



Specifications

Item		Specifications
		Standard
Compatible drive unit (*1)	1-axis type	MDS-D2-V1-320
	2-axis type	-
	3-axis type	-
	Regenerative resistor type	-
Power facility capacity [kVA]		18
Current	Rated (natural-cooling) [Arms]	33.6
	Rated (liquid-cooling) [Arms]	65.8
	Maximum [Arms]	237.4
Cooling method		Natural-cooling, liquid-cooling
Thrust	Rated (natural-cooling) [N]	2400
	Rated (liquid-cooling) [N]	4800
	Maximum [N]	14400
Maximum speed [m/s] (*2)		2.0
Magnetic attraction force [N]		36000
Mass	Primary side [kg]	56
	Secondary side [kg]	13.5 (480mm) 16.0 (576mm)
Recommended load mass ratio		15 times linear servo motor primary side mass maximum
Structure		Open (Degree of protection IP00)

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above value may be limited by the maximum speed of the linear scale.

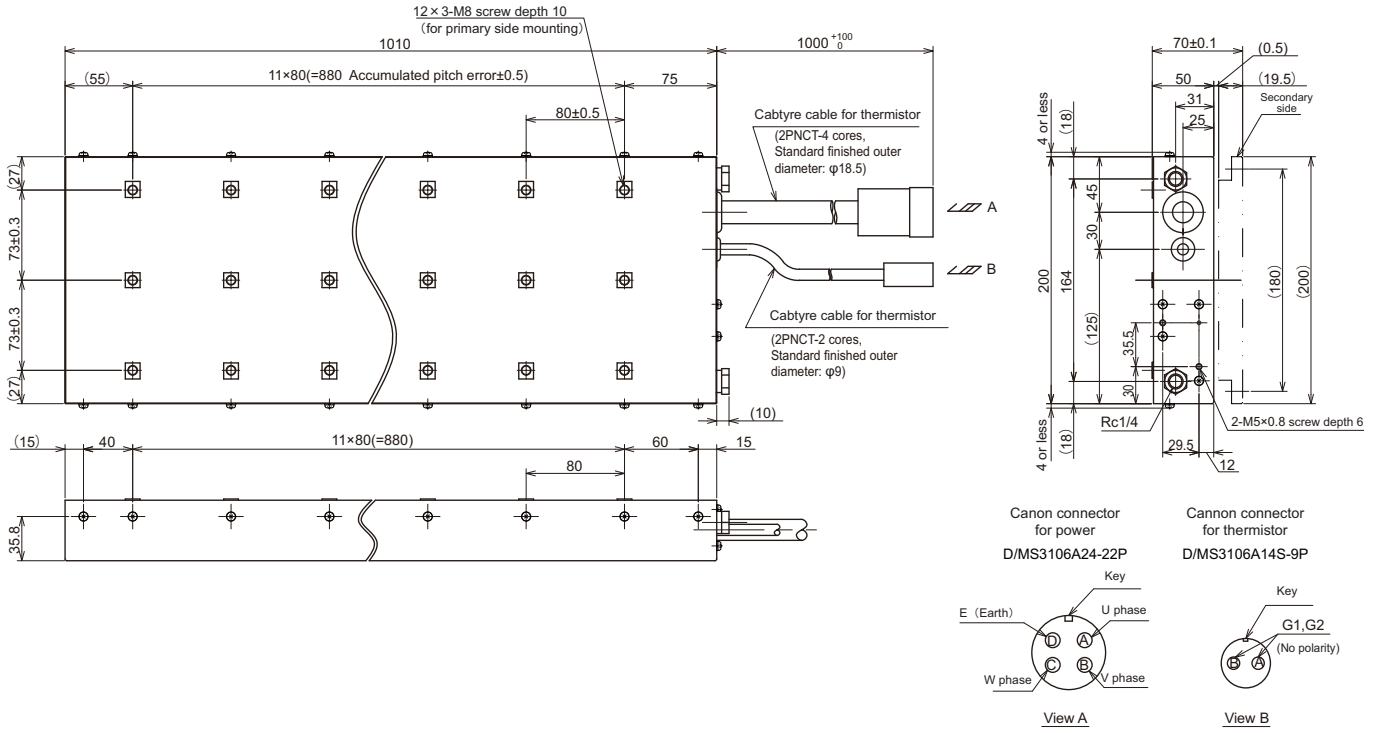
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to 55°C (with no freezing)
Ambient humidity	Operation: 80%RH or less (with no dew condensation) Storage: 90%RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Vibration	49m/s ² or less
Altitude	1000 meters or less above sea level

Outline dimension drawings [Unit : mm]

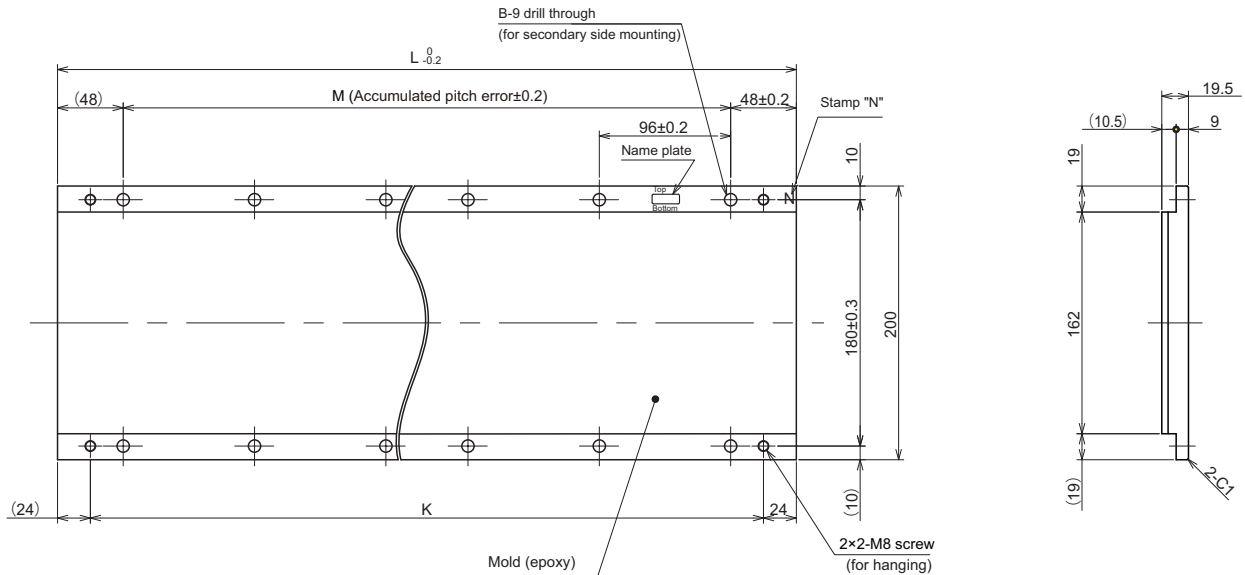
< Primary side >

LM-FP4H-48M-1WW0



< Secondary side >

LM-FS40-□-1WW0



Model	Variable dimensions			
	L	M	K	B
LM-FS40-480-1WW0	480	4X96(=384)	432	5×2
LM-FS40-576-1WW0	576	5X96(=480)	528	6×2

Spindle Motor

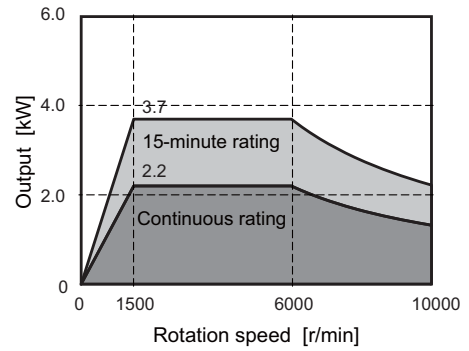
Base rotation speed 1500r/min series

SJ-D3.7/100-01

Specifications

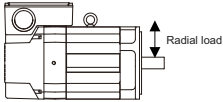
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-80
	2-axis type	MDS-D2-SP2-8040 (L) MDS-D2-SP2-8080 MDS-D2-SP2-16080S (M)
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-80
Output capacity[kW]	Continuous rated output	2.2
	Short time rated output	3.7 (15-minute rating)
	Standard output during acceleration/deceleration	3.7
	Actual acceleration/deceleration output(*3)	4.4
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	10000	
Frame No.	B90	
Continuous rated torque[N·m]	14.0	
GD ² [kg·m ²]	0.030	
Inertia[kg·m ²]	0.0074	
Tolerable radial load(*2) [N]	980	
Cooling fan	Input voltage	3-phase 200V
Degree of protection	IP54 (The shaft-through portion is excluded.)	
Mass[kg]	26	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)

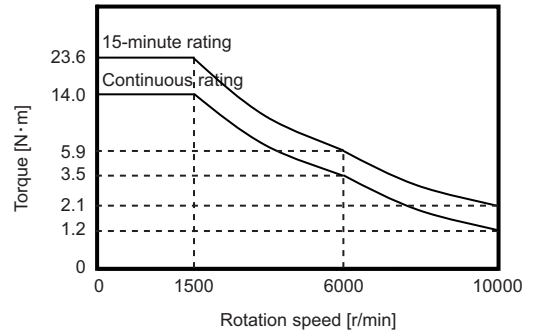


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

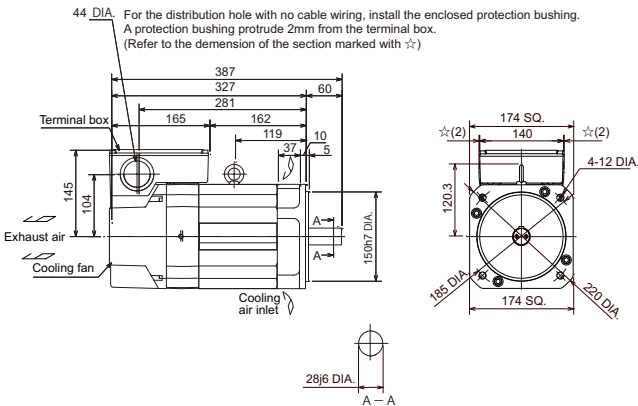


Environmental conditions

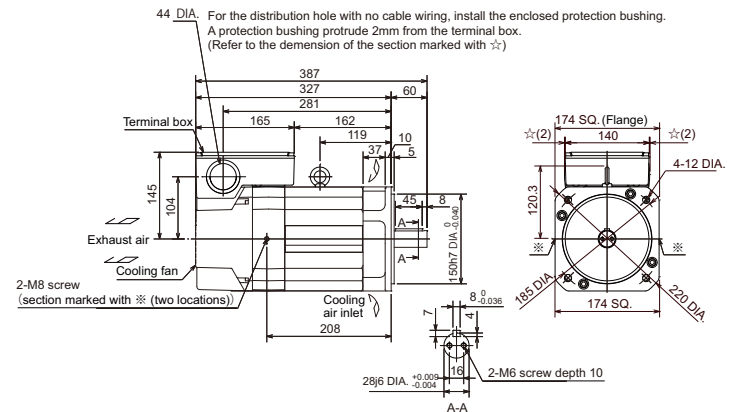
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-D3.7/100-01 with standard flange



SJ-D3.7/100-01-C with standard flange (with key)



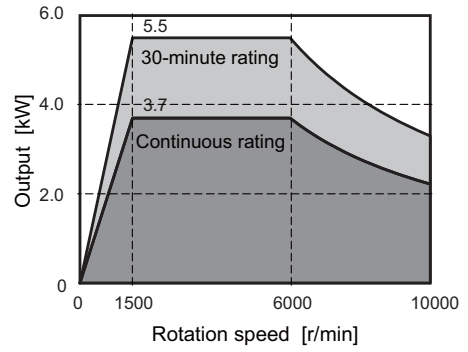
Base rotation speed 1500r/min series

SJ-D5.5/100-01

Specifications

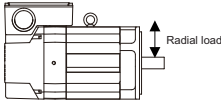
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-80
	2-axis type	MDS-D2-SP2-8040 (L) MDS-D2-SP2-8080 MDS-D2-SP2-16080S (M)
	Multi axis integrated type	MDS-DM2-SPV2-10080 MDS-DM2-SPV3-10080
	Regenerative resistor type	MDS-DJ-SP-100
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5 (30-minute rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	10000	
Frame No.	D90	
Continuous rated torque[N·m]	23.6	
GD ² [kg·m ²]	0.053	
Inertia[kg·m ²]	0.013	
Tolerable radial load(*2) [N]	1470	
Cooling fan	Input voltage	3-phase 200V
Degree of protection		IP54 (The shaft-through portion is excluded.)
Mass[kg]		39
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)

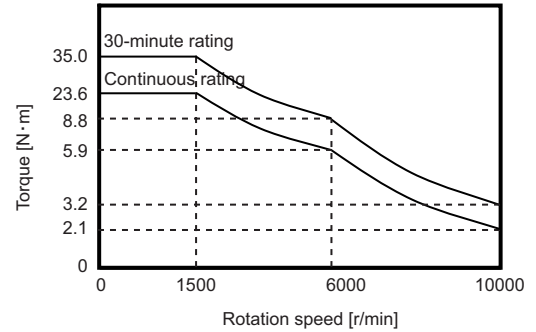


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

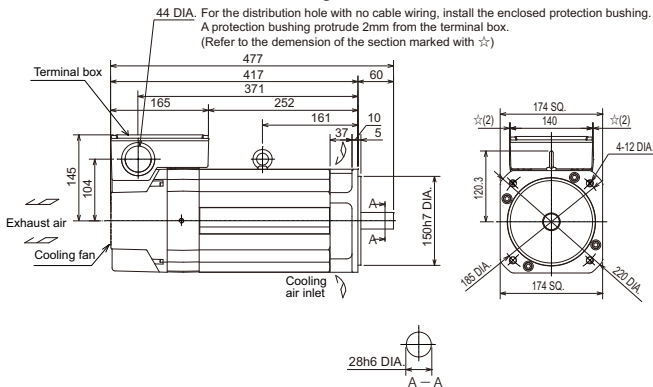


Environmental conditions

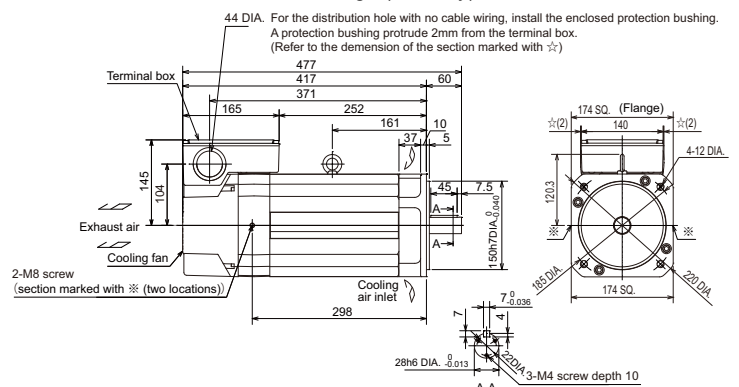
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-D5.5/100-01 with standard flange



SJ-D5.5/100-01-C with standard flange (with key)



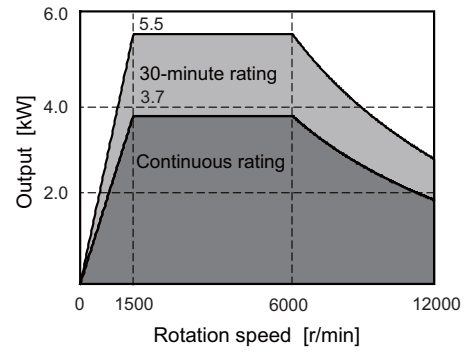
Base rotation speed 1500r/min series

SJ-D5.5/120-01

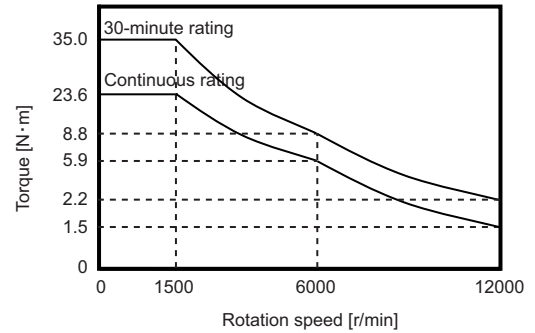
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-80
	2-axis type	MDS-D2-SP2-8040 (L)
		MDS-D2-SP2-8080
	Multi axis integrated type	MDS-D2-SP2-16080S (M)
Regenerative resistor type	MDS-DM2-SPV2-10080	
	MDS-DM2-SPV3-10080	
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5 (30-minute rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	12000	
Frame No.	D90	
Continuous rated torque[N·m]	23.6	
GD ² [kg·m ²]	0.053	
Inertia[kg·m ²]	0.013	
Tolerable radial load(*2) [N]	1470	
Cooling fan	Input voltage	3-phase 200V
Degree of protection	IP54	
	(The shaft-through portion is excluded.)	
Mass[kg]	39	
Heat-resistant class	155(F)	

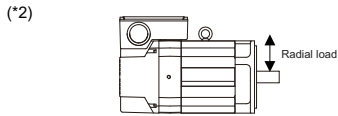
Output characteristics



Torque at steady state-rotation speed characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

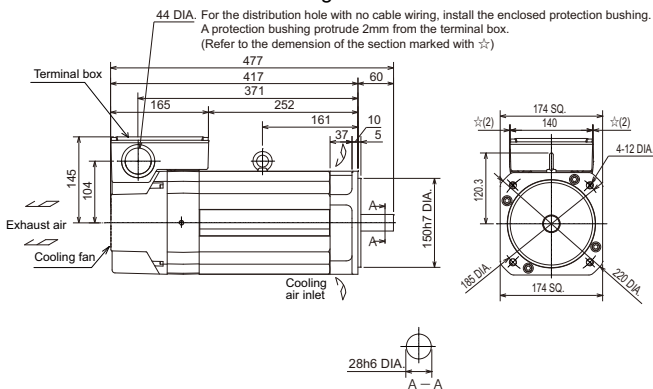
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

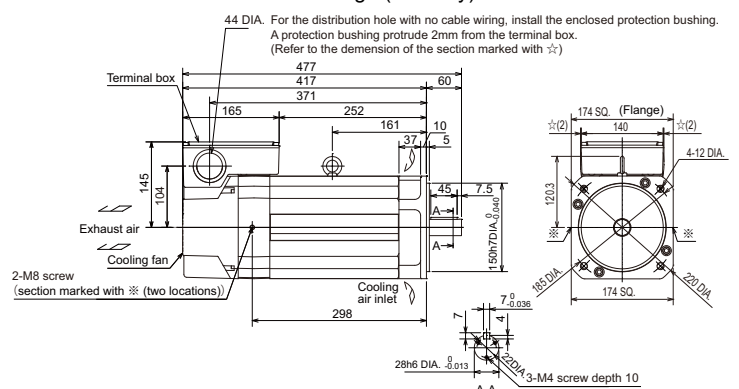
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-D5.5/120-01 with standard flange



SJ-D5.5/120-01-C with standard flange (with key)

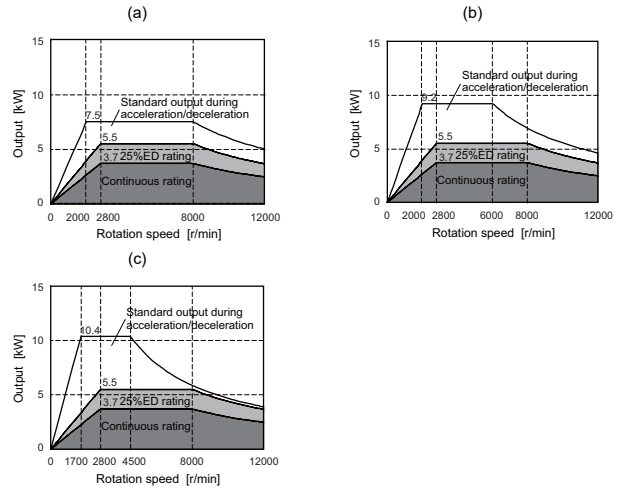


Base rotation speed 1500r/min series
SJ-D5.5/120-02

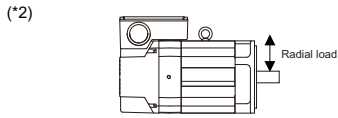
Specifications

Item	Specifications(a)	Specifications(b)	Specifications(c)	
Compatible drive unit (*1)	1-axis type MDS-D2-SP-	-	160	
	2-axis type MDS-D2-SP2-	-	16080S(L)	
	Multi axis integrated type	MDS-DM2-SPV2-10080 MDS-DM2-SPV3-10080	MDS-DM2-SPV2-16080 MDS-DM2-SPV3-16080	MDS-DM2-SPV2-20080 MDS-DM2-SPV3-20080
Output capacity[kW]	Regenerative resistor type	-	-	
	Continuous rated output	3.7		
	Short time rated output	5.5 (25%ED rating)		
	Standard output during acceleration/deceleration	7.5	9.2	10.4
Actual acceleration/deceleration output(*3)	9	11.0	12.5	
Base rotation speed[r/min]	2800			
Maximum rotation speed[r/min]	12000			
Frame No.	B90			
Continuous rated torque[N·m]	12.6			
GD ² [kg·m ²]	0.030			
Inertia[kg·m ²]	0.0074			
Tolerable radial load(*2) [N]	960			
Cooling fan	Input voltage			
Degree of protection	3-phase 200V			
	IP54 (The shaft-through portion is excluded.)			
Mass[kg]	26			
Heat-resistant class	155(F)			

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

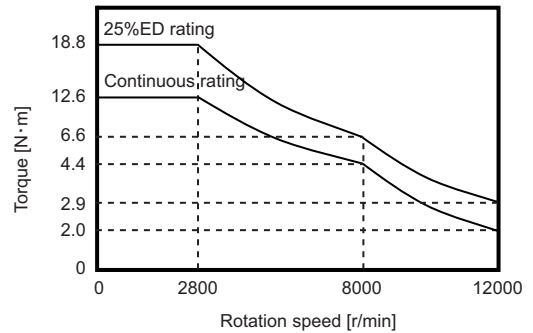


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

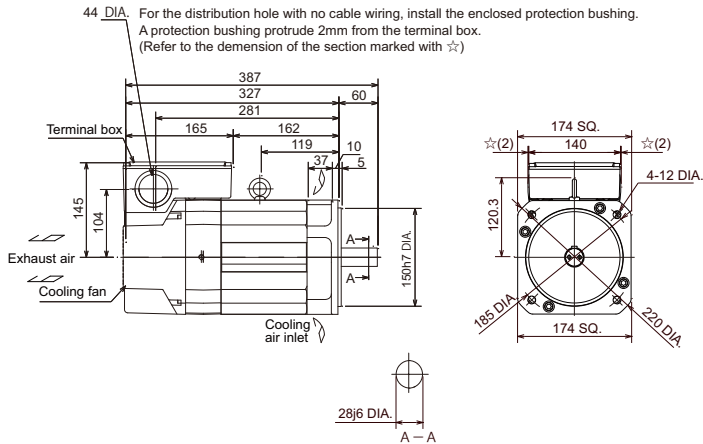


Environmental conditions

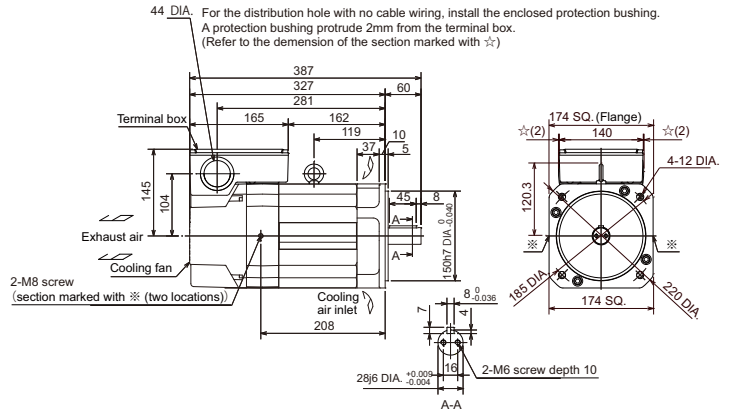
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-D5.5/120-02 with standard flange



SJ-D5.5/120-02-C with standard flange (with key)

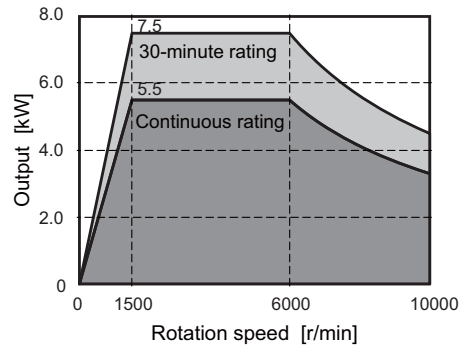


Base rotation speed 1500r/min series
SJ-D7.5/100-01

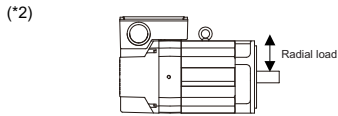
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L)
	Multi axis integrated type	MDS-DM2-SPV2-10080
		MDS-DM2-SPV3-10080
Output capacity[kW]	Regenerative resistor type	MDS-DJ-SP-120
	Continuous rated output	5.5
	Short time rated output	7.5 (15-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	10000	
Frame No.	A112	
Continuous rated torque[N·m]	35.0	
GD ² [kg·m ²]	0.094	
Inertia[kg·m ²]	0.023	
Tolerable radial load(*2) [N]	1960	
Cooling fan	Input voltage	3-phase 200V
Degree of protection	IP54 (The shaft-through portion is excluded.)	
Mass[kg]	53	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

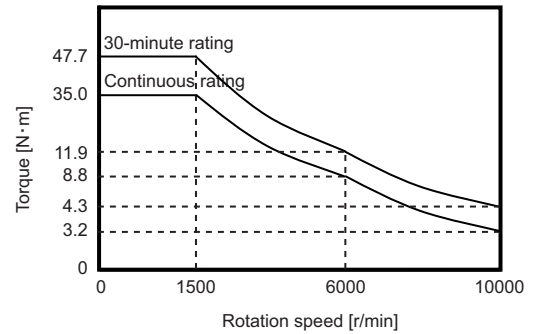


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

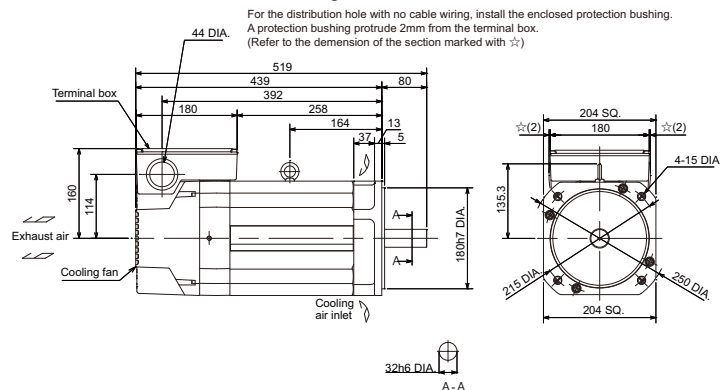


Environmental conditions

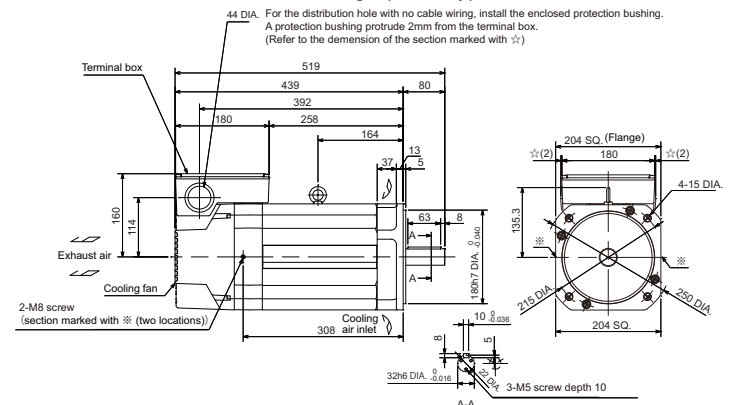
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-D7.5/100-01 with standard flange



SJ-D7.5/100-01-C with standard flange (with key)

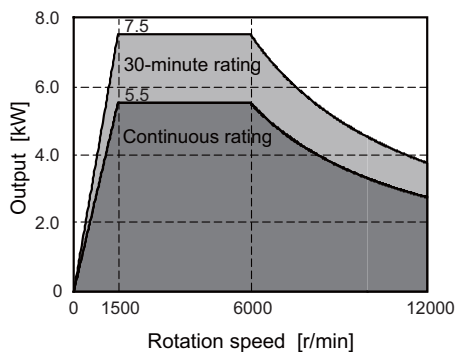


Base rotation speed 1500r/min series
SJ-D7.5/120-01

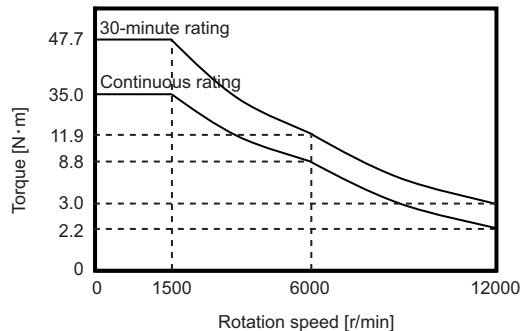
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L)
	Multi axis integrated type	MDS-DM2-SPV2-10080
		MDS-DM2-SPV3-10080
Output capacity[kW]	Regenerative resistor type	MDS-DJ-SP-120
	Continuous rated output	5.5
	Short time rated output	7.5 (15-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	12000	
Frame No.	A112	
Continuous rated torque[N·m]	35.0	
GD ² [kg·m ²]	0.094	
Inertia[kg·m ²]	0.023	
Tolerable radial load(*2) [N]	1960	
Cooling fan	Input voltage	3-phase 200V
Degree of protection	IP54 (The shaft-through portion is excluded.)	
Mass[kg]	53	
Heat-resistant class	155(F)	

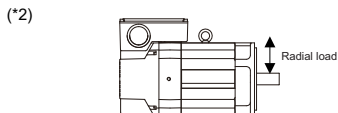
Output characteristics



Torque at steady state-rotation speed characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

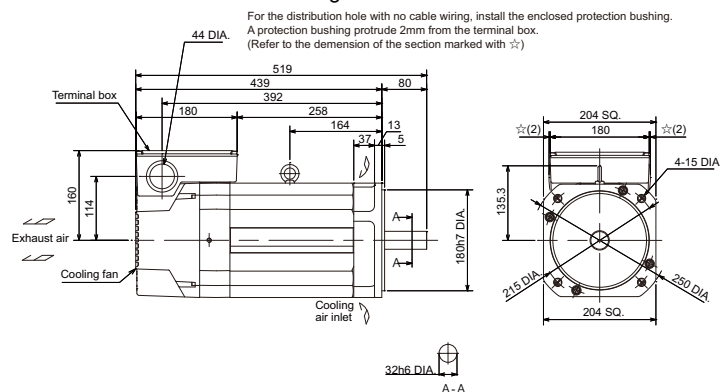
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

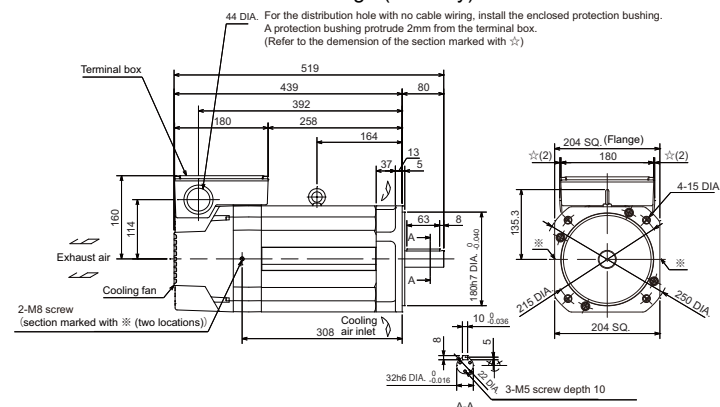
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-D7.5/120-01 with standard flange



SJ-D7.5/120-01-C with standard flange (with key)



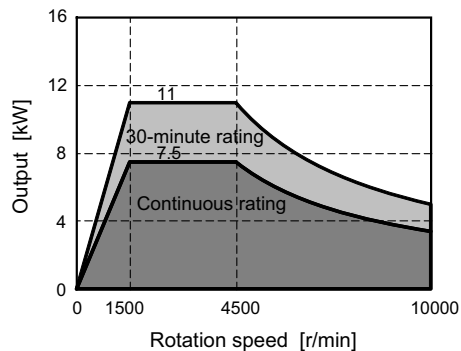
Base rotation speed 1500r/min series

SJ-D11/100-01

Specifications

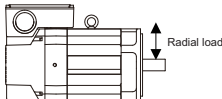
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L)
	Multi axis integrated type	MDS-DM2-SPV2-16080
		MDS-DM2-SPV3-16080
Output capacity[kW]	Regenerative resistor type	MDS-DJ-SP-160
	Continuous rated output	7.5
	Short time rated output	11 (30-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	10000	
Frame No.	B112	
Continuous rated torque[N·m]	47.7	
GD ² [kg·m ²]	0.122	
Inertia[kg·m ²]	0.031	
Tolerable radial load(*2) [N]	1960	
Cooling fan	Input voltage	3-phase 200V
Degree of protection		IP54 (The shaft-through portion is excluded.)
Mass[kg]		64
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)

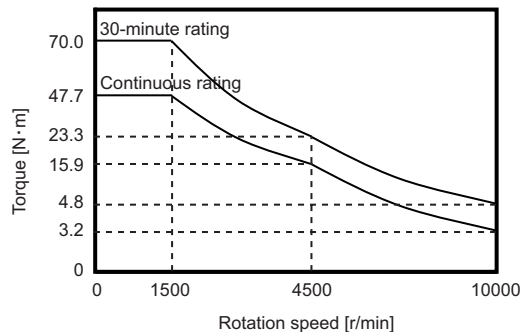


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

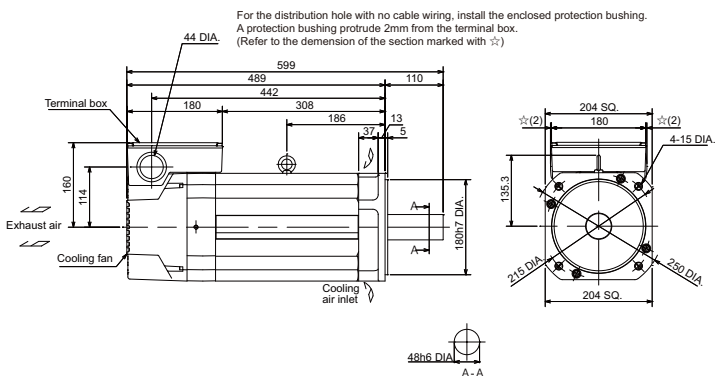


Environmental conditions

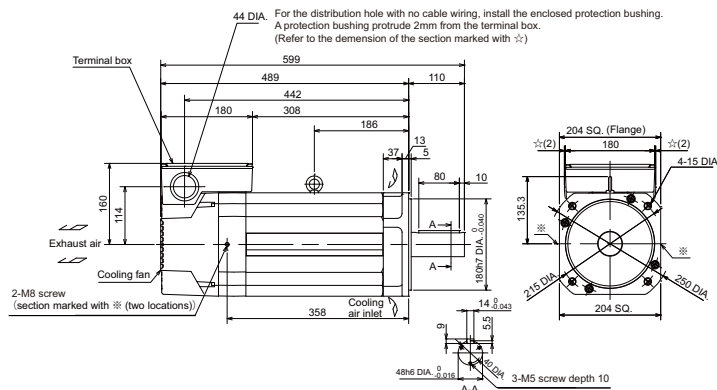
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-D11/100-01 with standard flange



SJ-D11/100-01-C with standard flange (with key)



Hollow shaft series

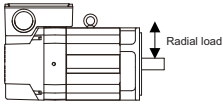
SJ-D5.5/120-02T-S

Specifications

Item	Specifications(a)	Specifications(b)	Specifications(c)	
Compatible drive unit (*1)	1-axis type MDS-D2-SP-	-	160	
	2-axis type MDS-D2-SP2-	-	16080S(L)	
	Multi axis integrated type	MDS-DM2-SPV2-10080 MDS-DM2-SPV3-10080	MDS-DM2-SPV2-16080 MDS-DM2-SPV3-16080	MDS-DM2-SPV2-20080 MDS-DM2-SPV3-20080
Output capacity[kW]	Continuous rated output	3.7		
	Short time rated output	5.5 (25%ED rating)		
	Standard output during acceleration/deceleration	7.5	9.2	10.4
	Actual acceleration/deceleration output(*3)	9	11.0	12.5
Base rotation speed[r/min]	2800			
Maximum rotation speed[r/min]	12000			
Frame No.	B90			
Continuous rated torque[N·m]	12.6			
GD ² [kg·m ²]	0.030			
Inertia[kg·m ²]	0.0075			
Tolerable radial load(*2) [N]	Not permitted (*4)			
Cooling fan	Input voltage			
Degree of protection	IP54 (The shaft-through portion is excluded.)			
Mass[kg]	24			
Heat-resistant class	155(F)			

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) The motor cannot be driven when a pulley or gear is directly installed on the shaft.

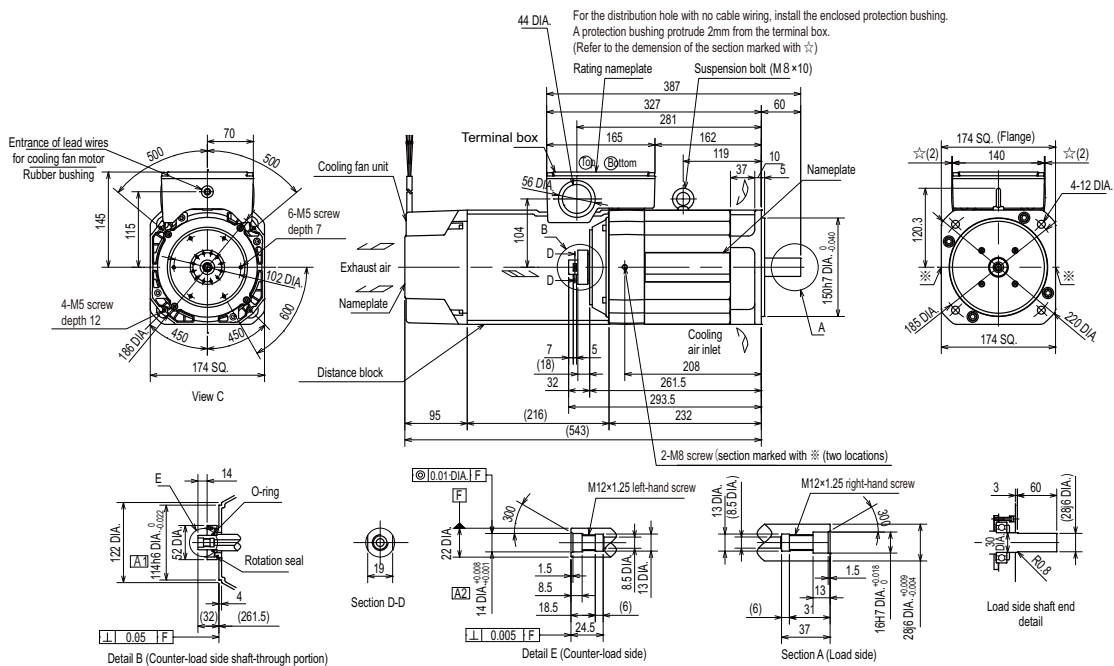
(*5) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

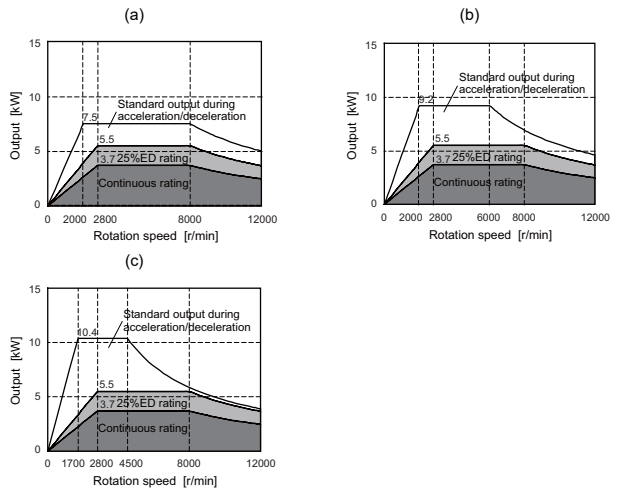
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level, Transportation: 10000 meters or less above sea level

Outline dimension drawings [Unit : mm]

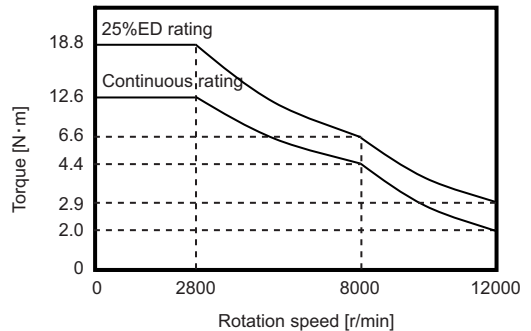
SJ-D5.5/120-02T-S with standard flange



Output characteristics



Torque at steady state-rotation speed characteristics

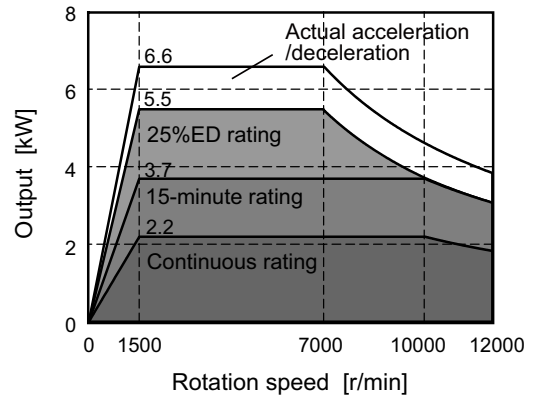


Base rotation speed 1500r/min series
SJ-DG3.7/120-03T

Specifications

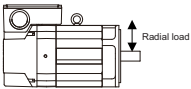
Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
	Base rotation speed[r/min]
Maximum rotation speed[r/min]	
Frame No.	
Continuous rated torque[N·m]	
GD ² [kg·m ²]	
Inertia[kg·m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	
Degree of protection	
Mass[kg]	
Heat-resistant class	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

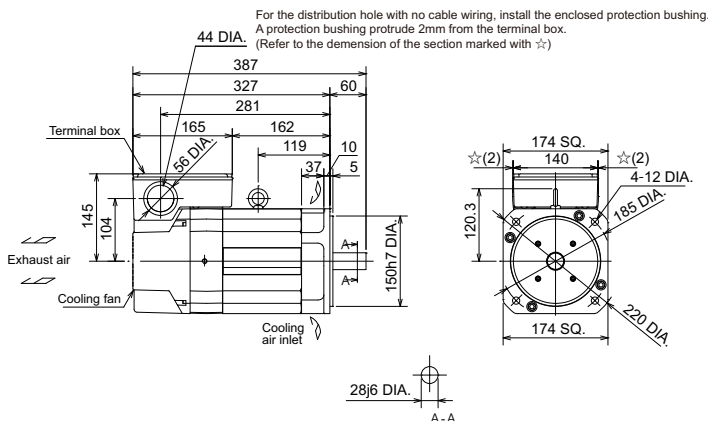
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

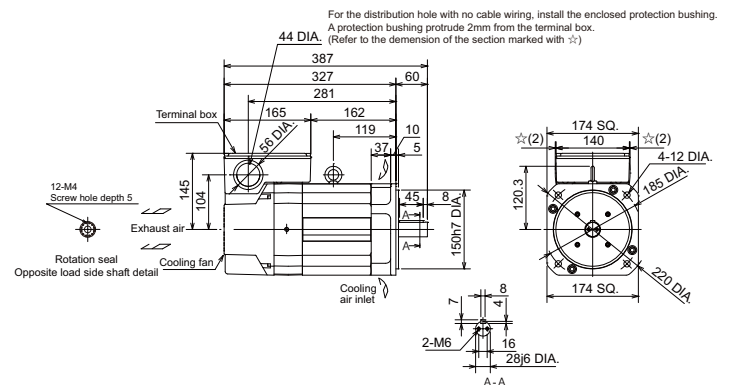
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DG3.7/120-03T with standard flange



SJ-DG3.7/120-03T-C with standard flange (with key)

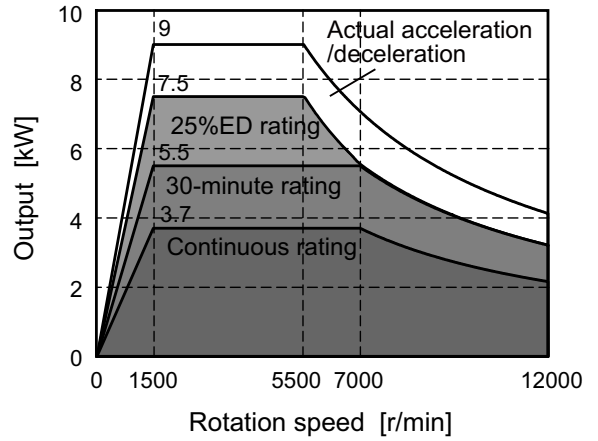


Base rotation speed 1500r/min series
SJ-DG5.5/120-04T

Specifications

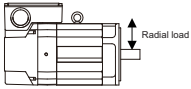
Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
	Base rotation speed[r/min]
Maximum rotation speed[r/min]	
Frame No.	
Continuous rated torque[N·m]	
GD ² [kg·m ²]	
Inertia[kg·m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	
Degree of protection	
Mass[kg]	
Heat-resistant class	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

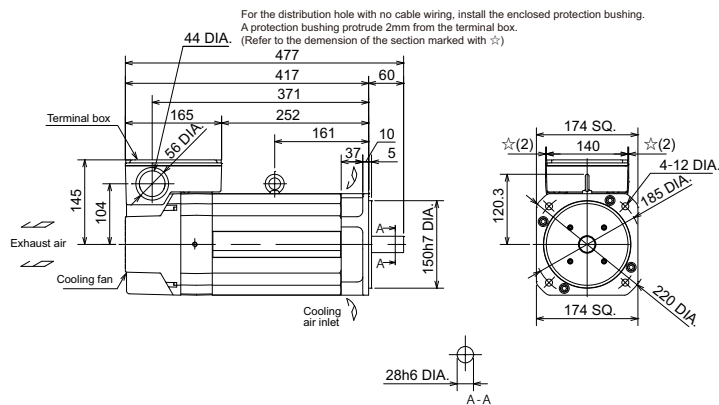
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

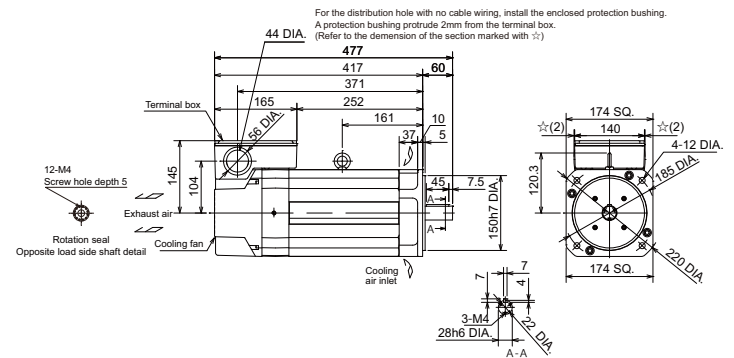
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DG5.5/120-04T with standard flange



SJ-DG5.5/120-04T-C with standard flange (with key)

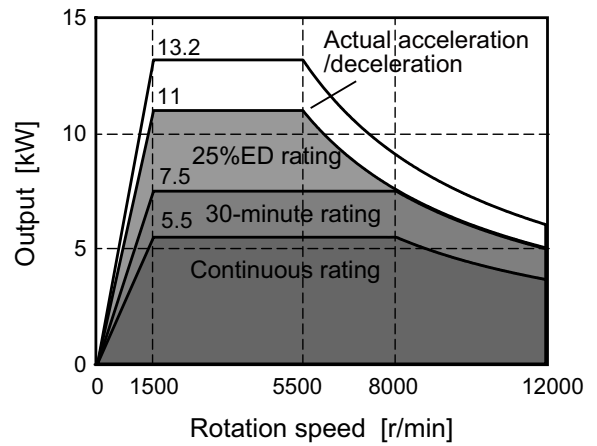


Base rotation speed 1500r/min series
SJ-DG7.5/120-05T

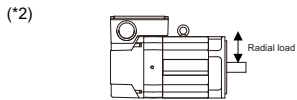
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
	Base rotation speed[r/min]
Maximum rotation speed[r/min]	
Frame No.	
Continuous rated torque[N·m]	
GD ² [kg·m ²]	
Inertia[kg·m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	
Degree of protection	
Mass[kg]	
Heat-resistant class	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

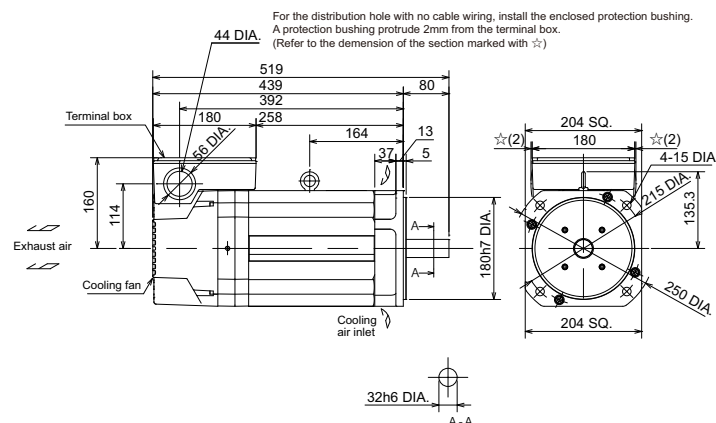
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

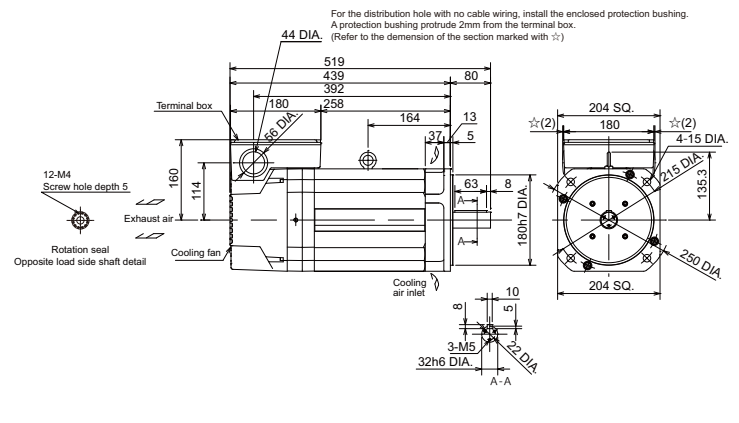
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DG7.5/120-05T with standard flange



SJ-DG7.5/120-05T-C with standard flange (with key)

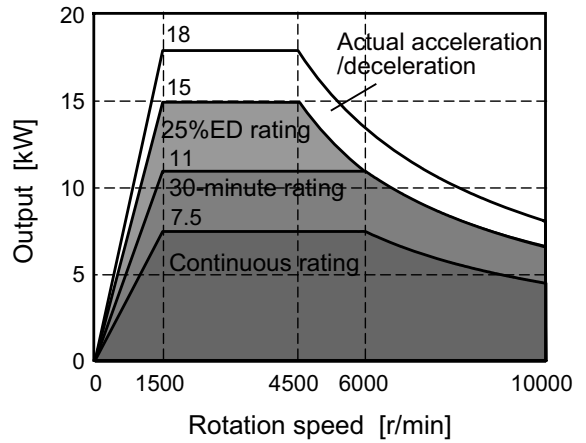


Base rotation speed 1500r/min series
SJ-DG11/100-03T

Specifications

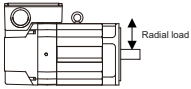
Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
	Regenerative resistor type
Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	10000
Frame No.	B112
Continuous rated torque[N·m]	47.7
GD ² [kg·m ²]	0.12
Inertia[kg·m ²]	0.029
Tolerable radial load(*2) [N]	1960
Cooling fan	3-phase 200V
Degree of protection	IP54 (The shaft-through portion and rotation seal portion are excluded.)
Mass[kg]	61
Heat-resistant class	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

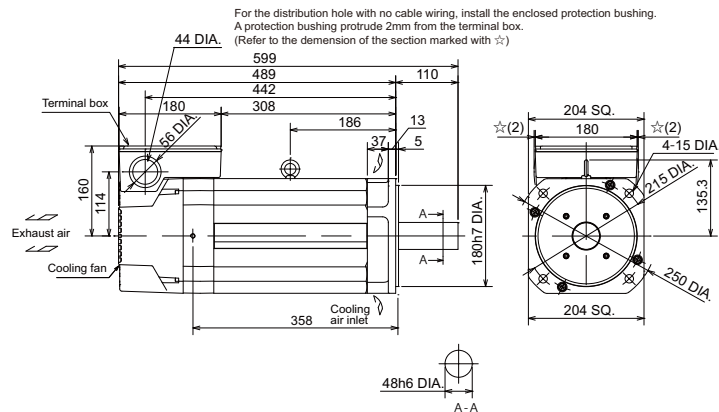
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

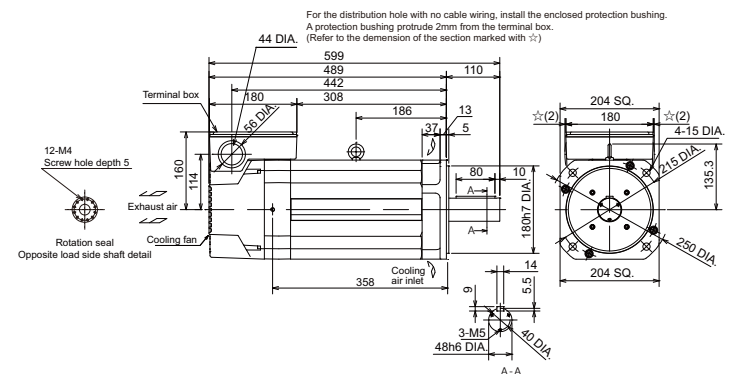
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DG11/100-03T with standard flange



SJ-DG11/100-03T-C with standard flange (with key)

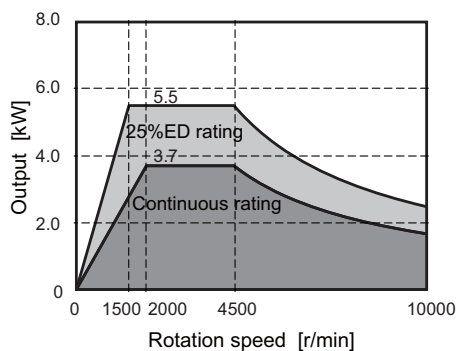


Base rotation speed 1500r/min series
SJ-DJ5.5/100-01

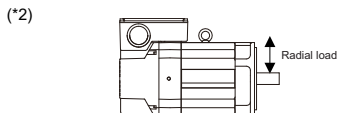
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-80
	2-axis type	MDS-D2-SP2-8040 (L) MDS-D2-SP2-8080 MDS-D2-SP2-16080S (M)
	Multi axis integrated type	MDS-DM2-SPV2-10080 MDS-DM2-SPV3-10080
	Regenerative resistor type	MDS-DJ-SP-100
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5 (25%ED rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
Base rotation speed	Continuous rating[r/min]	2000
	Short time rating[r/min]	1500
Maximum rotation speed[r/min]		10000
Frame No.		B90
Continuous rated torque[N·m]		17.7
GD ² [kg·m ²]		0.030
Inertia[kg·m ²]		0.0074
Tolerable radial load(*2) [N]		980
Cooling fan	Input voltage	3-phase 200V
Degree of protection		IP54 (The shaft-through portion is excluded.)
Mass[kg]		26
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

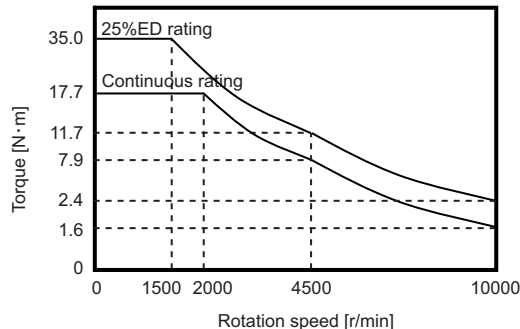


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

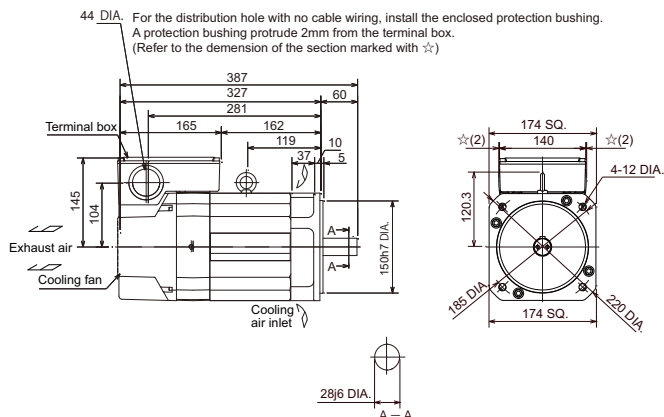


Environmental conditions

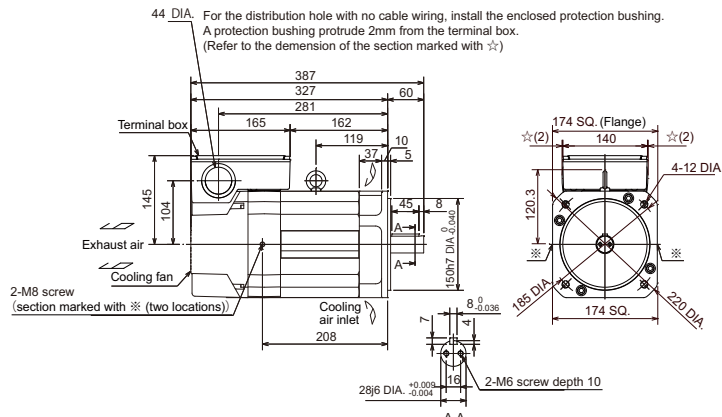
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DJ5.5/100-01 with standard flange



SJ-DJ5.5/100-01-C with standard flange (with key)

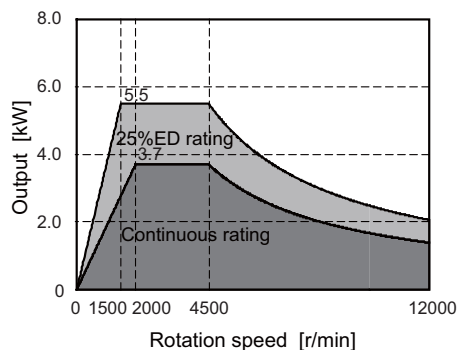


Base rotation speed 1500r/min series
SJ-DJ5.5/120-01

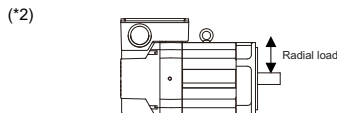
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-80
	2-axis type	MDS-D2-SP2-8040 (L) MDS-D2-SP2-8080 MDS-D2-SP2-16080S (M)
	Multi axis integrated type	MDS-DM2-SPV2-10080 MDS-DM2-SPV3-10080
	Regenerative resistor type	MDS-DJ-SP-100
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5 (25%ED rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
	Base rotation speed	Continuous rating[r/min] Short time rating[r/min]
Maximum rotation speed[r/min]	12000	
Frame No.	B90	
Continuous rated torque[N·m]	17.7	
GD ² [kg·m ²]	0.030	
Inertia[kg·m ²]	0.0074	
Tolerable radial load(*2) [N]	980	
Cooling fan	Input voltage	3-phase 200V
Degree of protection	IP54 (The shaft-through portion is excluded.)	
Mass[kg]	26	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

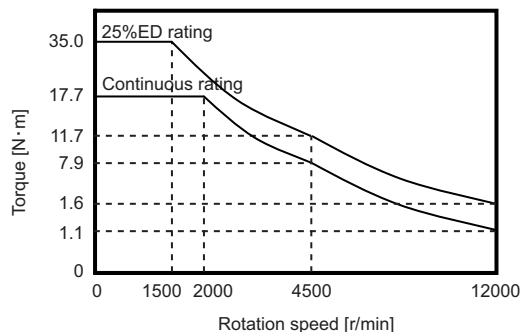


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

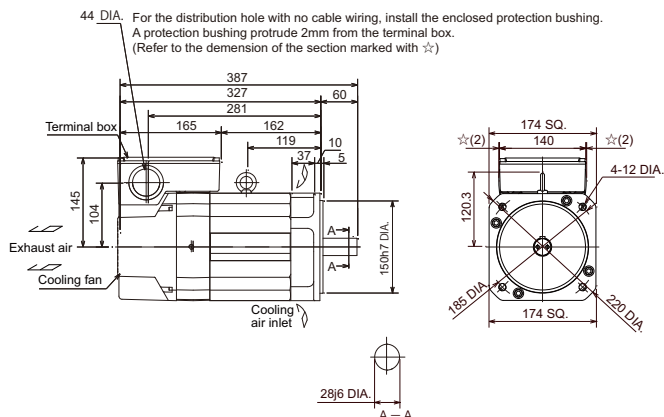


Environmental conditions

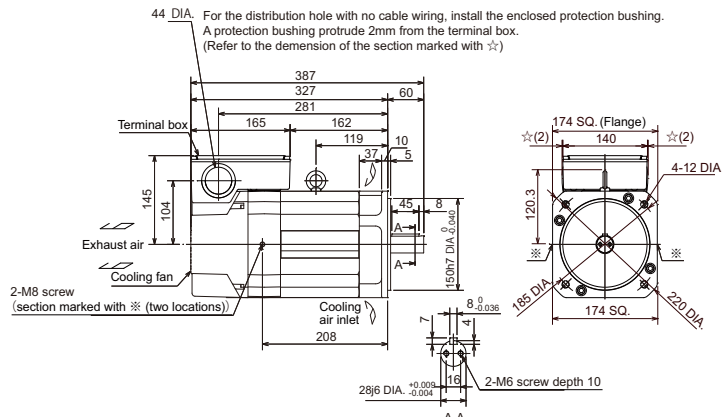
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DJ5.5/120-01 with standard flange



SJ-DJ5.5/120-01-C with standard flange (with key)

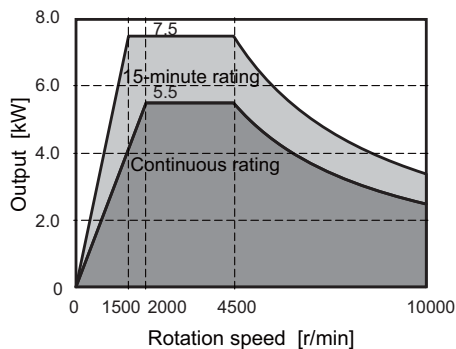


Base rotation speed 1500r/min series
SJ-DJ7.5/100-01

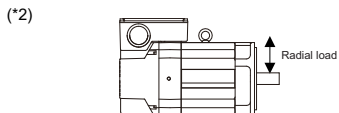
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L)
	Multi axis integrated type	MDS-DM2-SPV2-10080
		MDS-DM2-SPV3-10080
Output capacity[kW]	Regenerative resistor type	MDS-DJ-SP-120
	Continuous rated output	5.5
	Short time rated output	7.5 (15-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
Base rotation speed	Continuous rating[r/min]	2000
	Short time rating[r/min]	1500
Maximum rotation speed[r/min]	10000	
Frame No.	D90	
Continuous rated torque[N·m]	26.3	
GD ² [kg·m ²]	0.053	
Inertia[kg·m ²]	0.013	
Tolerable radial load(*2) [N]	1470	
Cooling fan	Input voltage	3-phase 200V
	Degree of protection	IP54 (The shaft-through portion is excluded.)
Mass[kg]	39	
Heat-resistant class	155(F)	

Output characteristics



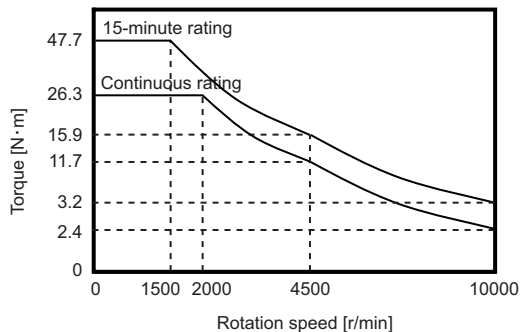
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

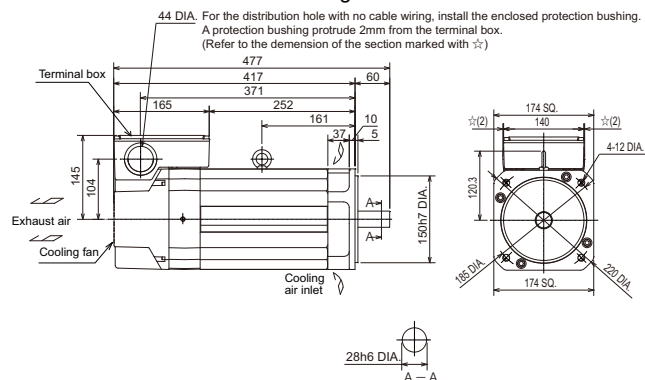


Environmental conditions

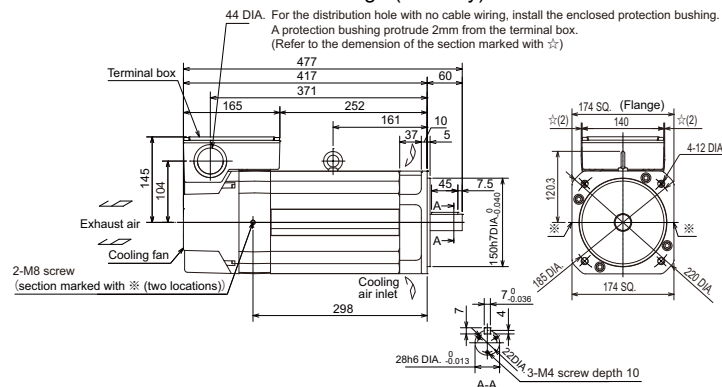
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DJ7.5/100-01 with standard flange



SJ-DJ7.5/100-01-C with standard flange (with key)

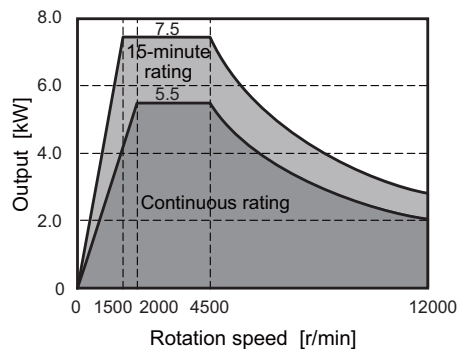


Base rotation speed 1500r/min series
SJ-DJ7.5/120-01

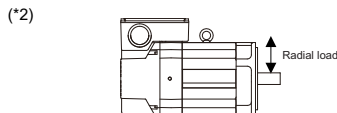
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L)
	Multi axis integrated type	MDS-DM2-SPV2-10080
		MDS-DM2-SPV3-10080
Output capacity[kW]	Regenerative resistor type	MDS-DJ-SP-120
	Continuous rated output	5.5
	Short time rated output	7.5 (15-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
Base rotation speed	Continuous rating[r/min]	2000
	Short time rating[r/min]	1500
Maximum rotation speed[r/min]	10000	
Frame No.	D90	
Continuous rated torque[N·m]	26.3	
GD ² [kg·m ²]	0.053	
Inertia[kg·m ²]	0.013	
Tolerable radial load(*2) [N]	1470	
Cooling fan	Input voltage	3-phase 200V
	Degree of protection	IP54 (The shaft-through portion is excluded.)
Mass[kg]	39	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

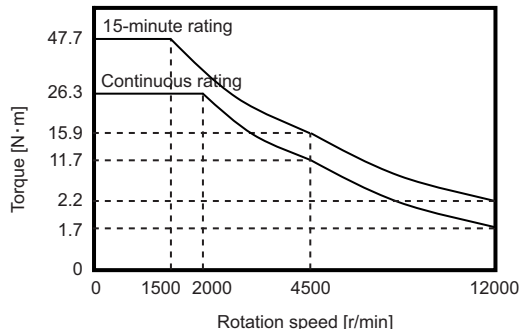


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

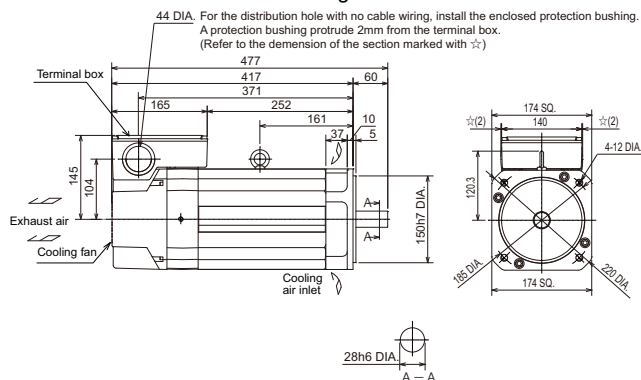


Environmental conditions

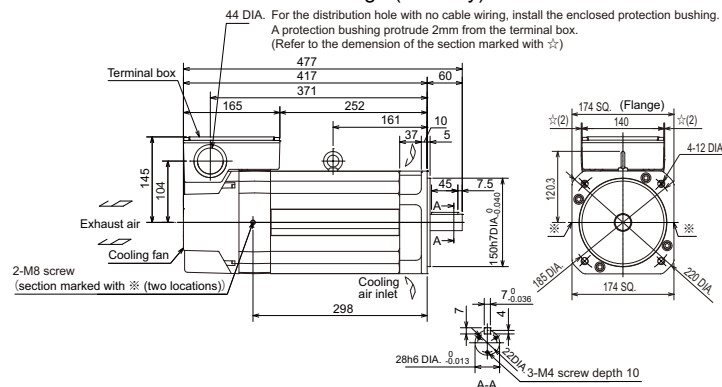
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level, Transportation: 10000 meters or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DJ7.5/120-01 with standard flange



SJ-DJ7.5/120-01-C with standard flange (with key)

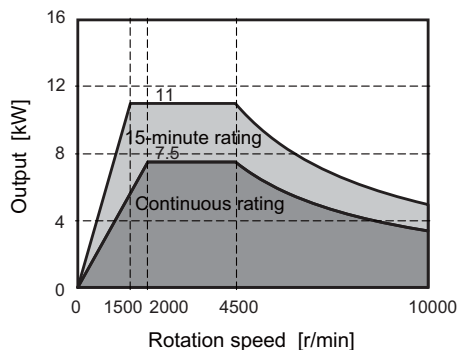


Base rotation speed 1500r/min series
SJ-DJ11/100-01

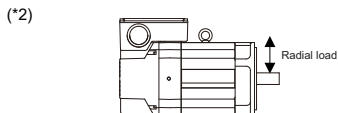
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
	Base rotation speed
Maximum rotation speed[r/min]	Continuous rating[r/min]
	Short time rating[r/min]
Frame No.	
Continuous rated torque[N·m]	
GD ² [kg·m ²]	
Inertia[kg·m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	Input voltage
Degree of protection	
Mass[kg]	
Heat-resistant class	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

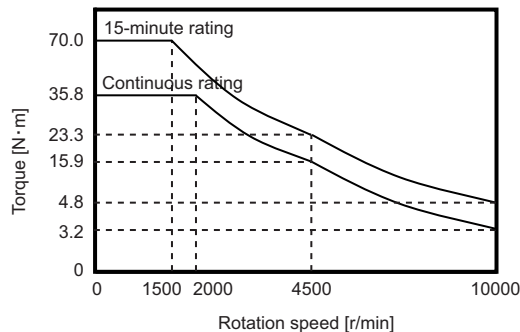


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

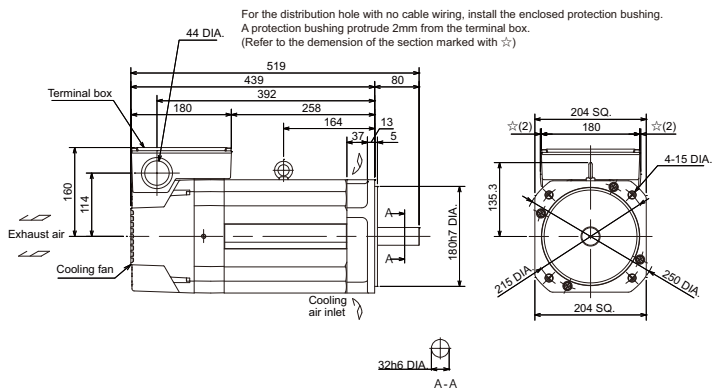


Environmental conditions

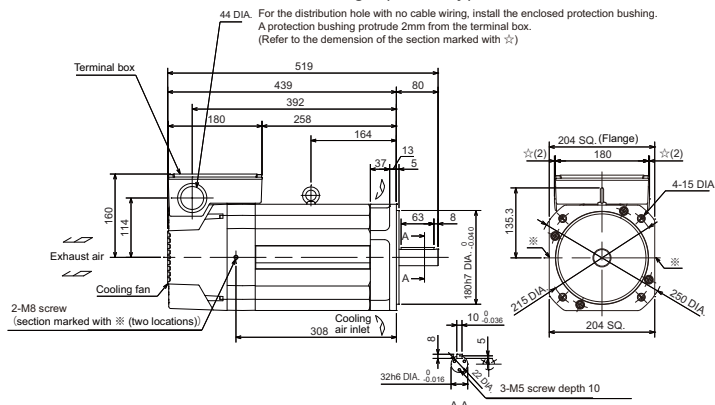
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DJ11/100-01 with standard flange



SJ-DJ11/100-01-C with standard flange (with key)



Base rotation speed 1500r/min series

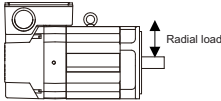
SJ-DJ15/80-01

Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-200
	2-axis type	-
	Multi axis integrated type	MDS-DM2-SPV2-20080 MDS-DM2-SPV3-20080
	Regenerative resistor type	-
Output capacity [kW]	Continuous rated output	11
	Short time rated output	15 (15-minute rating) (15%ED rating)
	Standard output during acceleration/deceleration	15
	Actual acceleration/deceleration output(*3)	18
	Base rotation speed	Continuous rating[r/min] Short time rating[r/min]
Maximum rotation speed[r/min]	8000	
Frame No.	B112	
Continuous rated torque[N·m]	52.5	
GD ² [kg·m ²]	0.122	
Inertia[kg·m ²]	0.031	
Tolerable radial load(*2) [N]	1960	
Cooling fan	Input voltage	3-phase 200V
Degree of protection	IP54 (The shaft-through portion is excluded.)	
Mass[kg]	64	
Heat-resistant class	155(F)	

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

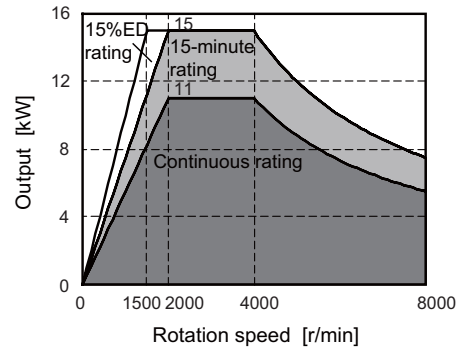
(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

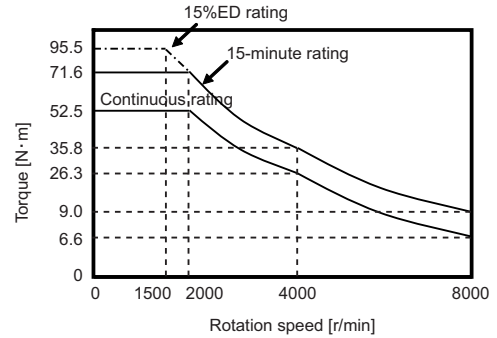
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics

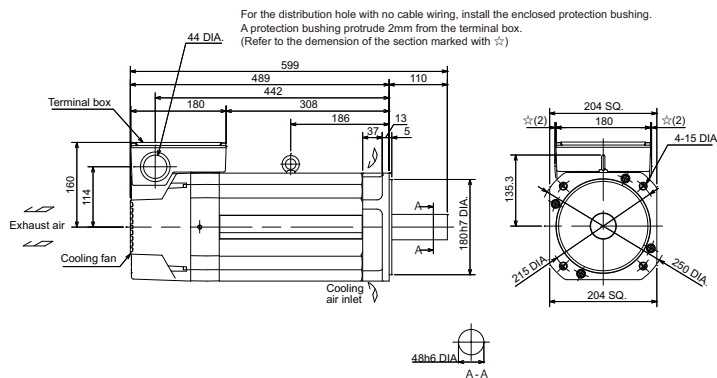


Torque at steady state-rotation speed characteristics

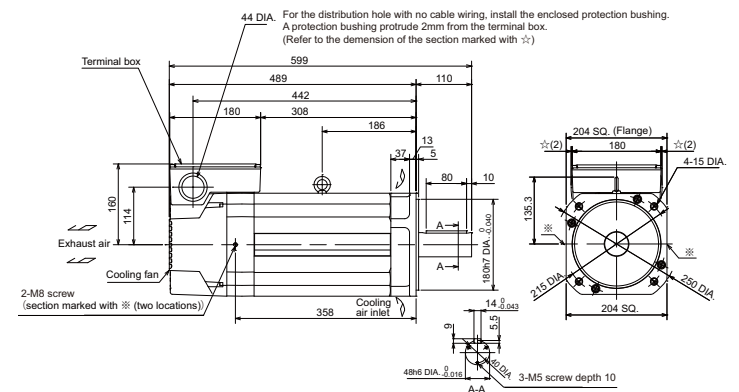


Outline dimension drawings [Unit : mm]

SJ-DJ15/80-01 with standard flange



SJ-DJ15/80-01-C with standard flange (with key)

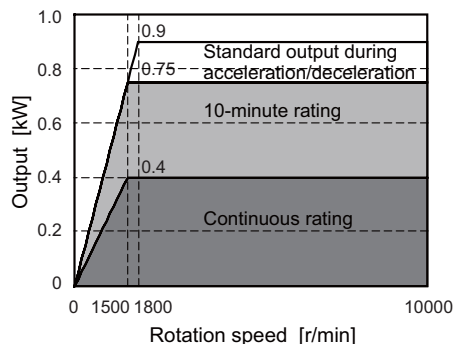


Base rotation speed 1500r/min series
SJ-DL0.75/100-01

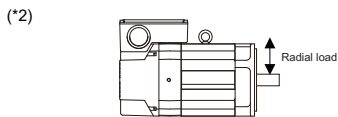
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-20
	2-axis type	MDS-D2-SP2-2020 MDS-D2-SP2-4020(M)
	Multi axis integrated type	-
Output capacity[kW]	Regenerative resistor type	-
	Continuous rated output	0.4
	Short time rated output	0.75 (10-minute rating)
	Standard output during acceleration/deceleration	0.9
Base rotation speed	Actual acceleration/deceleration output(*3)	1.1
	Continuous rating[r/min]	1500
Maximum rotation speed[r/min]	Short time rating[r/min]	1500
		10000
Frame No.	A71	
Continuous rated torque[N·m]	2.6	
GD ² [kg·m ²]	0.0044	
Inertia[kg·m ²]	0.0011	
Tolerable radial load(*2) [N]	490	
Cooling fan	Input voltage	3-phase 200V
	Degree of protection	IP54 (The shaft-through portion is excluded.)
Mass[kg]	10	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

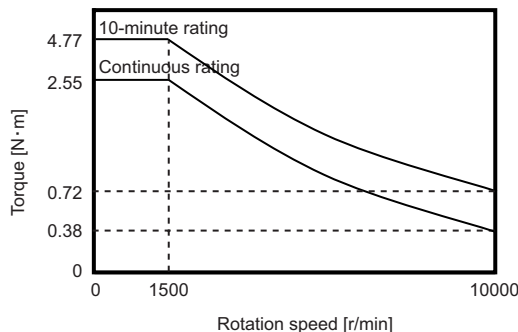


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

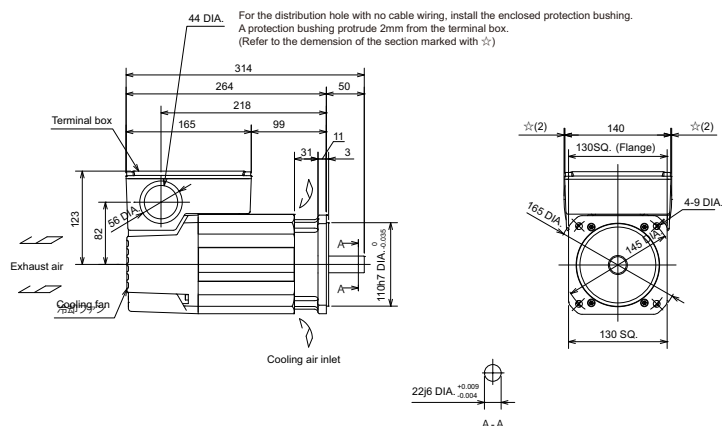


Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DL0.75/100-01 with standard flange

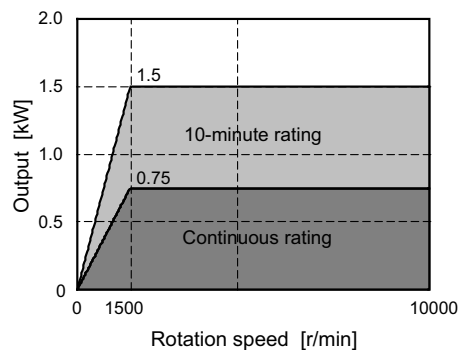


Base rotation speed 1500r/min series
SJ-DL1.5/100-01

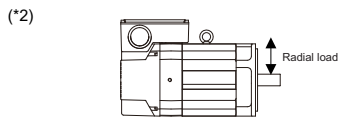
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-40
	2-axis type	MDS-D2-SP2-4020(L) MDS-D2-SP2-4040S MDS-D2-SP2-8040(M)
	Multi axis integrated type	-
	Regenerative resistor type	-
Output capacity[kW]	Continuous rated output	0.75
	Short time rated output	1.5 (10-minute rating)
	Standard output during acceleration/deceleration	1.5
	Actual acceleration/deceleration output(*3)	1.8
Base rotation speed	Continuous rating[r/min]	1500
	Short time rating[r/min]	1500
Maximum rotation speed[r/min]	10000	
Frame No.	B71	
Continuous rated torque[N·m]	4.8	
GD ² [kg·m ²]	0.0077	
Inertia[kg·m ²]	0.0019	
Tolerable radial load(*2) [N]	490	
Cooling fan	Input voltage	3-phase 200V
Degree of protection		IP54
		(The shaft-through portion is excluded.)
Mass[kg]	14	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

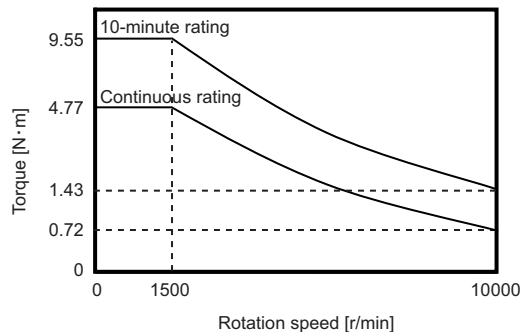


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

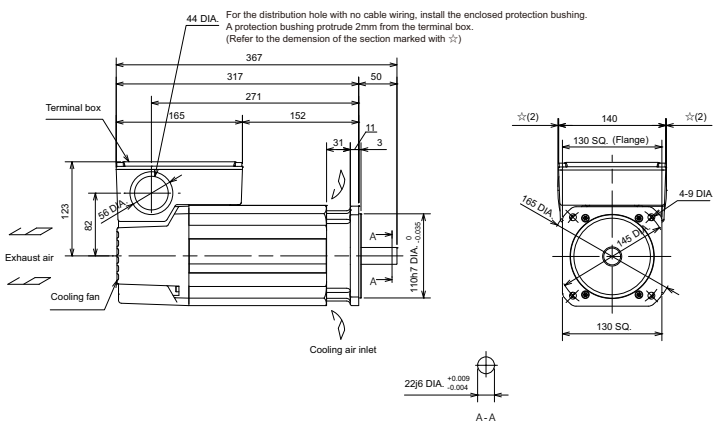


Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DL1.5/100-01 with standard flange

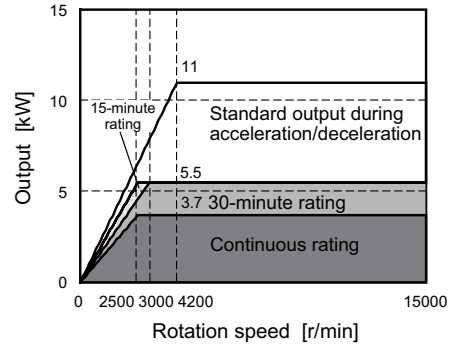


Base rotation speed 1500r/min series
SJ-DL5.5/150-01T

Specifications

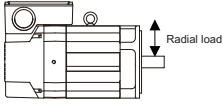
Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
	Base rotation speed
Maximum rotation speed[r/min]	Continuous rating[r/min]
	Short time rating[r/min]
Frame No.	
Continuous rated torque[N·m]	
GD ² [kg·m ²]	
Inertia[kg·m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	Input voltage
	Degree of protection
Mass[kg]	
Heat-resistant class	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)

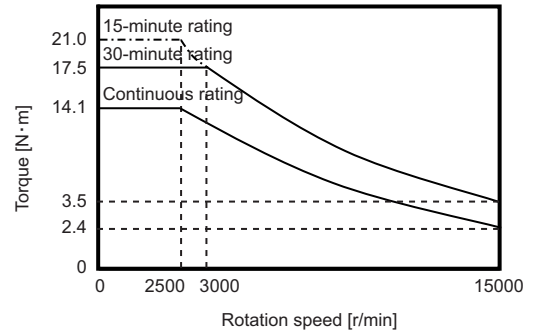


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

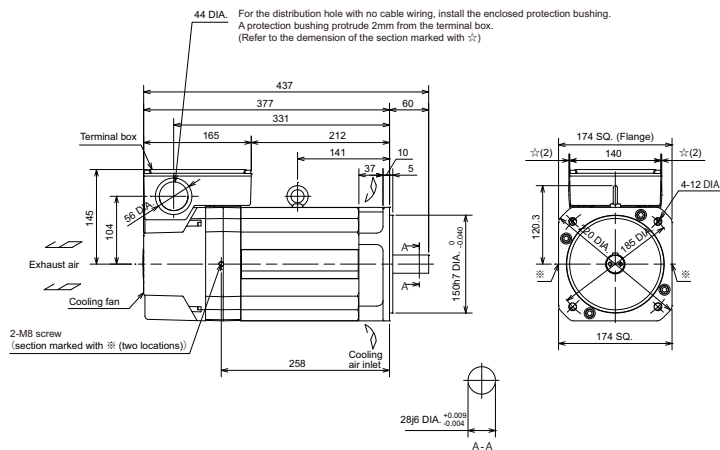


Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DL5.5/150-01T with standard flange

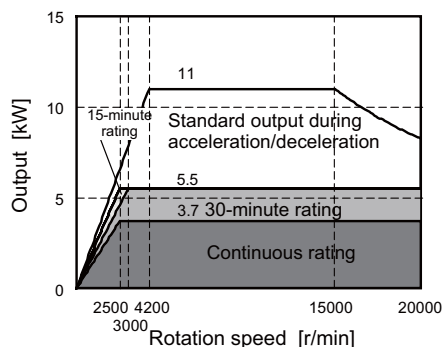


Base rotation speed 1500r/min series
SJ-DL5.5/200-01T

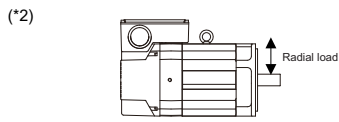
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed	Continuous rating[r/min]
	Short time rating[r/min]
Maximum rotation speed[r/min]	
Frame No.	
Continuous rated torque[N·m]	
GD ² [kg·m ²]	
Inertia[kg·m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	
Degree of protection	
Mass[kg]	
Heat-resistant class	

Output characteristics



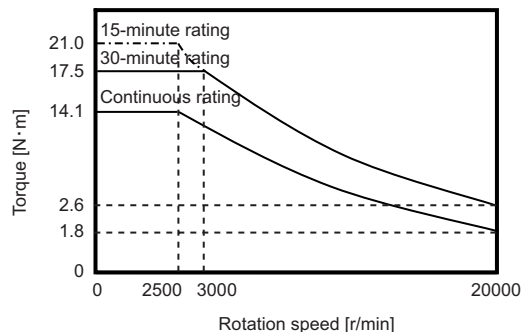
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

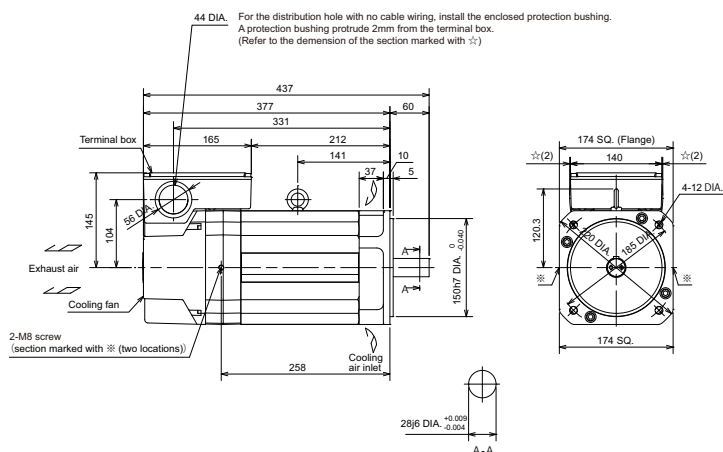


Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DL5.5/200-01T with standard flange

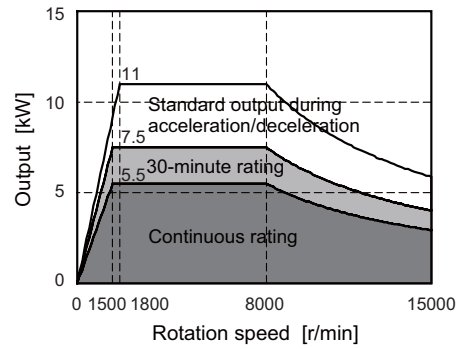


Base rotation speed 1500r/min series
SJ-DL7.5/150-01T

Specifications

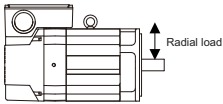
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S(L)
	Multi axis integrated type	MDS-DM2-SPV2-16080
		MDS-DM2-SPV3-16080
Output capacity[kW]	Regenerative resistor type	-
	Continuous rated output	5.5
	Short time rated output	7.5 (30-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed	Continuous rating[r/min]	1500
	Short time rating[r/min]	1500
Maximum rotation speed[r/min]	15000	
Frame No.	B112	
Continuous rated torque[N·m]	35.0	
GD ² [kg·m ²]	0.063	
Inertia[kg·m ²]	0.016	
Tolerable radial load(*2) [N]	980	
Cooling fan	Input voltage	3-phase 200V
	Degree of protection	IP54 (The shaft-through portion is excluded.)
Mass[kg]	56	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)

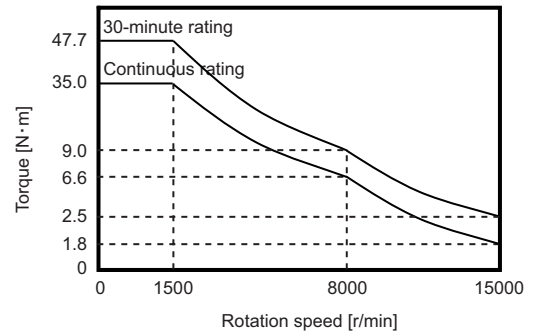


(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

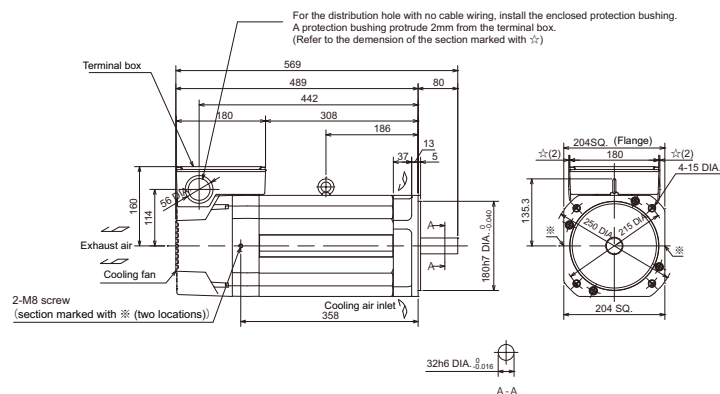


Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DL7.5/150-01T with standard flange



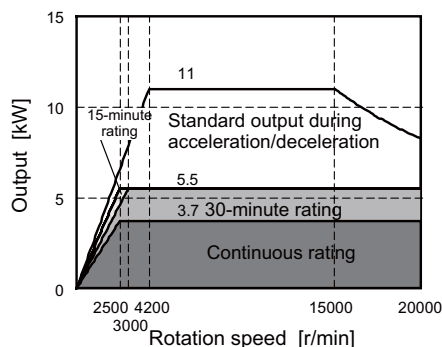
Hollow shaft series

SJ-DL5.5/200-01T-S

Specifications

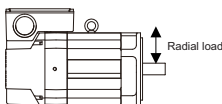
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S(L)
	Multi axis integrated type	-
	Regenerative resistor type	-
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5
	(15-minute rating)(30-minute rating)	11
	Standard output during acceleration/deceleration	11
Base rotation speed	Continuous rating[r/min]	2500
	Short time rating[r/min]	3000
Maximum rotation speed[r/min]	20000	
Frame No.	C90	
Continuous rated torque[N·m]	14.1	
GD ² [kg·m ²]	0.019	
Inertia[kg·m ²]	0.0046	
Tolerable radial load(*2) [N]	Not permitted (*4)	
Cooling fan	Input voltage	3-phase 200V
	Degree of protection	IP54 (The shaft-through portion is excluded.)
Mass[kg]	28	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



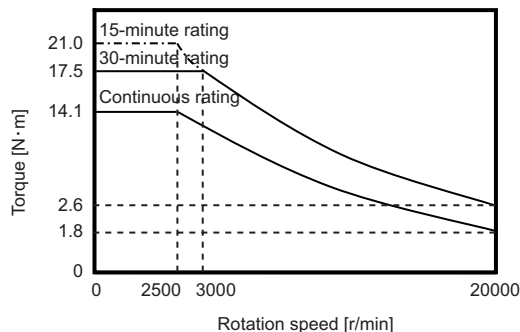
(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) The motor cannot be driven when a pulley or gear is directly installed on the shaft.

(*5) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Torque at steady state-rotation speed characteristics

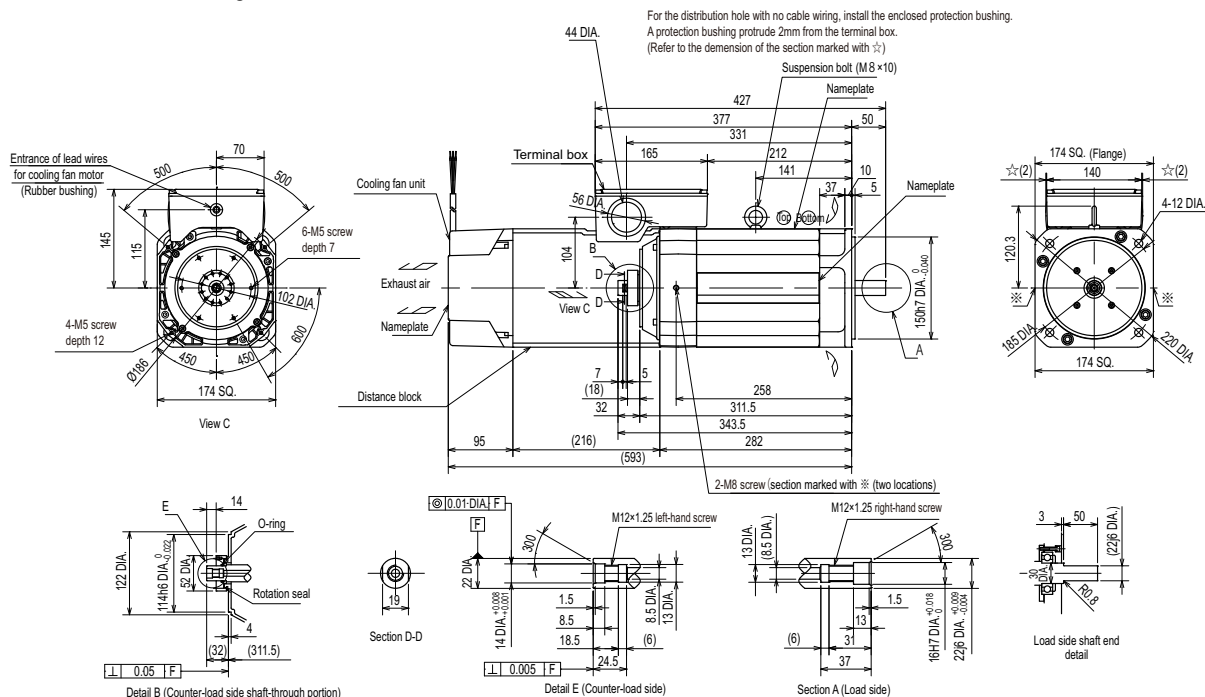


Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level, Transportation: 10000 meters or less above sea level

Outline dimension drawings [Unit : mm]

SJ-DL5.5/200-01T-S with standard flange

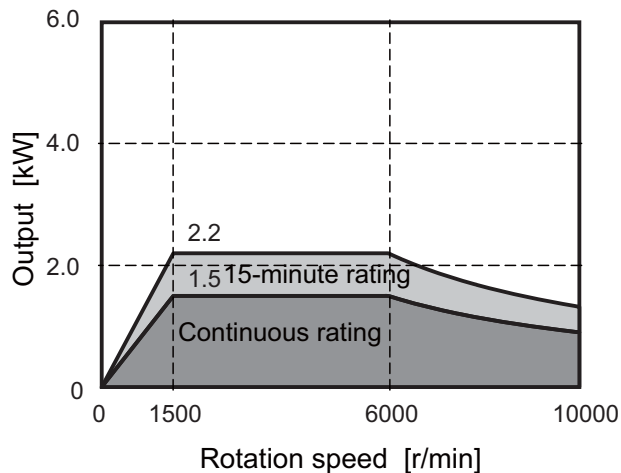


Base rotation speed 1500r/min series
SJ-V2.2-01T

Specifications

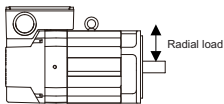
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-40
	2-axis type	MDS-D2-SP2-4020 (L) MDS-D2-SP2-4040S MDS-D2-SP2-8040 (M)
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-40
Output capacity[kW]	Continuous rated output	1.5
	Short time rated output	2.2 (15-minute rating)
	Standard output during acceleration/deceleration	2.2
	Actual acceleration/deceleration output(*3)	2.6
	Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	10000	
Frame No.	A90	
Continuous rated torque[N·m]	9.5	
GD ² [kg·m ²]	0.0027	
Inertia[kg·m ²]	0.00675	
Tolerable radial load(*2) [N]	980	
Cooling fan	Input voltage	Single-phase 200V
Degree of protection		IP44
Mass[kg]		25
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

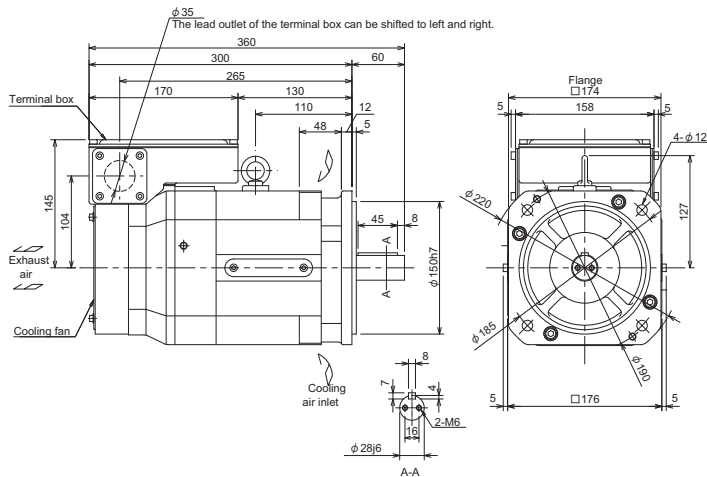
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

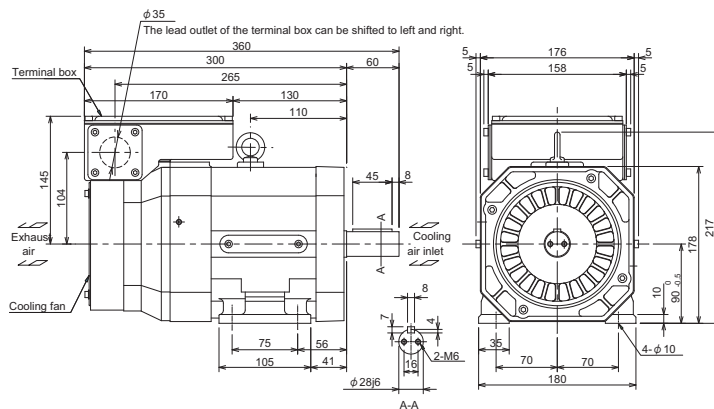
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V2.2-01T with standard flange



SJ-V2.2-01T with standard legs

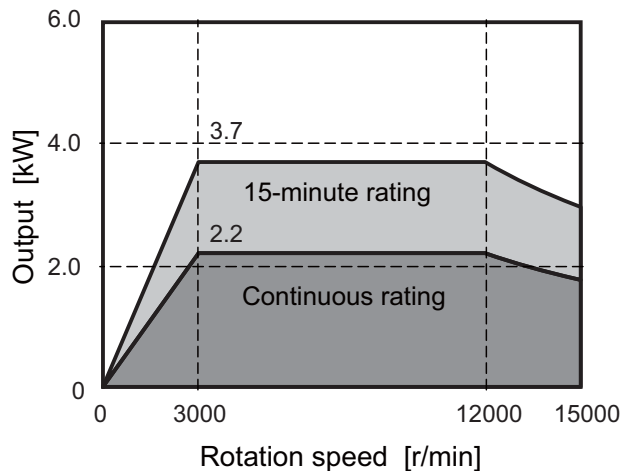


Base rotation speed 3000r/min series
SJ-V3.7-02ZT

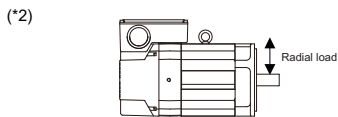
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	3000
Maximum rotation speed[r/min]	15000
Frame No.	A90
Continuous rated torque[N·m]	7.0
GD ² [kg·m ²]	0.027
Inertia[kg·m ²]	0.00675
Tolerable radial load(*2) [N]	245
Cooling fan	Input voltage
Degree of protection	IP44
Mass[kg]	25
Heat-resistant class	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

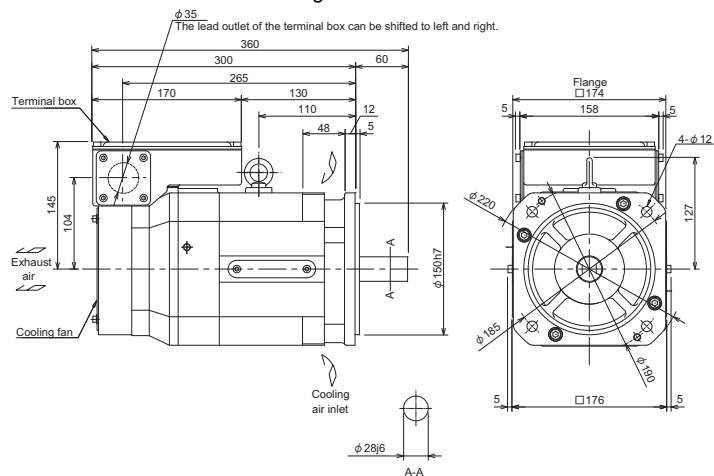
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V3.7-02ZT with standard flange

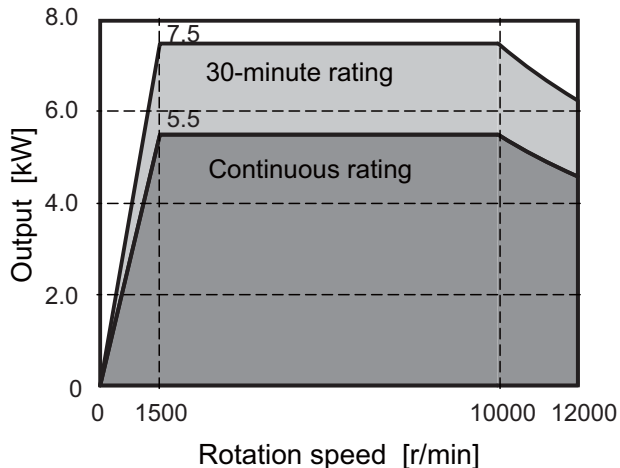


Base rotation speed 1500r/min series
SJ-V7.5-03ZT

Specifications

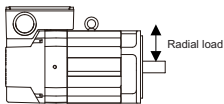
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L)
	Multi axis integrated type	MDS-DM2-SPV2-16080
		MDS-DM2-SPV3-16080
	Regenerative resistor type	MDS-DJ-SP-160
Output capacity[kW]	Continuous rated output	5.5
	Short time rated output	7.5 (30-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
	Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	12000	
Frame No.	A112	
Continuous rated torque[N·m]	35.0	
GD ² [kg·m ²]	0.098	
Inertia[kg·m ²]	0.0245	
Tolerable radial load(*2) [N]	980	
Cooling fan	Input voltage	3-phase 200V
Degree of protection	IP44	
Mass[kg]	60	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

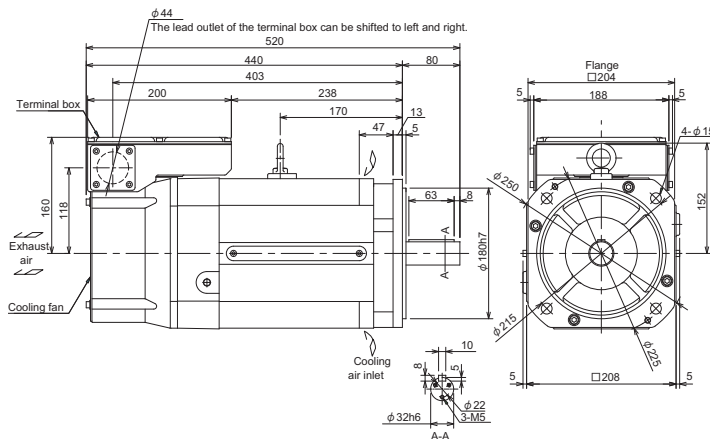
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

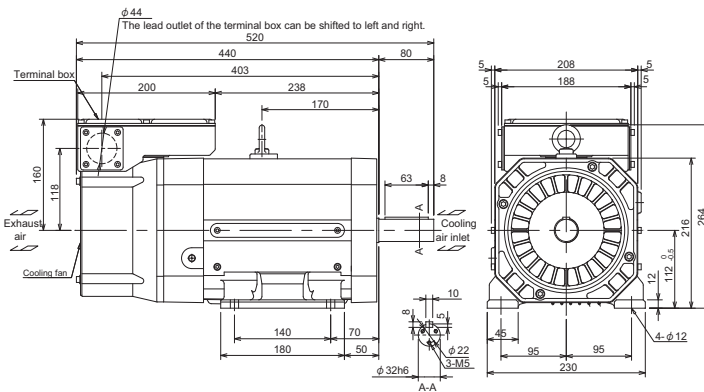
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V7.5-03ZT with standard flange



SJ-V7.5-03ZT with standard legs

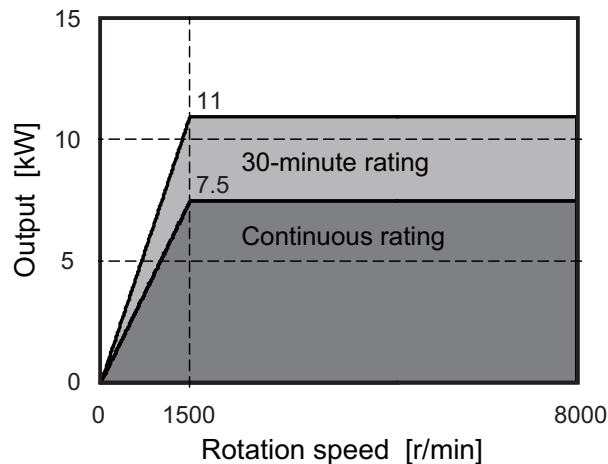


Base rotation speed 1500r/min series
SJ-V11-08ZT

Specifications

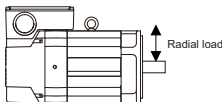
Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	8000
Frame No.	B112
Continuous rated torque[N·m]	47.7
GD ² [kg·m ²]	0.12
Inertia[kg·m ²]	0.03
Tolerable radial load(*2) [N]	1960
Cooling fan	Input voltage
Degree of protection	3-phase 200V
Mass[kg]	IP44
Heat-resistant class	70
	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

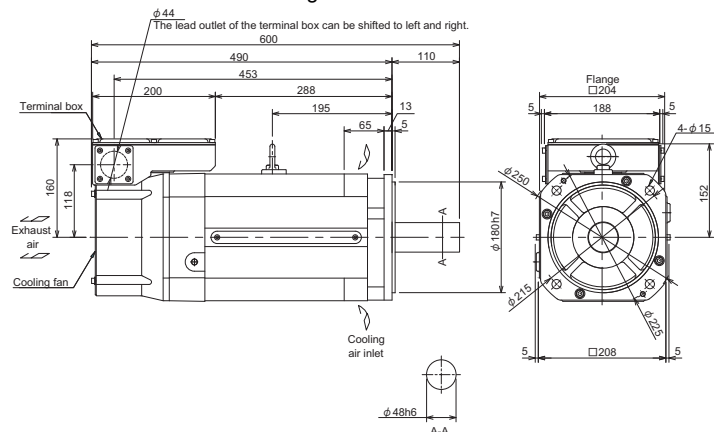
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V11-08ZT with standard flange

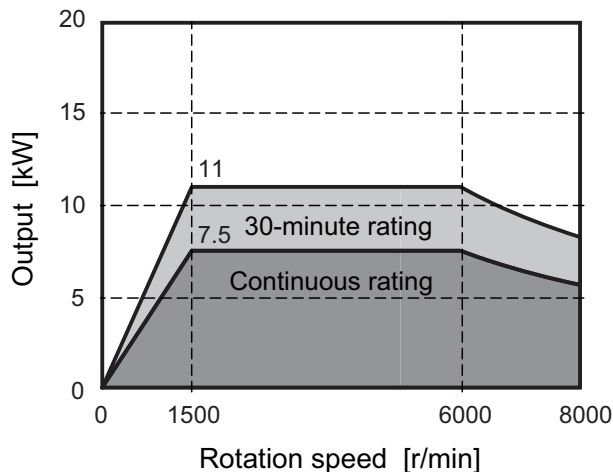


Base rotation speed 1500r/min series
SJ-V11-13ZT

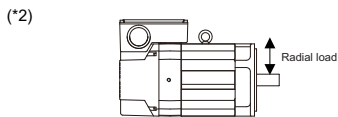
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-200
	2-axis type	-
	Multi axis integrated type	MDS-DM2-SPV2-20080 MDS-DM2-SPV3-20080
	Regenerative resistor type	-
	Continuous rated output	7.5
Output capacity[kW]	Short time rated output	11 (30-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
	Base rotation speed[r/min]	1500
	Maximum rotation speed[r/min]	8000
Frame No.	B112	
Continuous rated torque[N·m]	47.7	
GD ² [kg·m ²]	0.12	
Inertia[kg·m ²]	0.03	
Tolerable radial load(*2) [N]	1960	
Cooling fan	Input voltage	3-phase 200V
Degree of protection		IP44
Mass[kg]		70
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

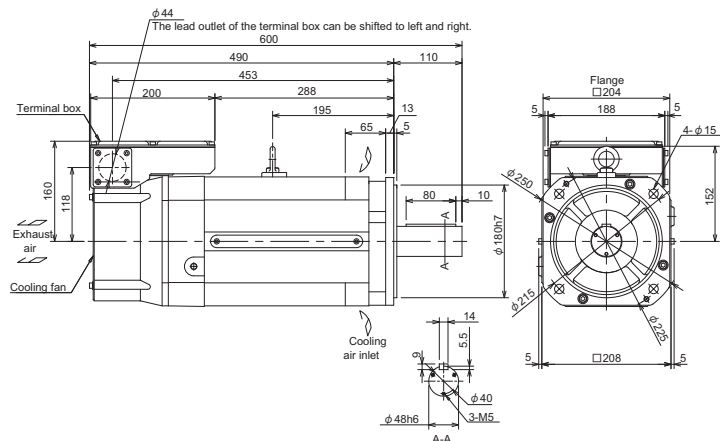
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V11-13ZT with standard flange

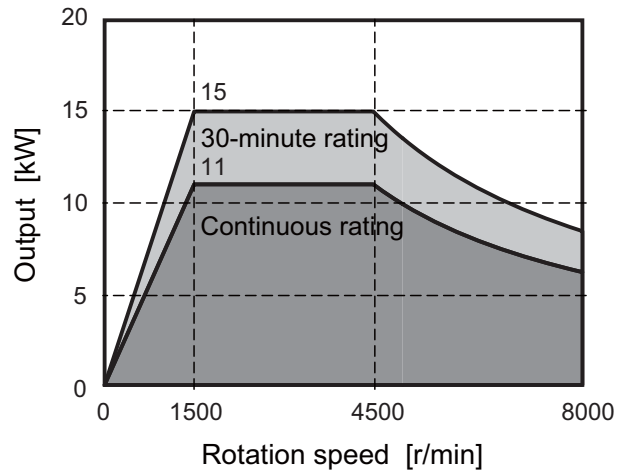


Base rotation speed 1500r/min series
SJ-V15-01ZT

Specifications

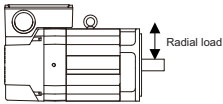
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-200
	2-axis type	-
	Multi axis integrated type	MDS-DM2-SPV2-20080 MDS-DM2-SPV3-20080
	Regenerative resistor type	-
Output capacity[kW]	Continuous rated output	11
	Short time rated output	15 (30-minute rating)
	Standard output during acceleration/deceleration	15
	Actual acceleration/deceleration output(*3)	18
	Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	8000	
Frame No.	A160	
Continuous rated torque[N·m]	70.0	
GD ² [kg·m ²]	0.23	
Inertia[kg·m ²]	0.0575	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage	3-phase 200V
Degree of protection	IP44	
Mass[kg]	110	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

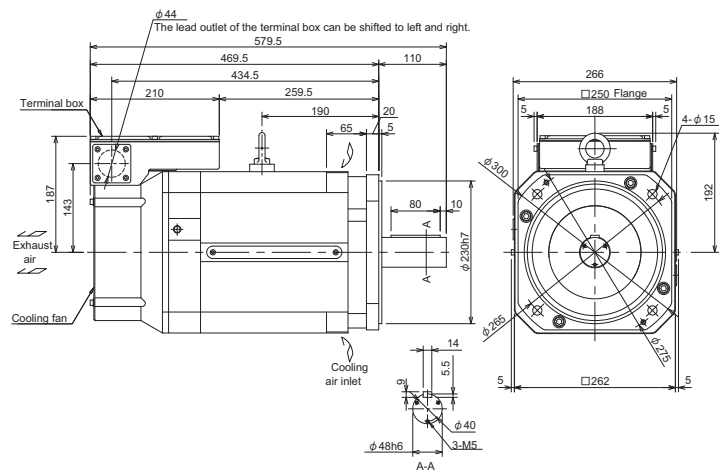
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V15-01ZT with standard flange

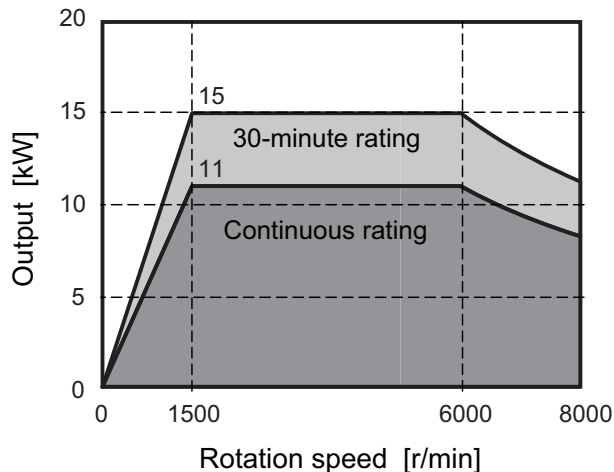


Base rotation speed 1500r/min series
SJ-V15-09ZT

Specifications

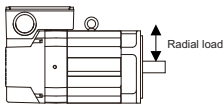
Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	
Maximum rotation speed[r/min]	
Frame No.	
Continuous rated torque[N·m]	
GD ² [kg·m ²]	
Inertia[kg·m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	
Degree of protection	
Mass[kg]	
Heat-resistant class	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

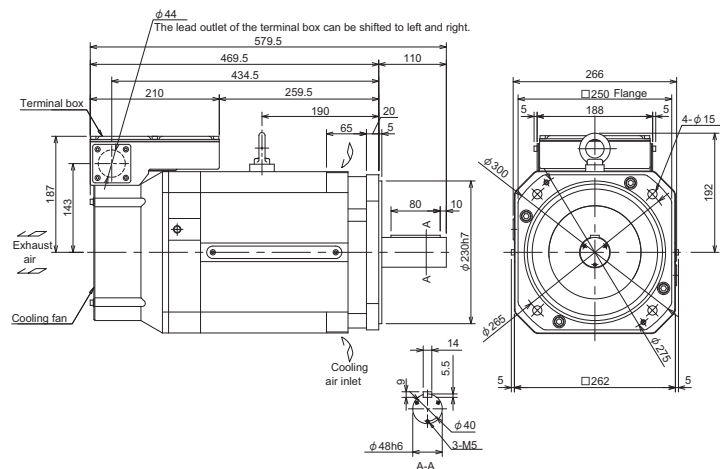
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V15-09ZT with standard flange



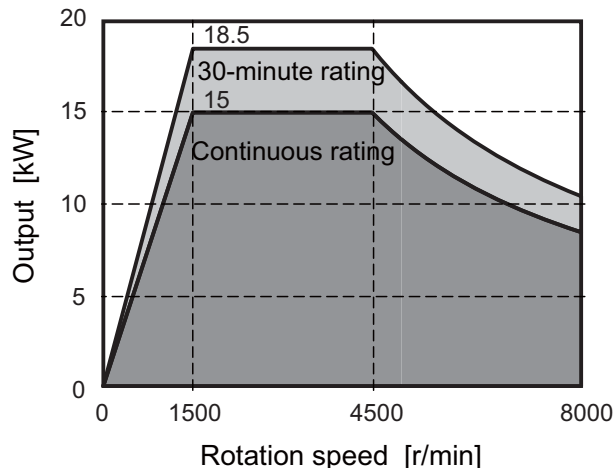
Base rotation speed 1500r/min series

SJ-V18.5-01ZT

Specifications

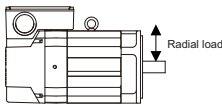
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-200
	2-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	-
Output capacity[kW]	Continuous rated output	15
	Short time rated output	18.5 (30-minute rating)
	Standard output during acceleration/deceleration	18.5
	Actual acceleration/deceleration output(*3)	22.2
	Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	8000	
Frame No.	A160	
Continuous rated torque[N•m]	95.5	
GD ² [kg•m ²]	0.23	
Inertia[kg•m ²]	0.0575	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage	3-phase 200V
Degree of protection		IP44
Mass[kg]		110
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

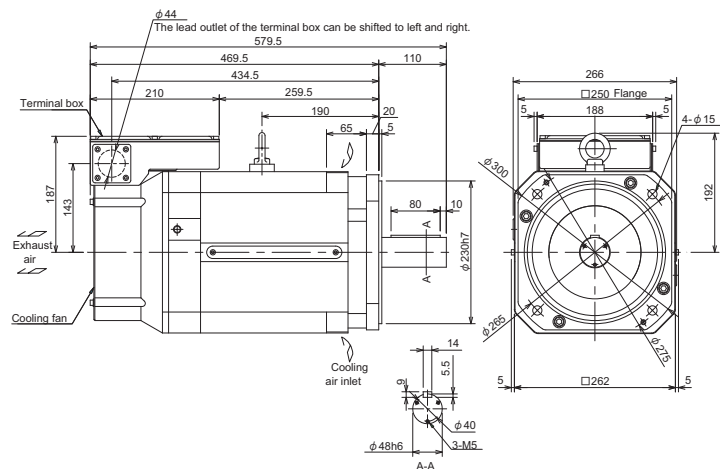
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

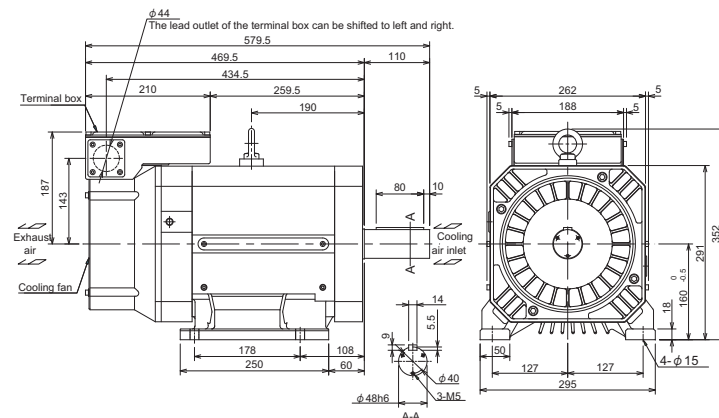
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V18.5-01ZT with standard flange



SJ-V18.5-01ZT with standard legs

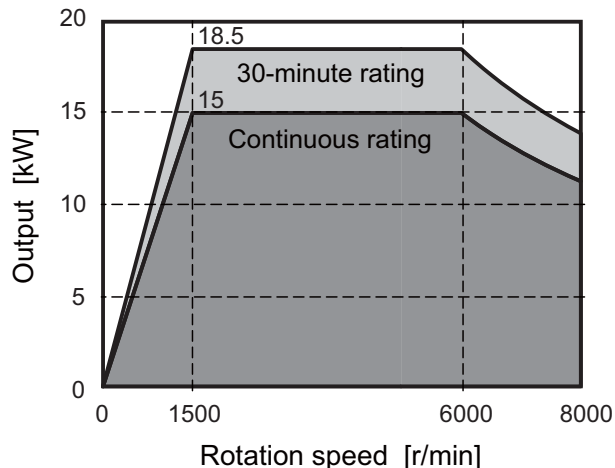


Base rotation speed 1500r/min series
SJ-V18.5-04ZT

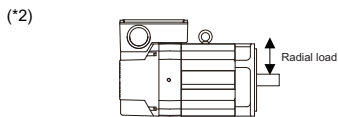
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	8000
Frame No.	A160
Continuous rated torque[N•m]	95.5
GD ² [kg•m ²]	0.23
Inertia[kg•m ²]	0.0575
Tolerable radial load(*2) [N]	2940
Cooling fan	Input voltage
Degree of protection	3-phase 200V
Mass[kg]	IP44
Heat-resistant class	110
	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

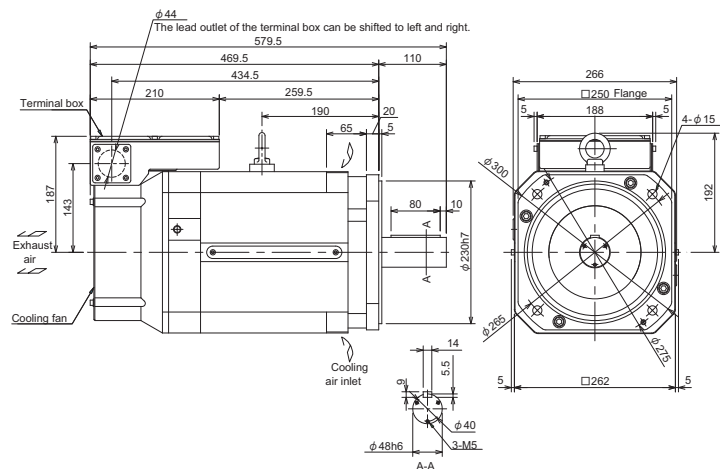
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

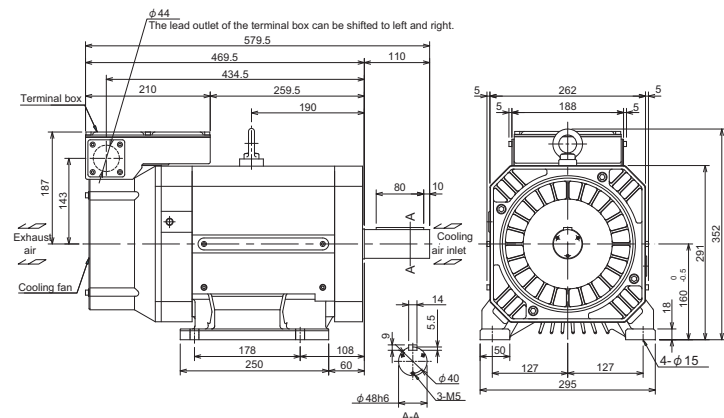
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V18.5-04ZT with standard flange



SJ-V18.5-04ZT with standard legs

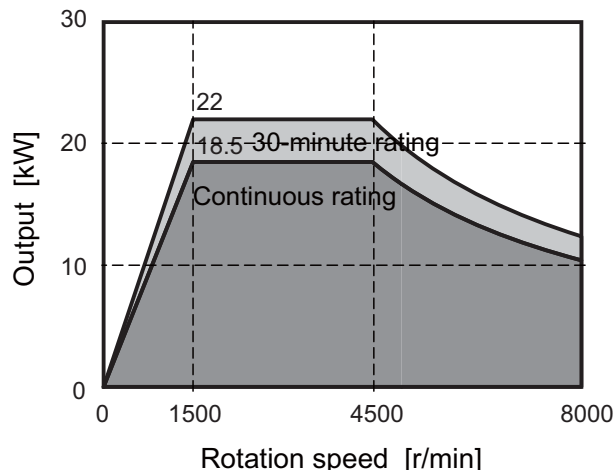


Base rotation speed 1500r/min series
SJ-V22-01ZT

Specifications

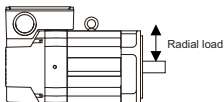
Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	8000
Frame No.	B160
Continuous rated torque[N·m]	118
GD ² [kg·m ²]	0.319
Inertia[kg·m ²]	0.08
Tolerable radial load(*2) [N]	2940
Cooling fan	Input voltage
Degree of protection	3-phase 200V
Mass[kg]	IP44
Heat-resistant class	135
	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

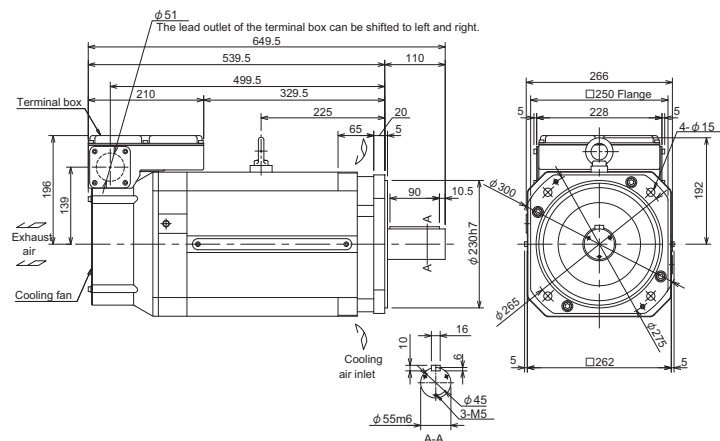
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V22-01ZT with standard flange

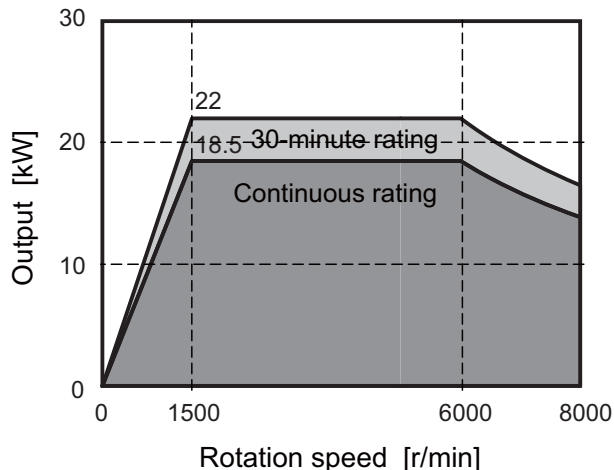


Base rotation speed 1500r/min series
SJ-V22-04ZT

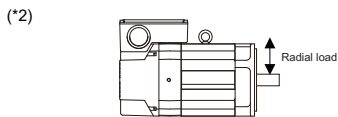
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	8000
Frame No.	B160
Continuous rated torque[N·m]	118
GD ² [kg·m ²]	0.319
Inertia[kg·m ²]	0.08
Tolerable radial load(*2) [N]	2940
Cooling fan	Input voltage
Degree of protection	3-phase 200V
Mass[kg]	IP44
Heat-resistant class	135
	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

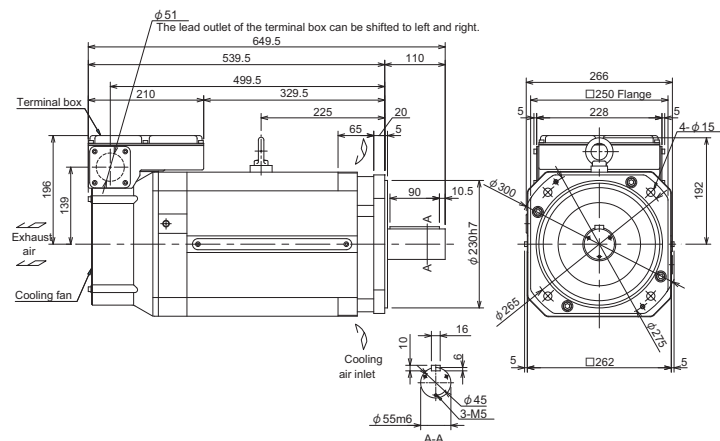
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V22-04ZT with standard flange

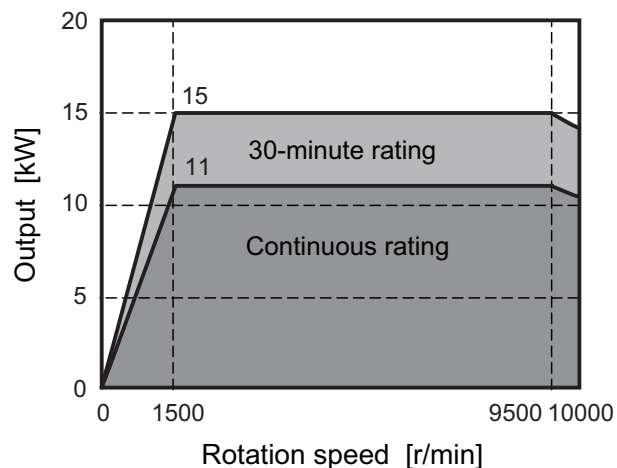


Base rotation speed 1500r/min series
SJ-V22-06ZT

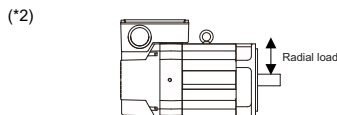
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	10000
Frame No.	A160
Continuous rated torque[N·m]	70.0
GD ² [kg·m ²]	0.23
Inertia[kg·m ²]	0.0575
Tolerable radial load(*2) [N]	2450
Cooling fan	Input voltage
Degree of protection	3-phase 200V
Mass[kg]	IP44
Heat-resistant class	110
	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

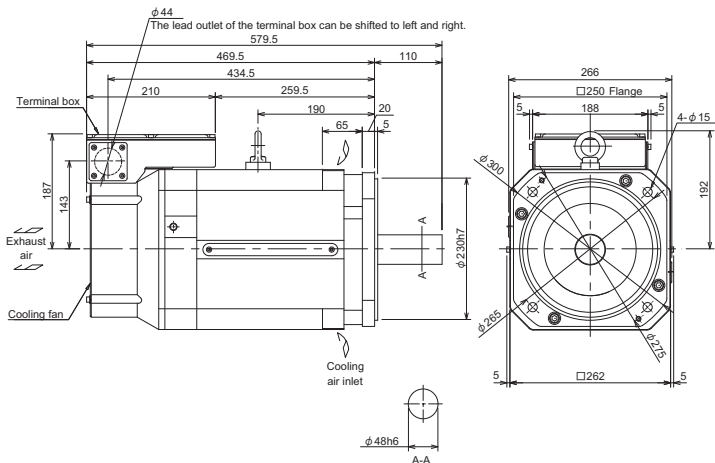
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V22-06ZT with standard flange

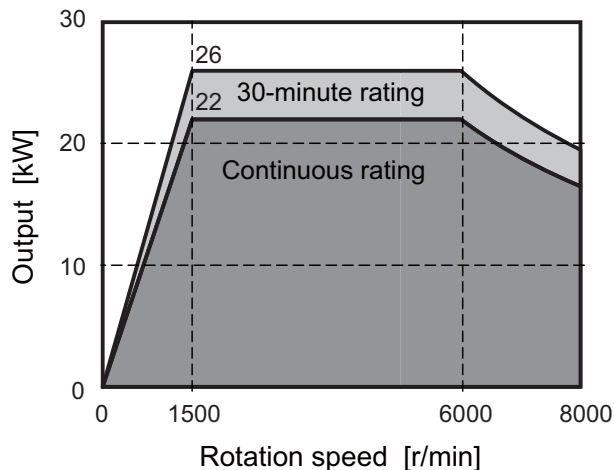


Base rotation speed 1500r/min series
SJ-V26-01ZT

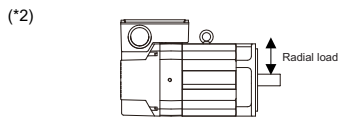
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	8000
Frame No.	C160
Continuous rated torque[N·m]	140
GD ² [kg·m ²]	0.37
Inertia[kg·m ²]	0.0925
Tolerable radial load(*2) [N]	2940
Cooling fan	Input voltage
Degree of protection	3-phase 200V
Mass[kg]	IP44
Heat-resistant class	155
	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

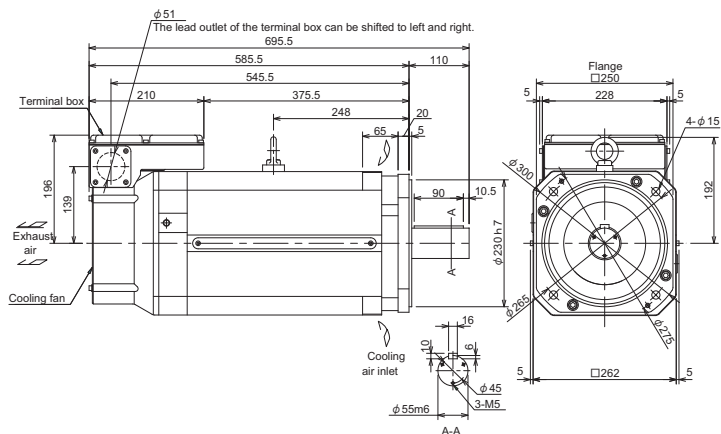
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V26-01ZT with standard flange

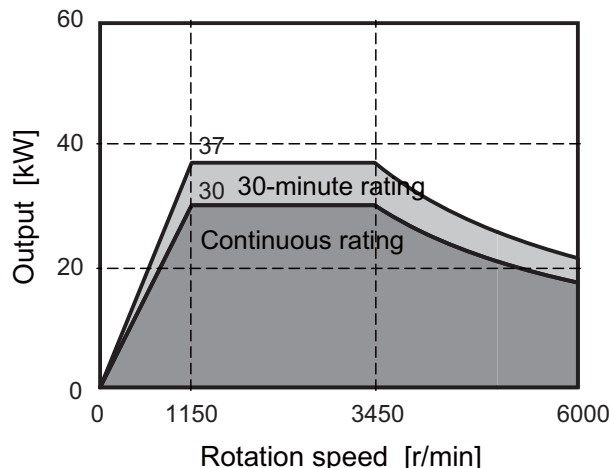


Base rotation speed 1500r/min series
SJ-V37-01ZT

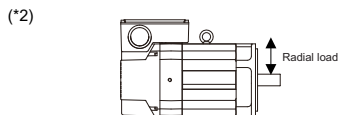
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	
Maximum rotation speed[r/min]	
Frame No.	
Continuous rated torque[N·m]	
GD ² [kg·m ²]	
Inertia[kg·m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	
Degree of protection	
Mass[kg]	
Heat-resistant class	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

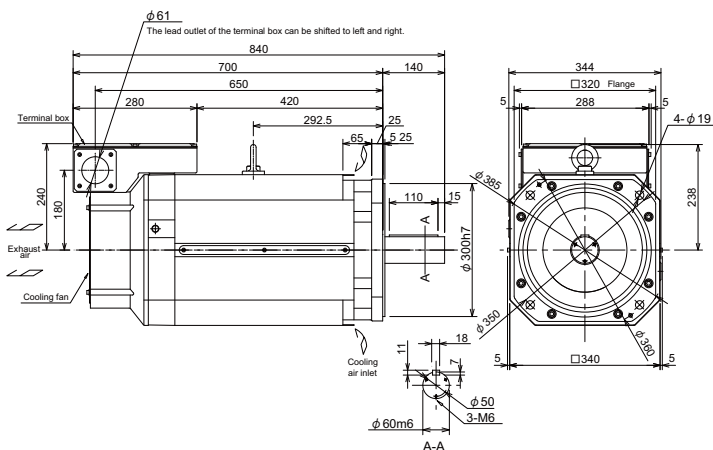
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V37-01ZT with standard flange

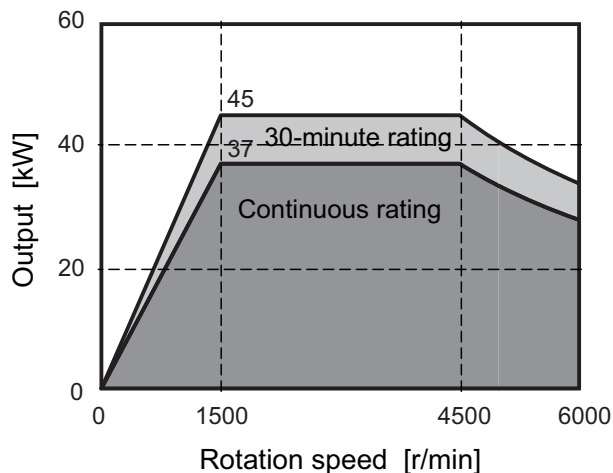


Base rotation speed 1500r/min series
SJ-V45-01ZT

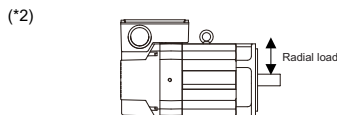
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	1500
Maximum rotation speed[r/min]	6000
Frame No.	B180
Continuous rated torque[N·m]	236
GD ² [kg·m ²]	1.36
Inertia[kg·m ²]	0.34
Tolerable radial load(*2) [N]	3920
Cooling fan	Input voltage
Degree of protection	3-phase 200V
Mass[kg]	IP44
Heat-resistant class	300
	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

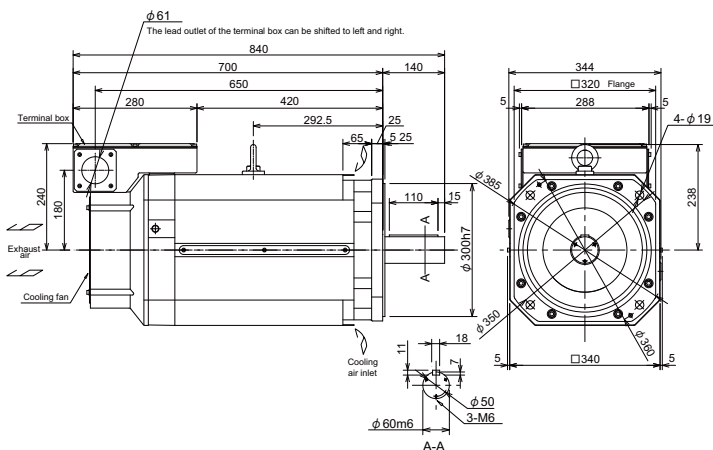
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V45-01ZT with standard flange

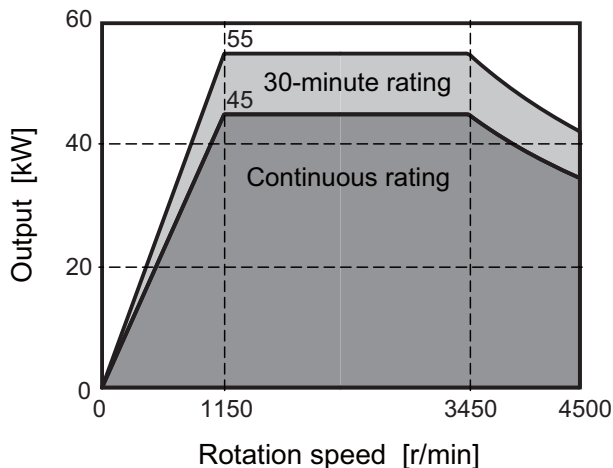


Base rotation speed 1150r/min series
SJ-V55-01ZT

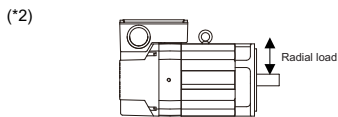
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	1150
Maximum rotation speed[r/min]	4500
Frame No.	A225
Continuous rated torque[N·m]	374
GD ² [kg·m ²]	3.39
Inertia[kg·m ²]	0.8475
Tolerable radial load(*2) [N]	5880
Cooling fan	Input voltage
Degree of protection	3-phase 200V
Mass[kg]	IP44
Heat-resistant class	450
	155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

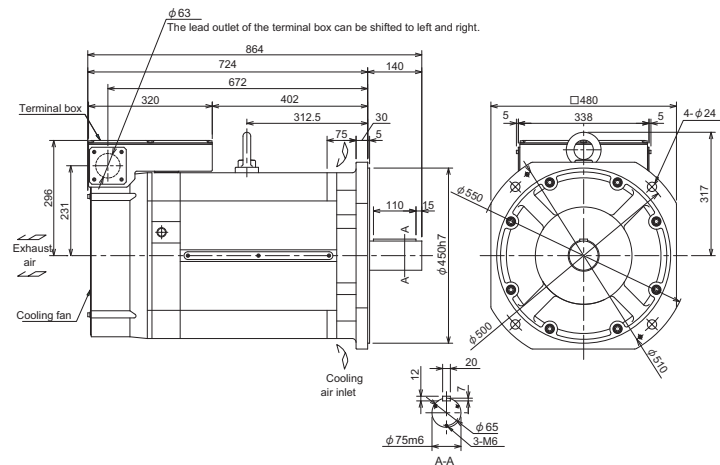
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V55-01ZT with standard flange



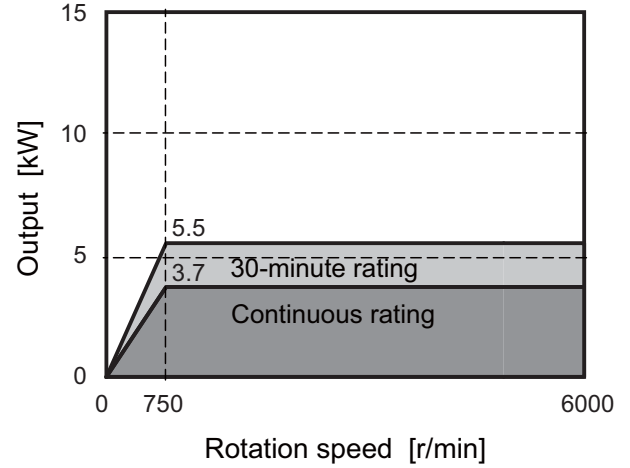
Wide range constant output series

SJ-V11-01T

Specifications

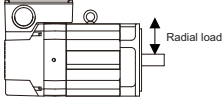
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L)
	Multi axis integrated type	MDS-DM2-SPV2-16080
		MDS-DM2-SPV3-16080
Output capacity[kW]	Regenerative resistor type	-
	Continuous rated output	3.7
	Short time rated output	5.5 (30-minute rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
Base rotation speed[r/min]	750	
Maximum rotation speed[r/min]	6000	
Frame No.	B112	
Continuous rated torque[N·m]	47.1	
GD ² [kg·m ²]	0.12	
Inertia[kg·m ²]	0.03	
Tolerable radial load(*2) [N]	1960	
Cooling fan	Input voltage	3-phase 200V
Degree of protection		IP44
Mass[kg]		70
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

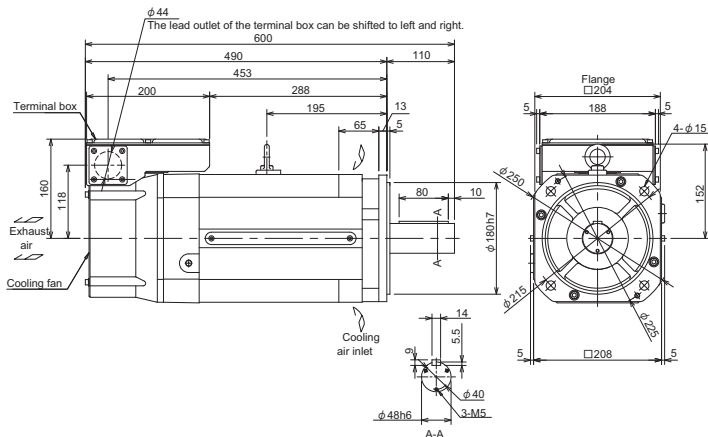
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

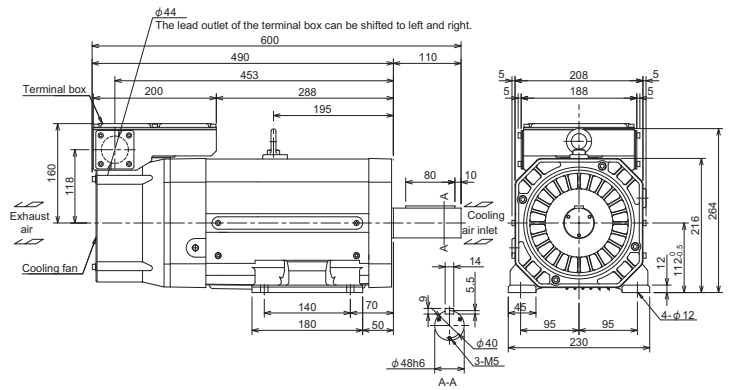
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V11-01T with standard flange



SJ-V11-01T with standard legs



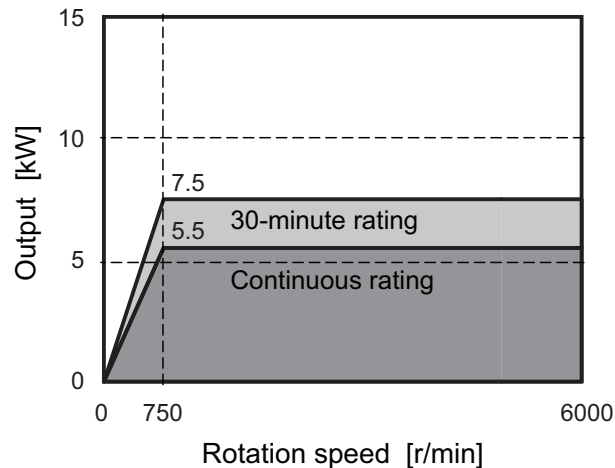
Wide range constant output series

SJ-V11-09T

Specifications

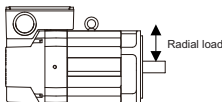
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L)
	Multi axis integrated type	MDS-DM2-SPV2-16080
		MDS-DM2-SPV3-16080
Output capacity[kW]	Regenerative resistor type	-
	Continuous rated output	5.5
	Short time rated output	7.5 (30-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
Base rotation speed[r/min]	750	
Maximum rotation speed[r/min]	6000	
Frame No.	A160	
Continuous rated torque[N·m]	70.0	
GD ² [kg·m ²]	0.23	
Inertia[kg·m ²]	0.0575	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage 3-phase 200V	
Degree of protection	IP44	
Mass[kg]	110	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

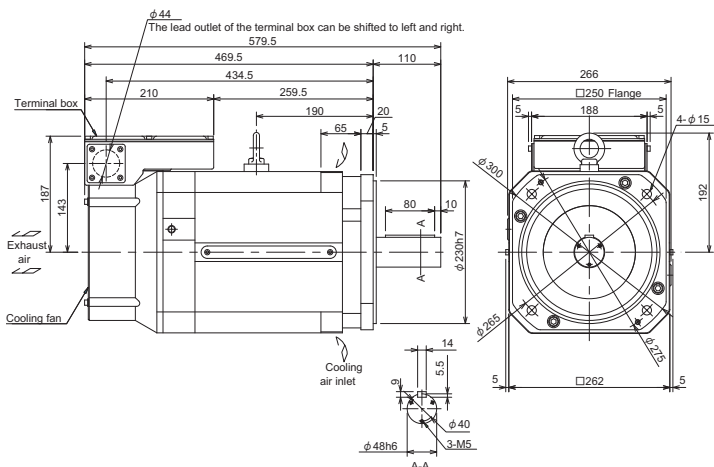
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

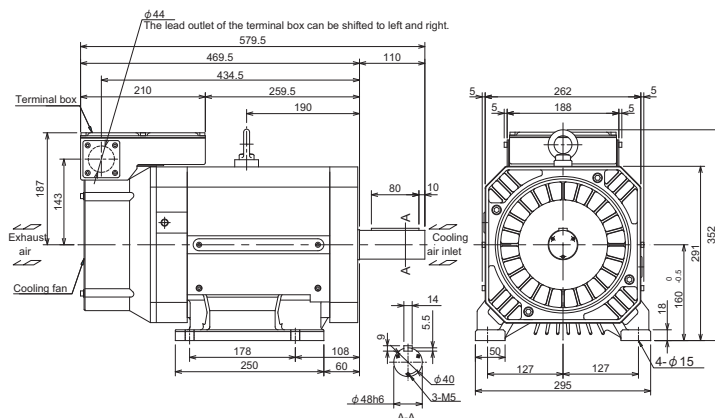
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V11-09T with standard flange



SJ-V11-09T with standard legs



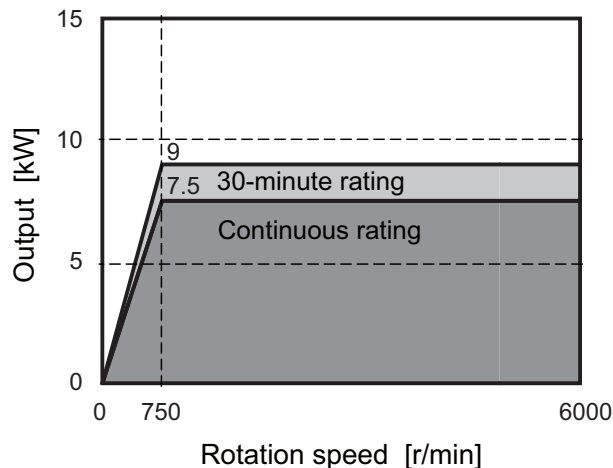
Wide range constant output series

SJ-V15-03T

Specifications

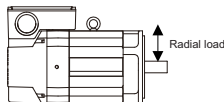
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-200
	2-axis type	-
	Multi axis integrated type	MDS-DM2-SPHV3-20080
	Regenerative resistor type	-
Output capacity[kW]	Continuous rated output	7.5
	Short time rated output	9 (30-minute rating)
	Standard output during acceleration/deceleration	9
	Actual acceleration/deceleration output(*3)	10.8
Base rotation speed[r/min]	750	
Maximum rotation speed[r/min]	6000	
Frame No.	A160	
Continuous rated torque[N·m]	95.5	
GD ² [kg·m ²]	0.23	
Inertia[kg·m ²]	0.0575	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage	3-phase 200V
Degree of protection	IP44	
Mass[kg]	110	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

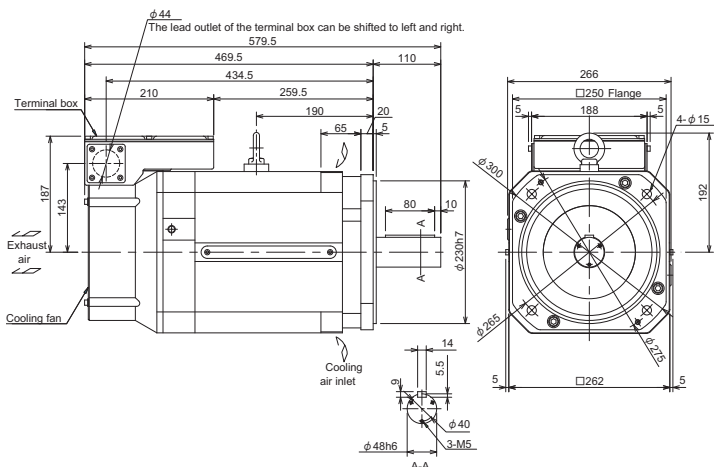
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

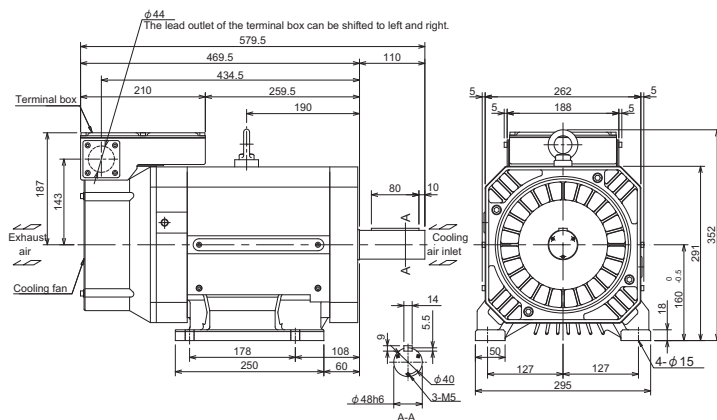
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V15-03T with standard flange



SJ-V15-03T with standard legs

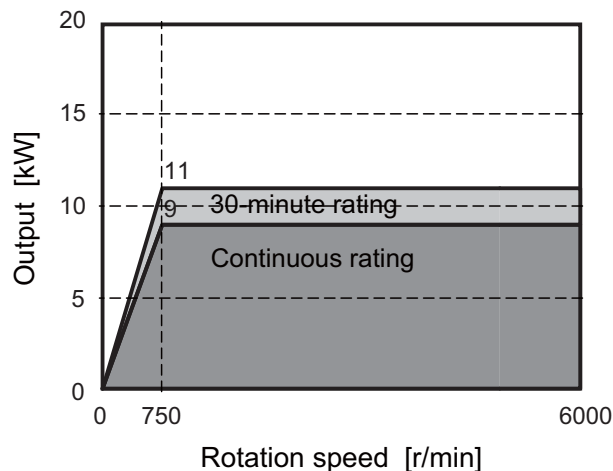


Wide range constant output series
SJ-V18.5-03T

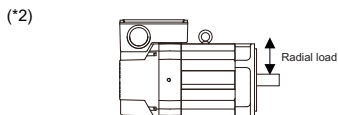
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
Base rotation speed[r/min]	
Maximum rotation speed[r/min]	
Frame No.	
Continuous rated torque[N•m]	
GD ² [kg•m ²]	
Inertia[kg•m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	
Degree of protection	
Mass[kg]	
Heat-resistant class	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

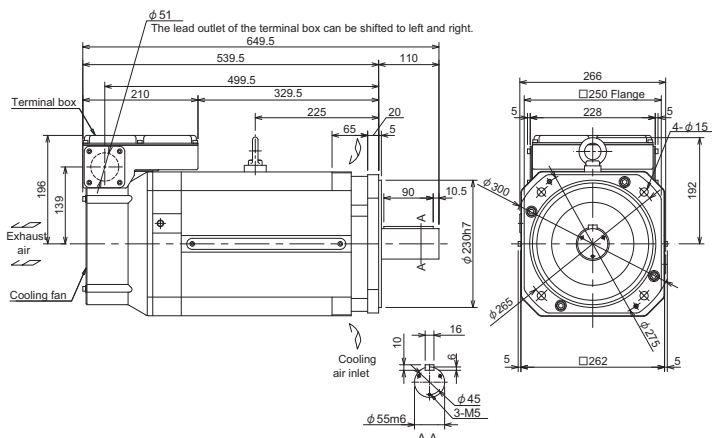
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

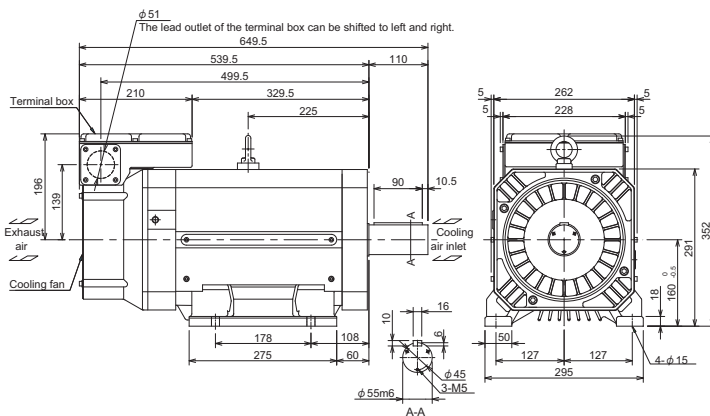
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V18.5-03T with standard flange



SJ-V18.5-03T with standard legs



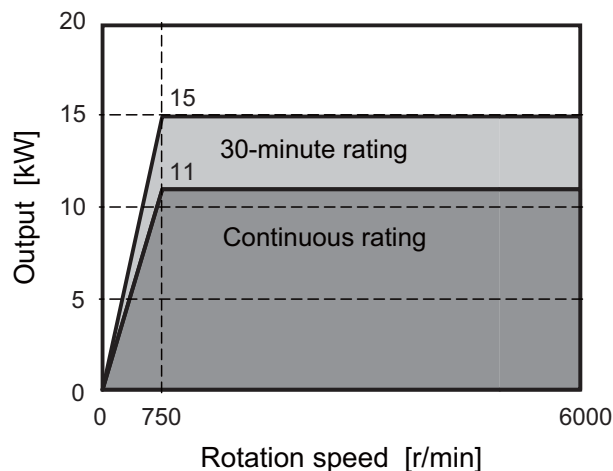
Wide range constant output series

SJ-V22-05T

Specifications

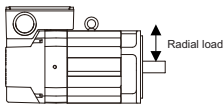
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-320
	2-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	-
Output capacity[kW]	Continuous rated output	11
	Short time rated output	15 (30-minute rating)
	Standard output during acceleration/deceleration	15
	Actual acceleration/deceleration output(*3)	18
Base rotation speed[r/min]	750	
Maximum rotation speed[r/min]	6000	
Frame No.	B160	
Continuous rated torque[N·m]	140	
GD ² [kg·m ²]	0.319	
Inertia[kg·m ²]	0.08	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage	3-phase 200V
Degree of protection		IP44
Mass[kg]		135
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

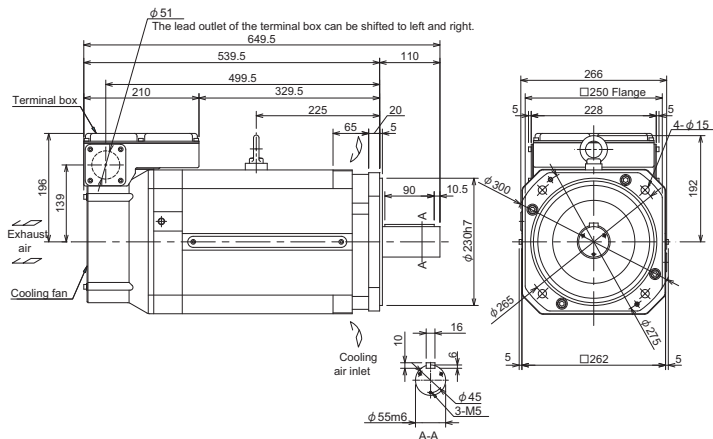
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

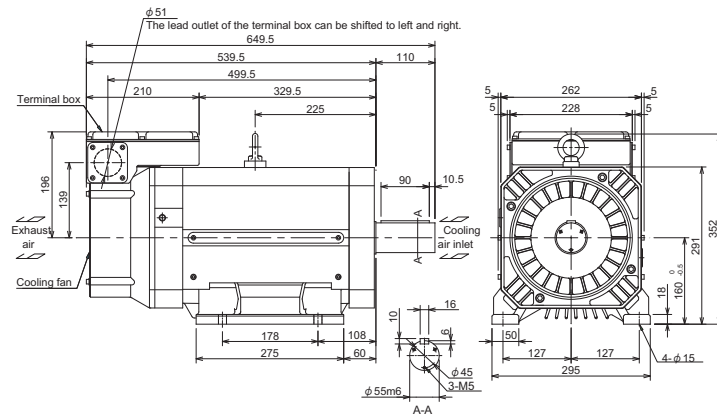
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V22-05T with standard flange



SJ-V22-05T with standard legs

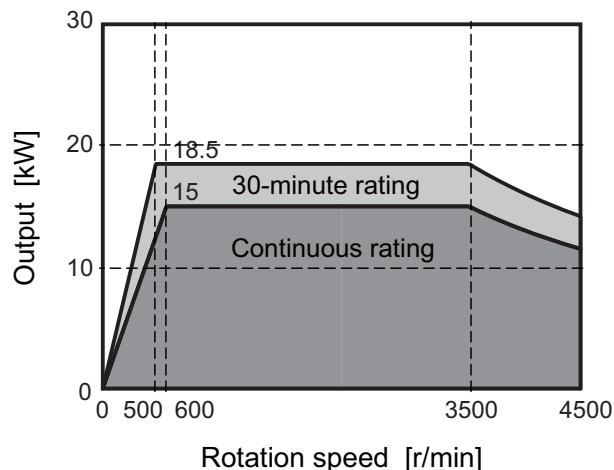


Wide range constant output series
SJ-V22-09T

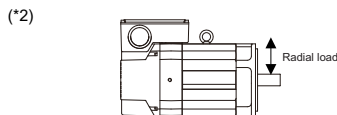
Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	Multi axis integrated type
	Regenerative resistor type
Output capacity[kW]	Continuous rated output
	Short time rated output
	Standard output during acceleration/deceleration
	Actual acceleration/deceleration output(*3)
	Actual acceleration/deceleration output(*3)
Base rotation speed	Continuous rating[r/min]
	Short time rating[r/min]
Maximum rotation speed[r/min]	
Frame No.	
Continuous rated torque[N·m]	
GD ² [kg·m ²]	
Inertia[kg·m ²]	
Tolerable radial load(*2) [N]	
Cooling fan	
Input voltage	
Degree of protection	
Mass[kg]	
Heat-resistant class	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

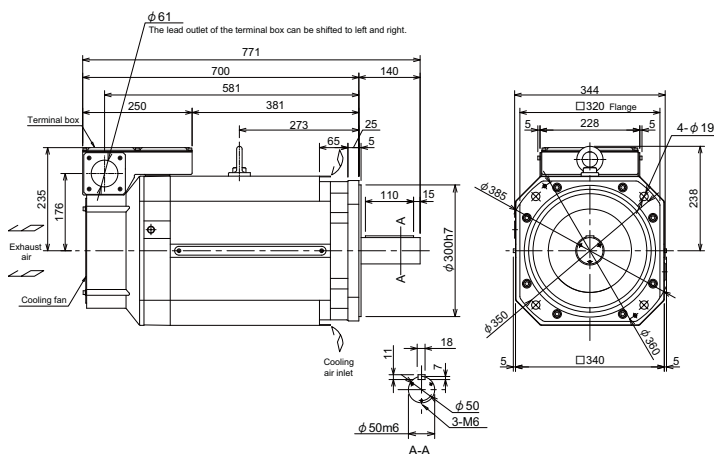
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

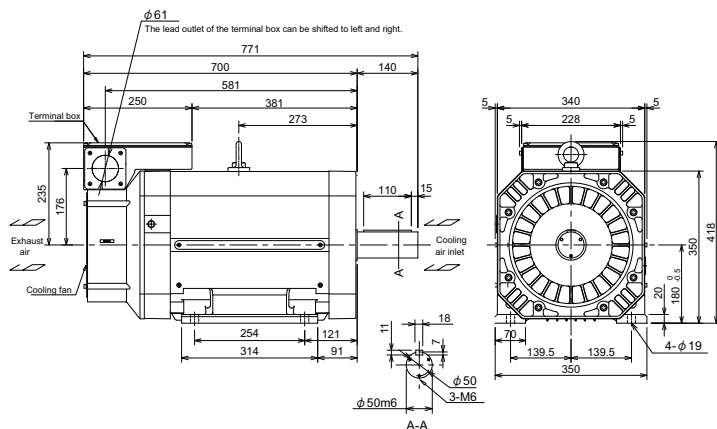
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-V22-09T with standard flange



SJ-V22-09T with standard legs



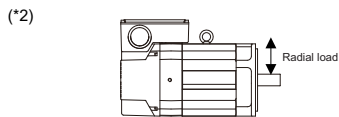
Wide range constant output series

SJ-VK22-19ZT

Specifications

Item	Specifications		
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-320	
	2-axis type	-	
	Multi axis integrated type	-	
	Regenerative resistor type	-	
Output capacity[kW]	Continuous rated output	13	
	Short time rated output	18.5	
		(15-minute rating) (30-minute rating)	22
	Standard output during acceleration/deceleration	18.5	
Actual acceleration/deceleration output(*3)	22.2	26.4	
Base rotation speed[r/min]	(Continuous) 400 / (Short time) 330	575	
Maximum rotation speed[r/min]	750	6000	
Frame No.	B180		
Continuous rated torque[N·m]	310	307	
GD ² [kg·m ²]	1.36		
Inertia[kg·m ²]	0.34		
Tolerable radial load(*2) [N]	3920		
Cooling fan	Input voltage	3-phase 200V	
Degree of protection	IP44		
Mass[kg]	300		
Heat-resistant class	155(F)		

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

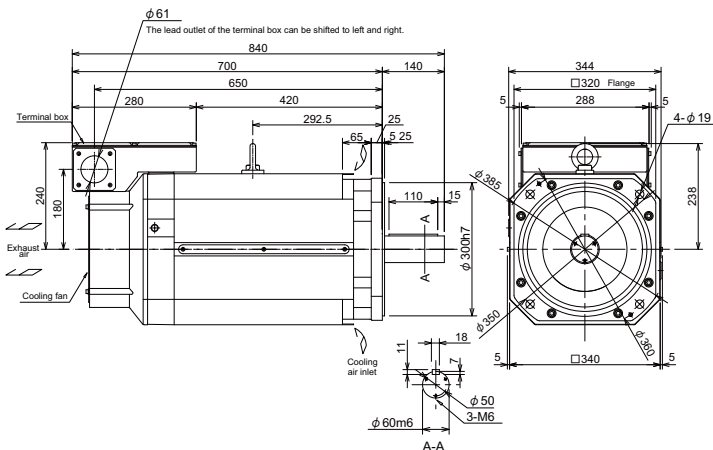
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

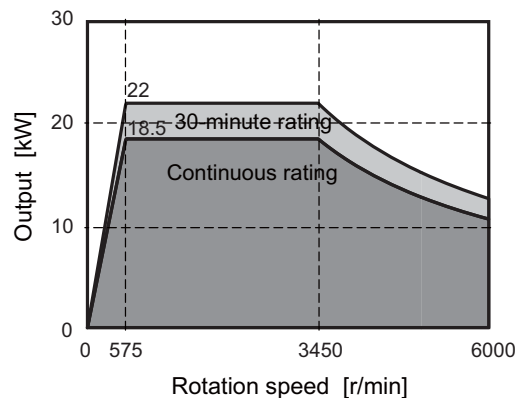
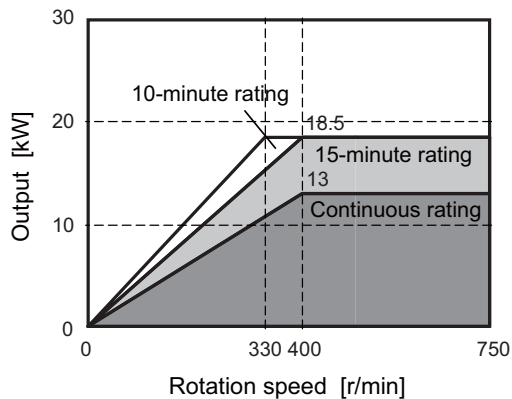
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-VK22-19ZT with standard flange



Output characteristics



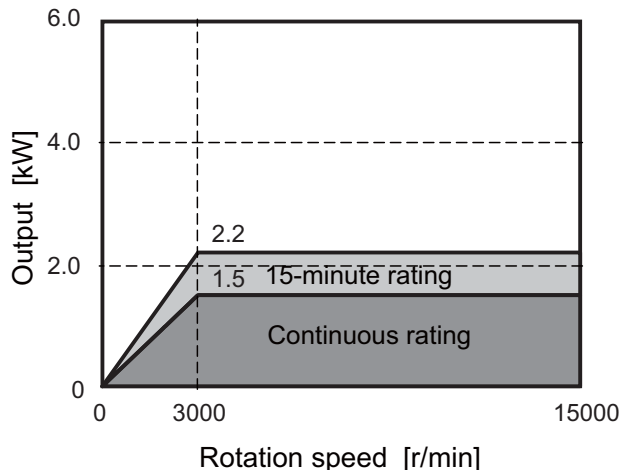
Low-inertia series

SJ-VL2.2-02ZT

Specifications

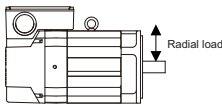
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-40
	2-axis type	MDS-D2-SP2-4020 (L) MDS-D2-SP2-4040S MDS-D2-SP2-8040 (M)
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-80
Output capacity[kW]	Continuous rated output	1.5
	Short time rated output	2.2 (15-minute rating)
	Standard output during acceleration/deceleration	2.2
	Actual acceleration/deceleration output(*3)	2.6
	Regenerative resistor type	MDS-DJ-SP-80
Base rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	15000	
Frame No.	B71	
Continuous rated torque[N·m]	4.8	
GD ² [kg·m ²]	0.0096	
Inertia[kg·m ²]	0.0024	
Tolerable radial load(*2) [N]	196	
Cooling fan	Input voltage	Single-phase 200V
Degree of protection		IP44
Mass[kg]		20
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) The acceleration/deceleration frequency is limited by the regenerative resistor.

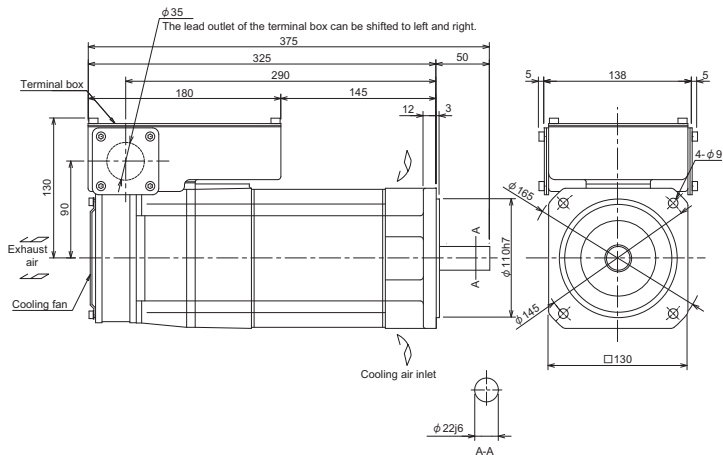
(*5) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-VL2.2-02ZT with standard flange



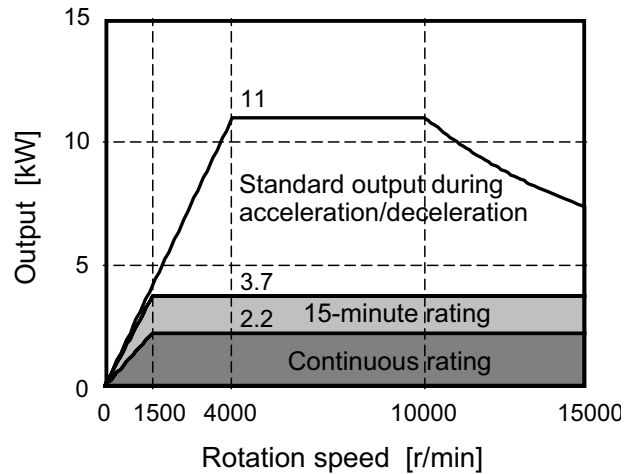
Low-inertia series

SJ-VL11-02FZT

Specifications

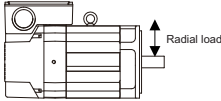
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S(L)
	Multi axis integrated type	MDS-DM2-SPV2-16080
		MDS-DM2-SPV3-16080
Output capacity[kW]	Regenerative resistor type	-
	Continuous rated output	2.2
	Short time rated output	3.7 (15-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	15000	
Frame No.	D90	
Continuous rated torque[N·m]	14.0	
GD ² [kg·m ²]	0.012	
Inertia[kg·m ²]	0.003	
Tolerable radial load(*2) [N]	245	
Cooling fan	Input voltage	Single-phase 200V
Degree of protection		IP44
Mass[kg]		42
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

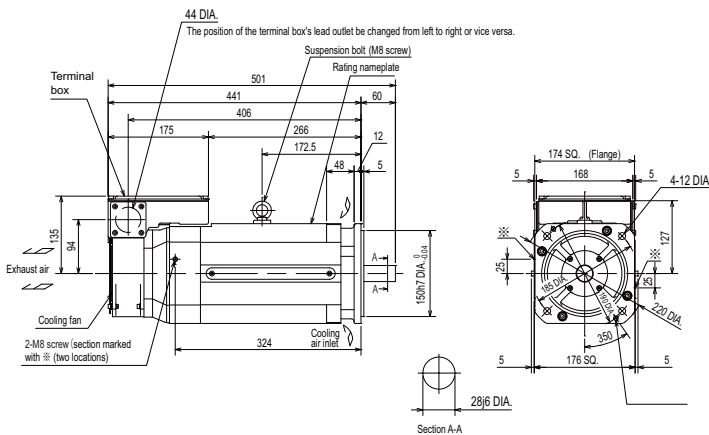
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level Transportation: 10000 meters or less above sea level

Outline dimension drawings [Unit : mm]

SJ-VL11-02FZT with standard flange



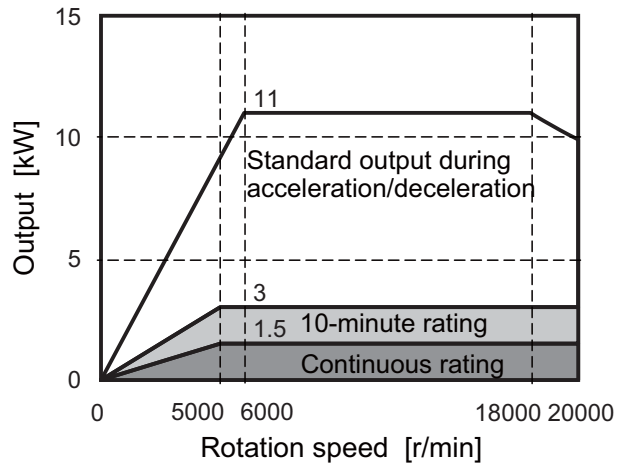
Low-inertia series

SJ-VL11-05FZT-S01

Specifications

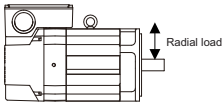
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L)
	Multi axis integrated type	MDS-DM2-SPV2-16080
		MDS-DM2-SPV3-16080
Output capacity[kW]	Regenerative resistor type	MDS-DJ-SP-160
	Continuous rated output	1.5
	Short time rated output	3 (10-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed[r/min]	5000	
Maximum rotation speed[r/min]	20000	
Frame No.	B71	
Continuous rated torque[N·m]	2.9	
GD ² [kg·m ²]	0.0096	
Inertia[kg·m ²]	0.0024	
Tolerable radial load(*2) [N]	98	
Cooling fan	Input voltage	Single-phase 200V
Degree of protection	IP44	
Mass[kg]	20	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

(*4) The acceleration/deceleration frequency is limited by the regenerative resistor.

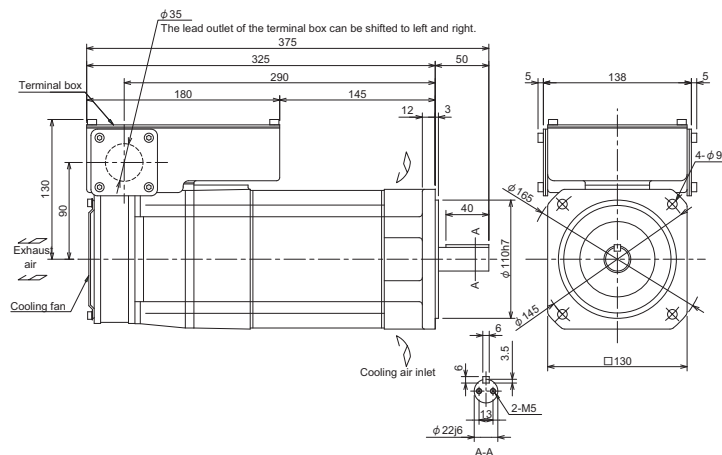
(*5) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-VL11-05FZT-S01 with standard flange



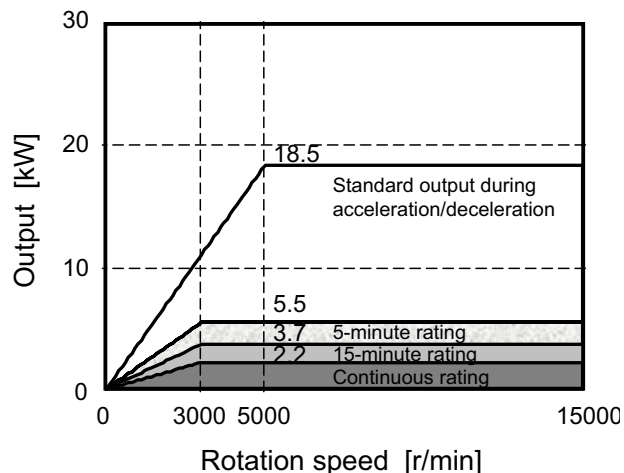
Low-inertia series

SJ-VL18.5-05FZT

Specifications

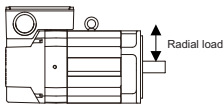
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-240
	2-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	-
Output capacity[kW]	Continuous rated output	2.2
	Short time rated output	5.5(5-minute rating)
	Standard output during acceleration/deceleration	18.5
	Actual acceleration/deceleration output(*3)	22.2
Base rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	15000	
Frame No.	D90	
Continuous rated torque[N·m]	7.0	
GD ² [kg·m ²]	0.021	
Inertia[kg·m ²]	0.00525	
Tolerable radial load(*2) [N]	245	
Cooling fan	Input voltage	Single-phase 200V
Degree of protection		IP44
Mass[kg]		40
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

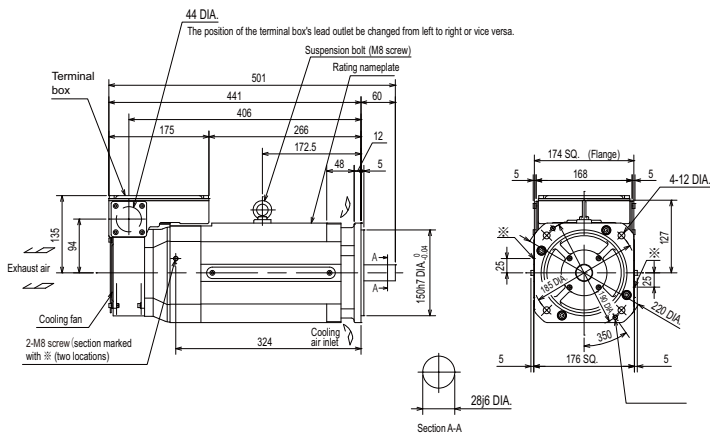
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000 meters or less above sea level, Storage: 1000 meters or less above sea level Transportation: 10000 meters or less above sea level

Outline dimension drawings [Unit : mm]

SJ-VL18.5-05FZT with standard flange



Built-in Spindle Motor

Built-in IM spindle motor
SJ-2B4002T

Specifications

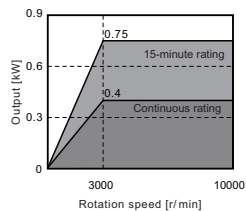
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-20	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	0.4
	Short time rated output	0.75(15-minute rating)
	Standard output during acceleration/deceleration	0.75
	Actual acceleration/deceleration output(*3)	0.9
Base rotation speed	Continuous[r/min]	3000
	Short time[r/min]	3000
Maximum rotation speed[r/min]	10000	
Frame No. - Core width	63-50	
Torque (Base rotation speed)	Continuous[N·m]	1.27
	Short time[N·m]	2.39
Rotor GD ² [kg·m ²]	0.0031	
Rotor inertia moment[kg·m ²]	0.00078	
Mass	Stator[kg]	2.2
	Rotor[kg]	0.9
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	240	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

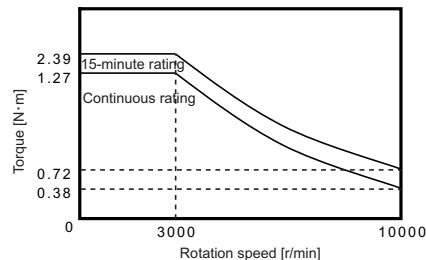
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



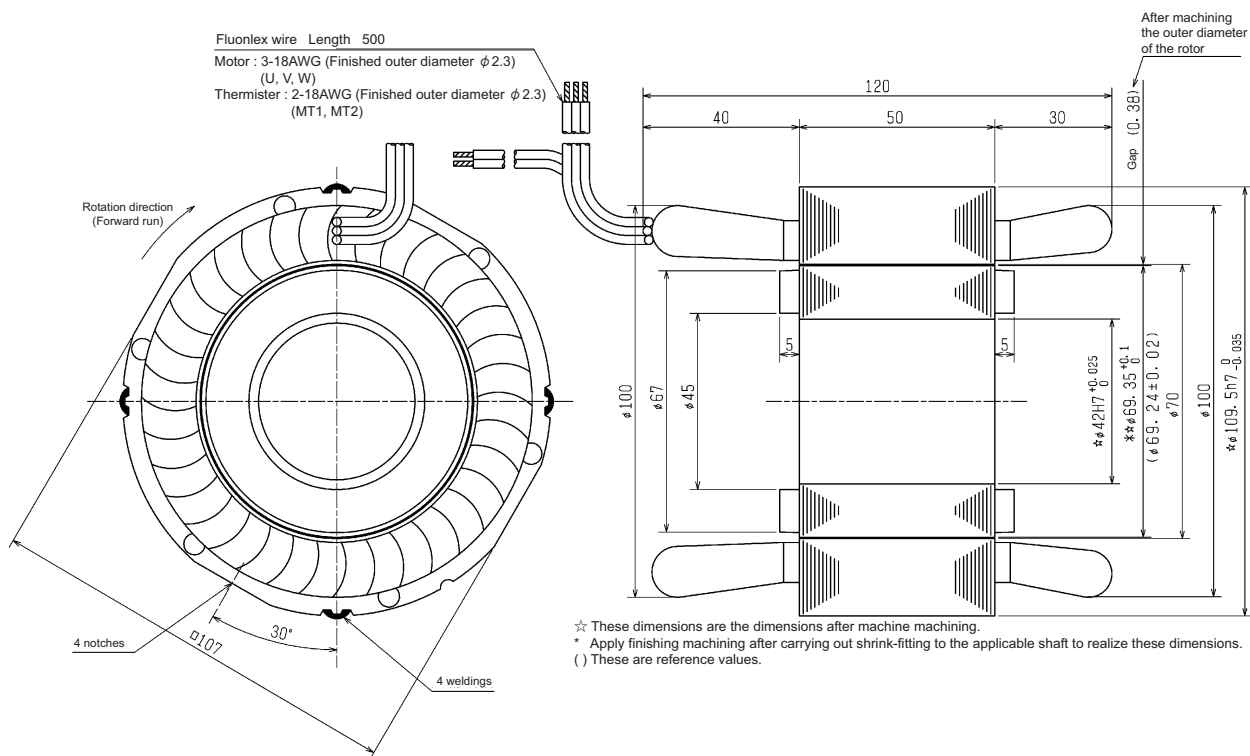
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 15-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



Built-in IM spindle motor

SJ-2B4004T

Specifications

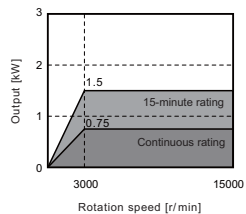
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-40	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	0.75
	Short time rated output	1.5(15-minute rating)
	Standard output during acceleration/deceleration	1.5
	Actual acceleration/deceleration output(*3)	1.8
Base rotation speed	Continuous[r/min]	3000
	Short time[r/min]	3000
Maximum rotation speed[r/min]	15000	
Frame No. - Core width	63-50	
Torque (Base rotation speed)	Continuous[N·m]	2.39
	Short time[N·m]	4.77
Rotor GD ² [kg·m ²]	0.0031	
Rotor inertia moment[kg·m ²]	0.00078	
Mass	Stator[kg]	2.2
	Rotor[kg]	0.9
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	530	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

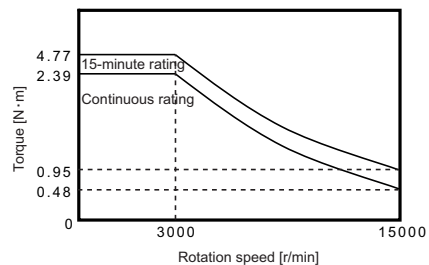
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



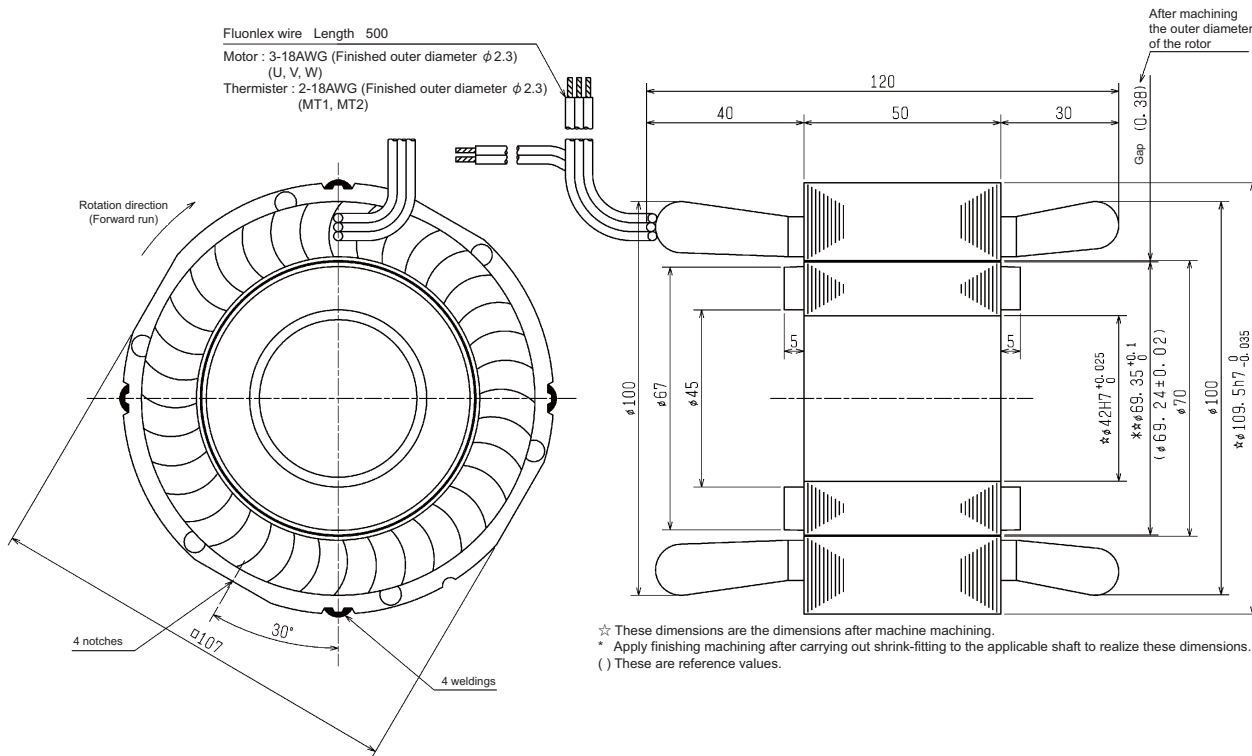
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 15-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Built-in IM spindle motor

SJ-2B4003T

Specifications

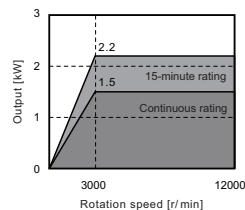
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-40	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	1.5
	Short time rated output	2.2(15-minute rating)
	Standard output during acceleration/deceleration	2.2
	Actual acceleration/deceleration output(*3)	2.64
Base rotation speed	Continuous[r/min]	3000
	Short time[r/min]	3000
Maximum rotation speed[r/min]	12000	
Frame No. - Core width	63-90	
Torque (Base rotation speed)	Continuous[N·m]	4.77
	Short time[N·m]	7.00
Rotor GD ² [kg·m ²]	0.0055	
Rotor inertia moment[kg·m ²]	0.00138	
Mass	Stator[kg]	3.9
	Rotor[kg]	1.7
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	570	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

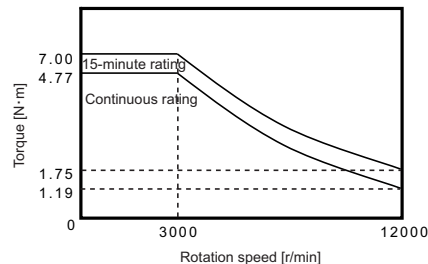
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



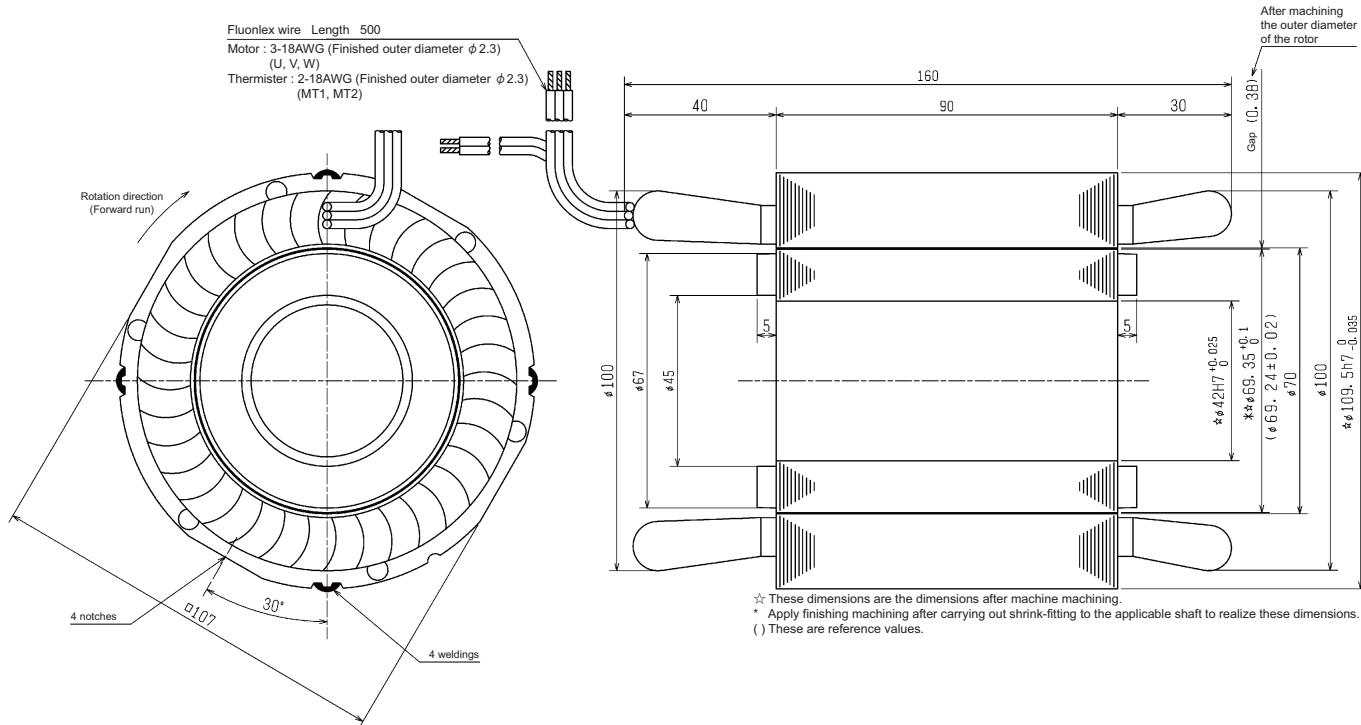
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 15-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



Built-in IM spindle motor

SJ-2B4B03T

Specifications

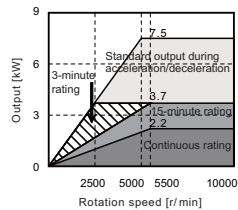
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-160	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	2.2
	Short time rated output	3.7(15-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
Base rotation speed	Continuous[r/min]	5500
	Short time[r/min]	5500
Maximum rotation speed[r/min]	10000	
Frame No. - Core width	70-70	
Torque (Base rotation speed)	Continuous[N·m]	3.82
	Short time[N·m]	6.42
Rotor GD ² [kg·m ²]	0.0065	
Rotor inertia moment[kg·m ²]	0.00163	
Mass	Stator[kg]	3.0
	Rotor[kg]	1.5
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	720	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

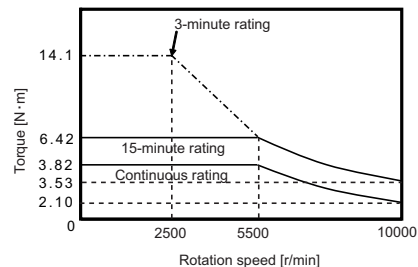
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics

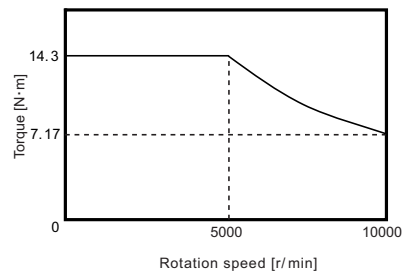


Torque at steady state-rotation speed characteristics



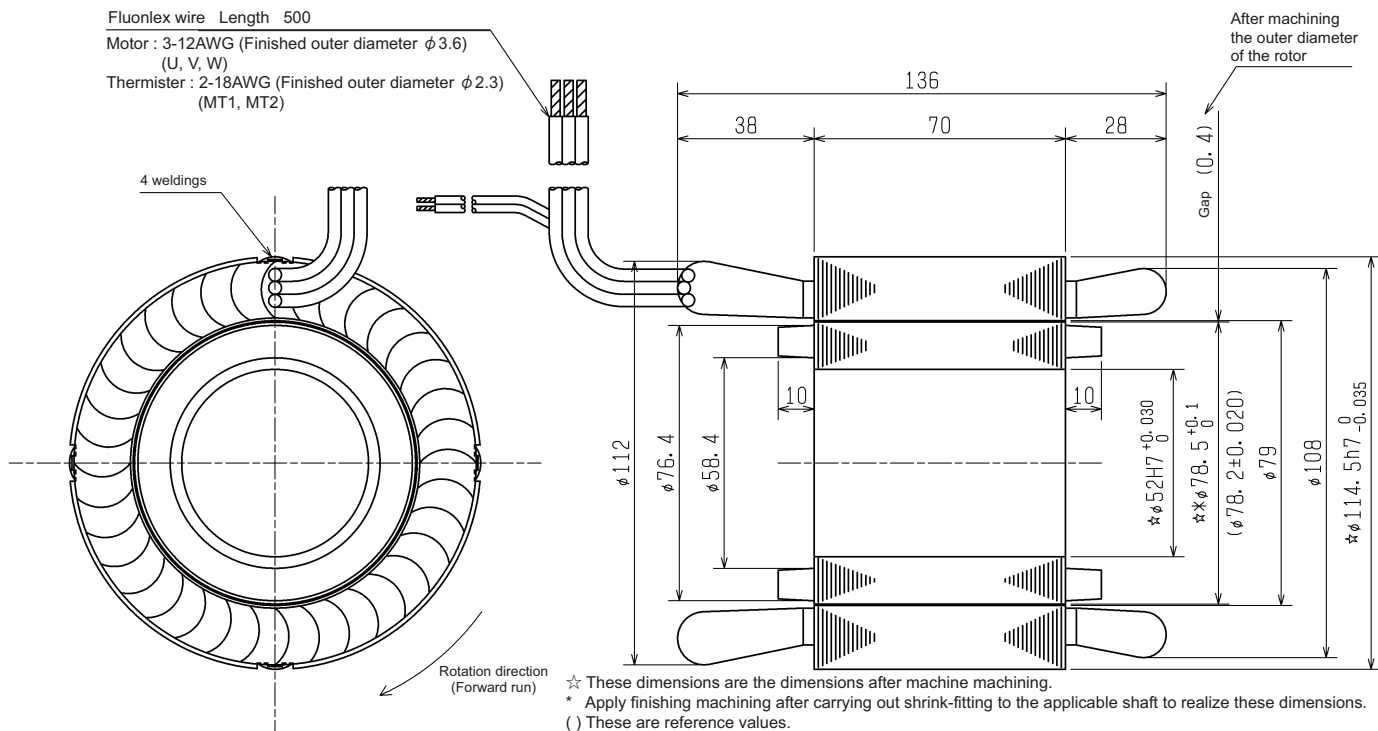
120% of this characteristics is output at the time of actual acceleration/deceleration.

Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Outline dimension drawings [Unit : mm]



Built-in IM spindle motor
SJ-2B4112T

Specifications

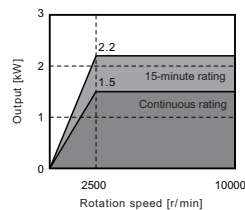
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-40	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	1.5
	Short time rated output	2.2(15-minute rating)
	Standard output during acceleration/deceleration	2.2
	Actual acceleration/deceleration output(*3)	2.64
Base rotation speed	Continuous[r/min]	2500
	Short time[r/min]	2500
Maximum rotation speed[r/min]	10000	
Frame No. - Core width	71-66	
Torque (Base rotation speed)	Continuous[N·m]	5.73
	Short time[N·m]	8.40
Rotor GD ² [kg·m ²]	0.0067	
Rotor inertia moment[kg·m ²]	0.00168	
Mass	Stator[kg]	4.1
	Rotor[kg]	1.7
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	570	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

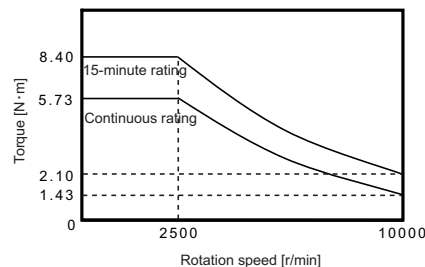
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



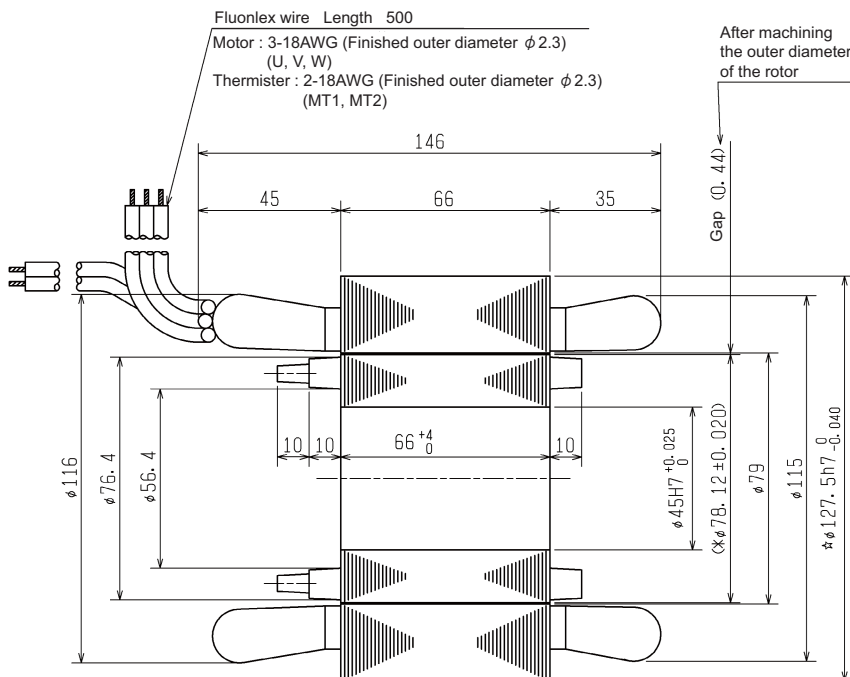
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 15-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Built-in IM spindle motor
SJ-2B4111T

Specifications

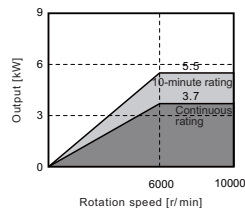
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-80	
AC reactor for spindle motor	BKO-NC6783H31	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5(10-minute rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
Base rotation speed	Continuous[r/min]	6000
	Short time[r/min]	6000
Maximum rotation speed[r/min]	10000	
Frame No. - Core width	71-66	
Torque (Base rotation speed)	Continuous[N·m]	5.89
	Short time[N·m]	8.75
Rotor GD ² [kg·m ²]	0.0067	
Rotor inertia moment[kg·m ²]	0.00168	
Mass	Stator[kg]	4.1
	Rotor[kg]	1.7
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	870	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

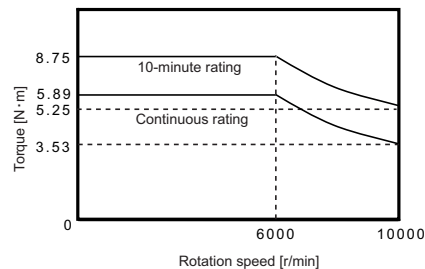
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



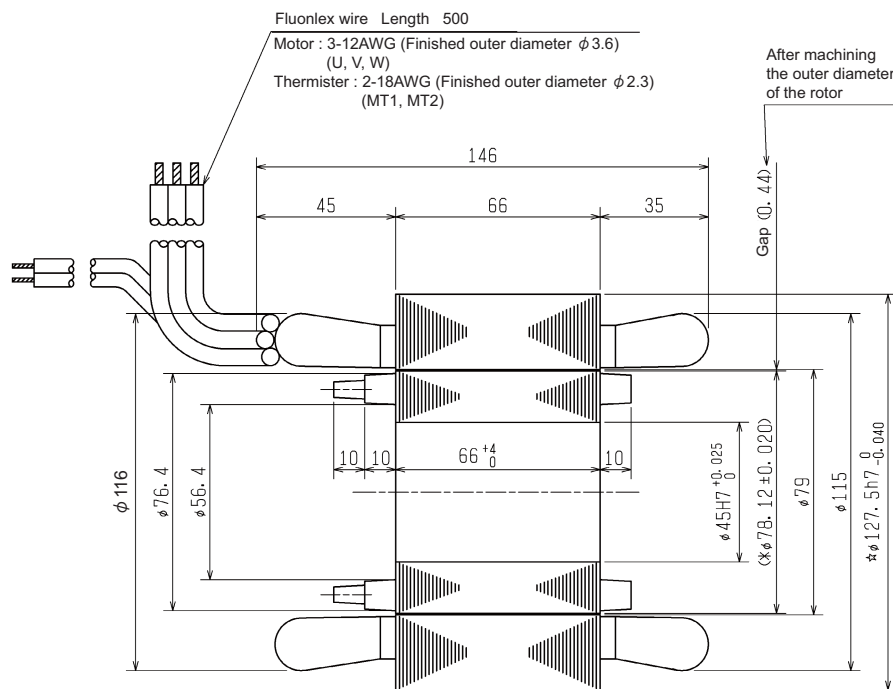
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 10-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Built-in IM spindle motor
SJ-2B4105T

Specifications

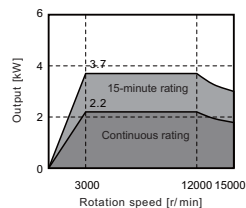
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-80	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	2.2
	Short time rated output	3.7(15-minute rating)
	Standard output during acceleration/deceleration	3.7
	Actual acceleration/deceleration output(*3)	4.44
Base rotation speed	Continuous[r/min]	3000
	Short time[r/min]	3000
Maximum rotation speed[r/min]	15000	
Frame No. - Core width	71-120	
Torque (Base rotation speed)	Continuous[N·m]	7.00
	Short time[N·m]	11.8
Rotor GD ² [kg·m ²]	0.0012	
Rotor inertia moment[kg·m ²]	0.003	
Mass	Stator[kg]	7.4
	Rotor[kg]	3.0
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	700	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

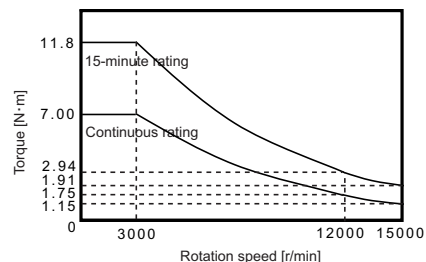
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



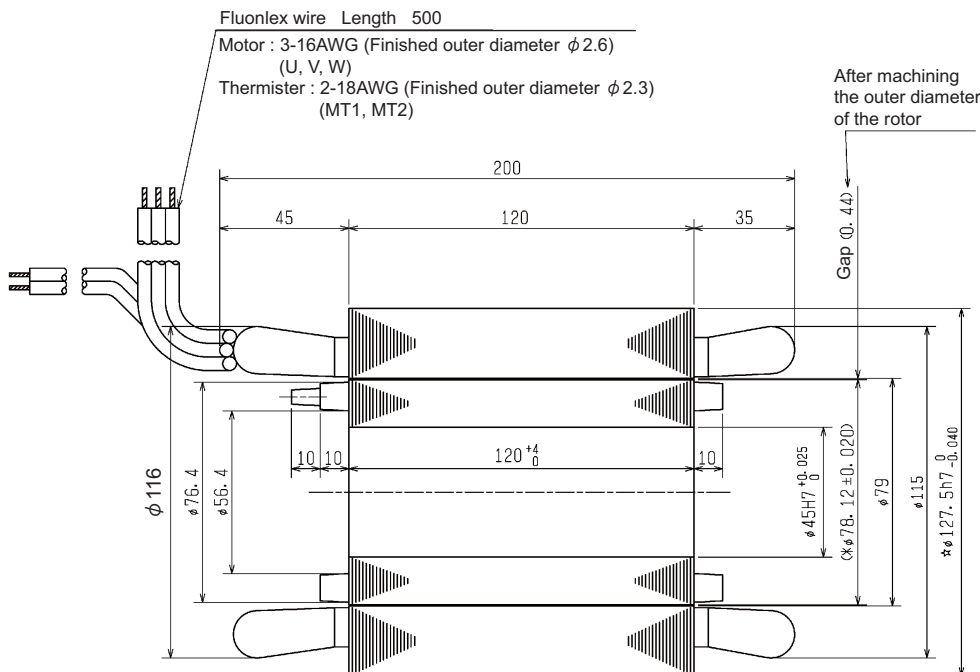
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 15-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Built-in IM spindle motor
SJ-2B4102T

Specifications

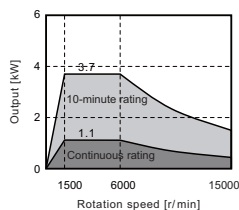
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-80	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	1.1
	Short time rated output	3.7(10-minute rating)
	Standard output during acceleration/deceleration	3.7
	Actual acceleration/deceleration output(*3)	4.44
Base rotation speed	Continuous[r/min]	1500
	Short time[r/min]	1500
Maximum rotation speed[r/min]	15000	
Frame No. - Core width	71-170	
Torque (Base rotation speed)	Continuous[N·m]	7.00
	Short time[N·m]	23.6
Rotor GD ² [kg·m ²]	0.0017	
Rotor inertia moment[kg·m ²]	0.00425	
Mass	Stator[kg]	10
	Rotor[kg]	4.3
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	1530	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

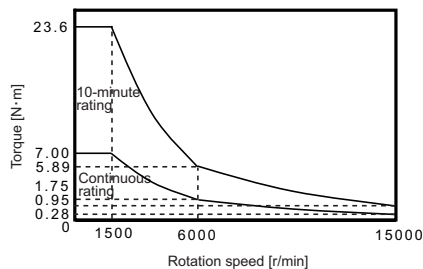
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



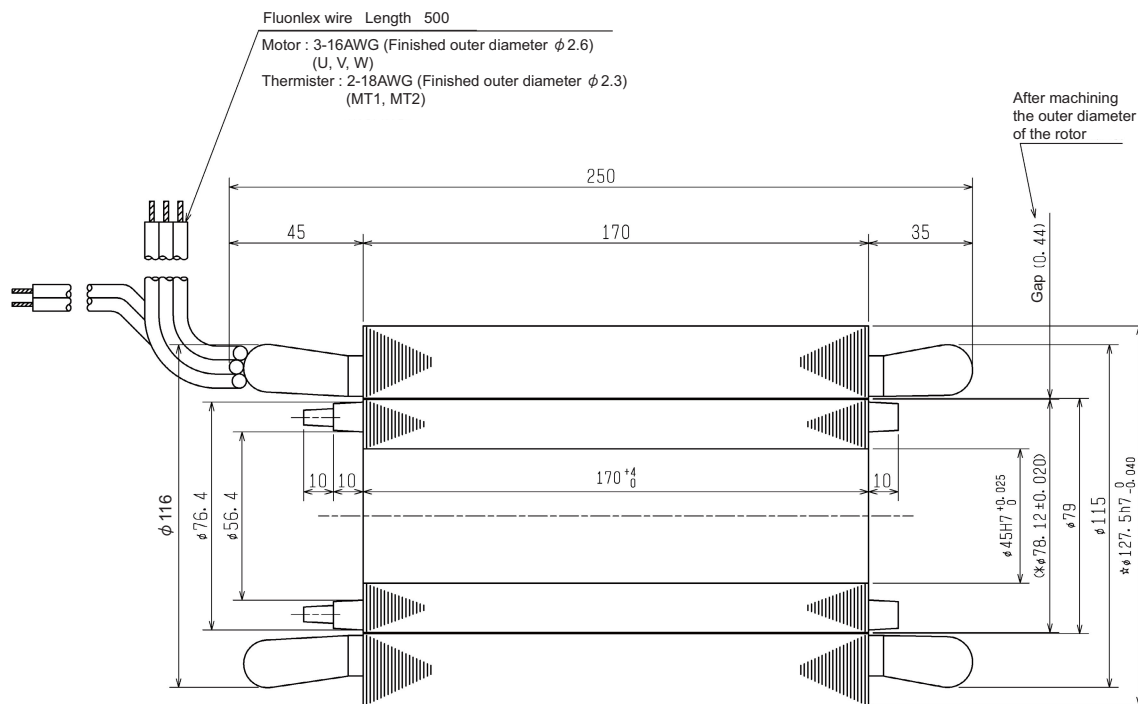
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 10-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Built-in IM spindle motor

SJ-2B4310T

Specifications

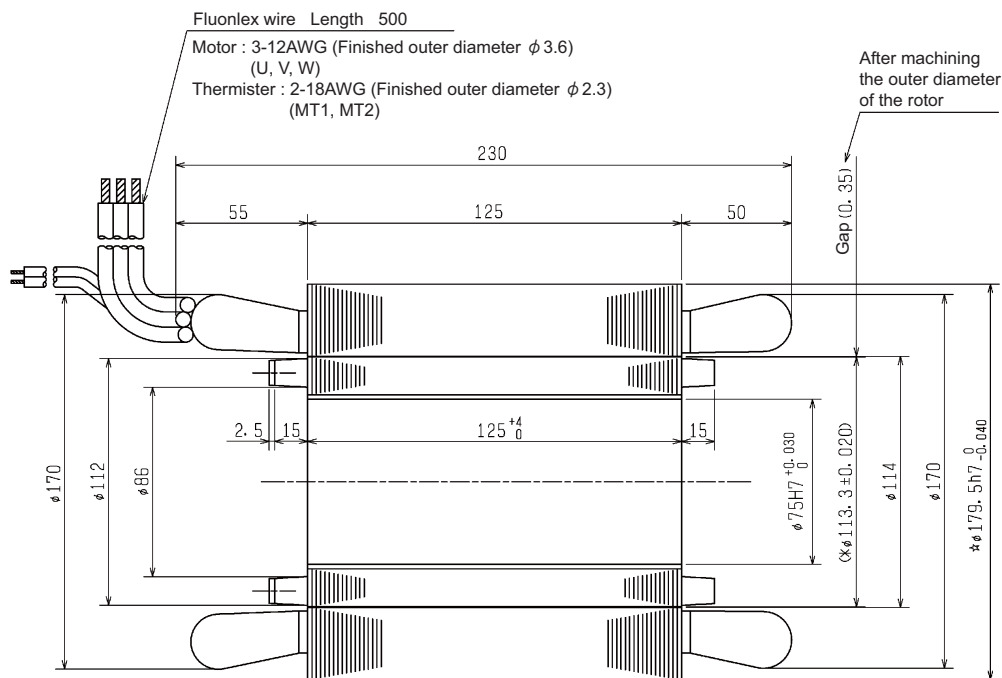
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-80	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5(30-minute rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
Base rotation speed	Continuous[r/min]	1750
	Short time[r/min]	1750
Maximum rotation speed[r/min]	8000	
Frame No. - Core width	112-125	
Torque (Base rotation speed)	Continuous[N·m]	20.2
	Short time[N·m]	30.0
Rotor GD ² [kg·m ²]	0.051	
Rotor inertia moment[kg·m ²]	0.0128	
Mass	Stator[kg]	15
	Rotor[kg]	5.6
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	910	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

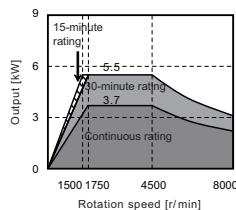
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

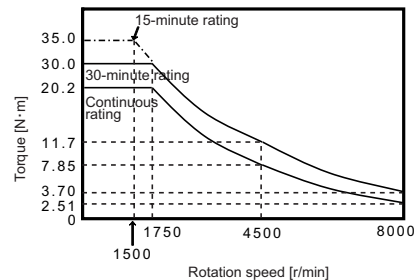


- ☆ These dimensions are the dimensions after machine machining.
- * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
- () These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 15-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B4301T

Specifications

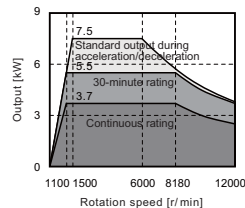
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-160	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5(30-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
Base rotation speed	Continuous[r/min]	1100
	Short time[r/min]	1100
Maximum rotation speed[r/min]	12000	
Frame No. - Core width	112-125	
Torque (Base rotation speed)	Continuous[N·m]	32.1
	Short time[N·m]	47.7
Rotor GD ² [kg·m ²]	0.051	
Rotor inertia moment[kg·m ²]	0.0128	
Mass	Stator[kg]	15
	Rotor[kg]	5.6
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	1510	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

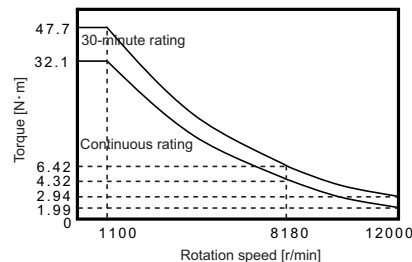
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics

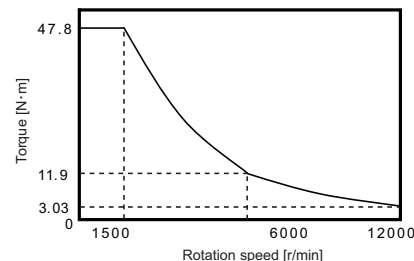


Torque at steady state-rotation speed characteristics



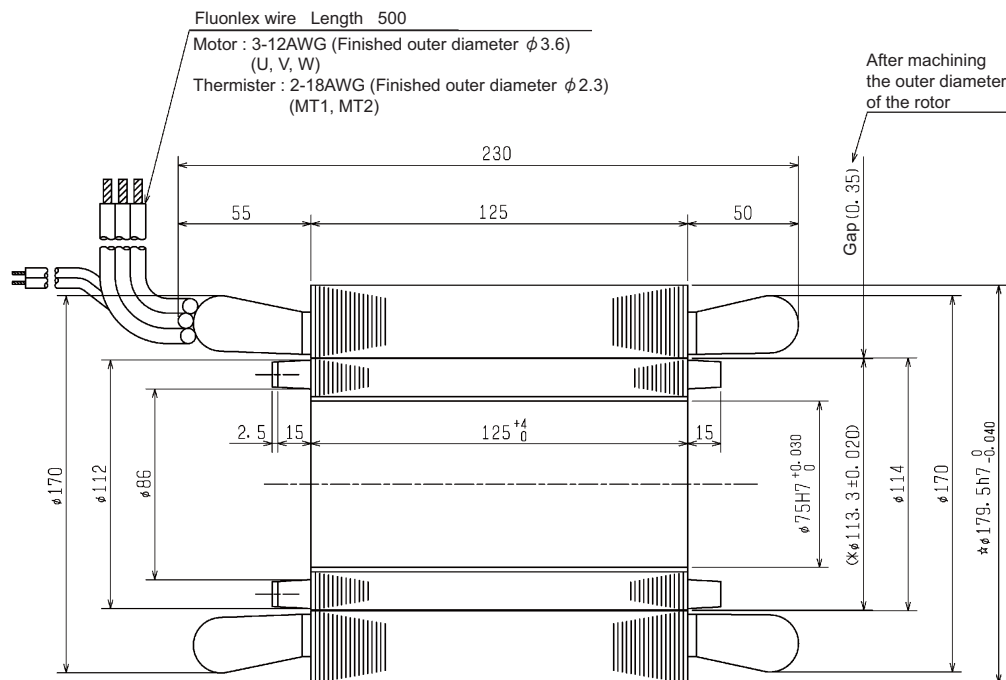
120% of this characteristics is output at the time of actual acceleration/deceleration.

Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Outline dimension drawings [Unit : mm]



- ☆ These dimensions are the dimensions after machine machining.
- * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
- () These are reference values.

Built-in IM spindle motor
SJ-2B4327T

Specifications

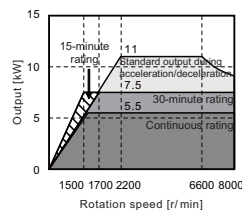
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-160	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	5.5
	Short time rated output	7.5(30-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed	Continuous[r/min]	1700
	Short time[r/min]	1700
Maximum rotation speed[r/min]	8000	
Frame No. - Core width	112-170	
Torque (Base rotation speed)	Continuous[N·m]	30.9
	Short time[N·m]	42.1
Rotor GD ² [kg·m ²]	0.070	
Rotor inertia moment[kg·m ²]	0.0175	
Mass	Stator[kg]	20
	Rotor[kg]	7.6
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	1140	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

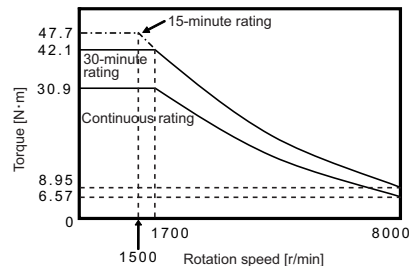
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics

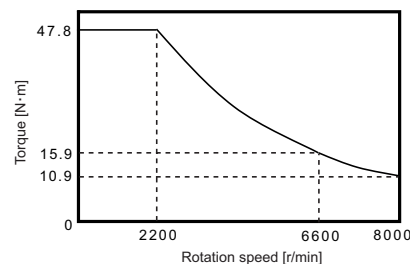


Torque at steady state-rotation speed characteristics



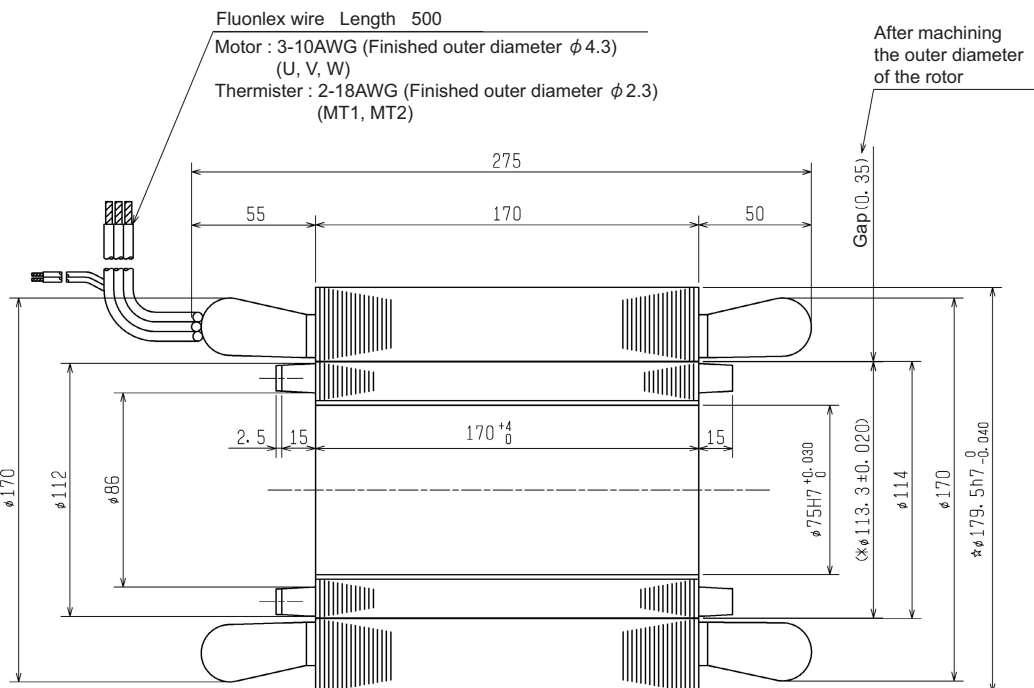
120% of this characteristics is output at the time of actual acceleration/deceleration.

Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Outline dimension drawings [Unit : mm]



- ☆ These dimensions are the dimensions after machine machining.
- * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
- () These are reference values.

Built-in IM spindle motor

SJ-2B4340T

Specifications

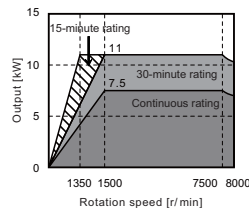
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-200	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	7.5
	Short time rated output	11(30-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed	Continuous[r/min]	1500
	Short time[r/min]	1500
Maximum rotation speed[r/min]	8000	
Frame No. - Core width	112-170	
Torque (Base rotation speed)	Continuous[N·m]	47.7
	Short time[N·m]	70.0
Rotor GD ² [kg·m ²]	0.070	
Rotor inertia moment[kg·m ²]	0.0175	
Mass	Stator[kg]	20
	Rotor[kg]	7.6
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	2500	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

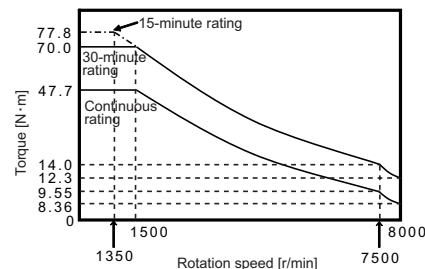
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



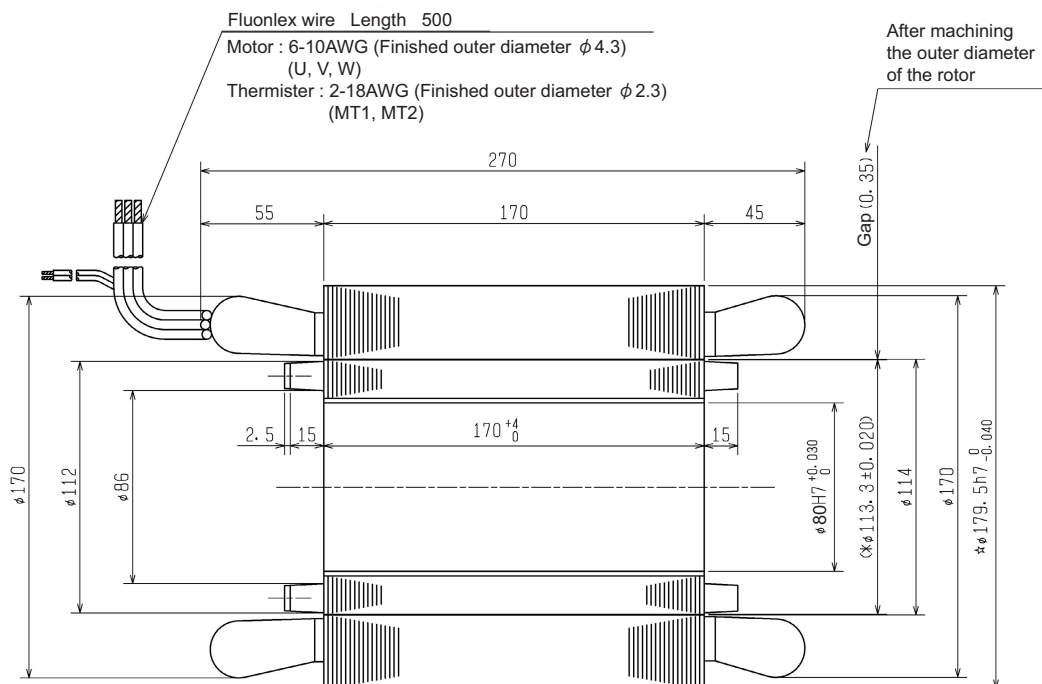
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 15-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



- ☆ These dimensions are the dimensions after machine machining.
- * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
- () These are reference values.

Built-in IM spindle motor

SJ-2B4313TK

Specifications

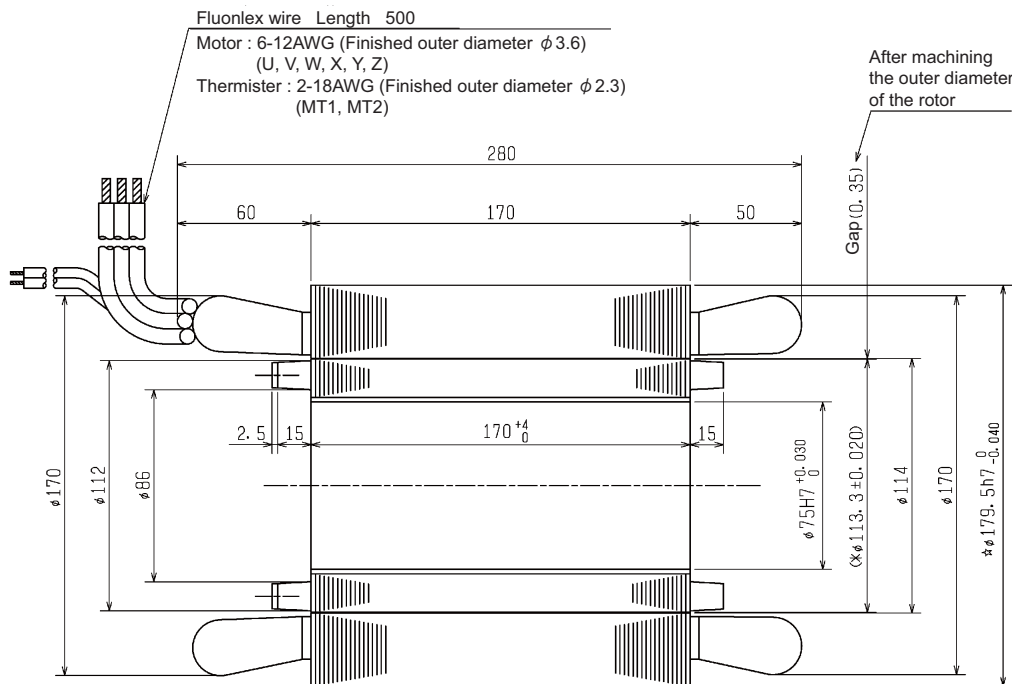
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-160	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	5.5	5.5
	Short time rated output	7.5(30-minute rating)	7.5(30-minute rating)
	Standard output during acceleration/deceleration	7.5	
	Actual acceleration/deceleration output(*3)	9	
Base rotation speed	Continuous[r/min]	1000	2100
	Short time[r/min]	1000	2100
Maximum rotation speed[r/min]		2100	12000
Frame No. - Core width		112-170	
Torque (Base rotation speed)	Continuous[N·m]	52.5	25.0
	Short time[N·m]	71.6	34.1
Rotor GD ² [kg·m ²]		0.070	
Rotor inertia moment[kg·m ²]		0.0175	
Mass	Stator[kg]	20	
	Rotor[kg]	7.6	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		2200	
Cooling oil amount[l/min (20°C)]		10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

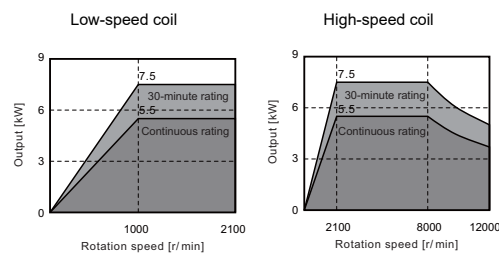
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

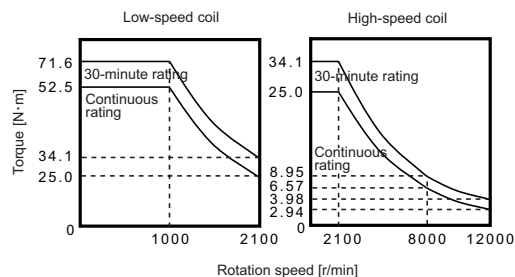


- ☆ These dimensions are the dimensions after machine machining.
- * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
- () These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor
SJ-2B4323TK

Specifications

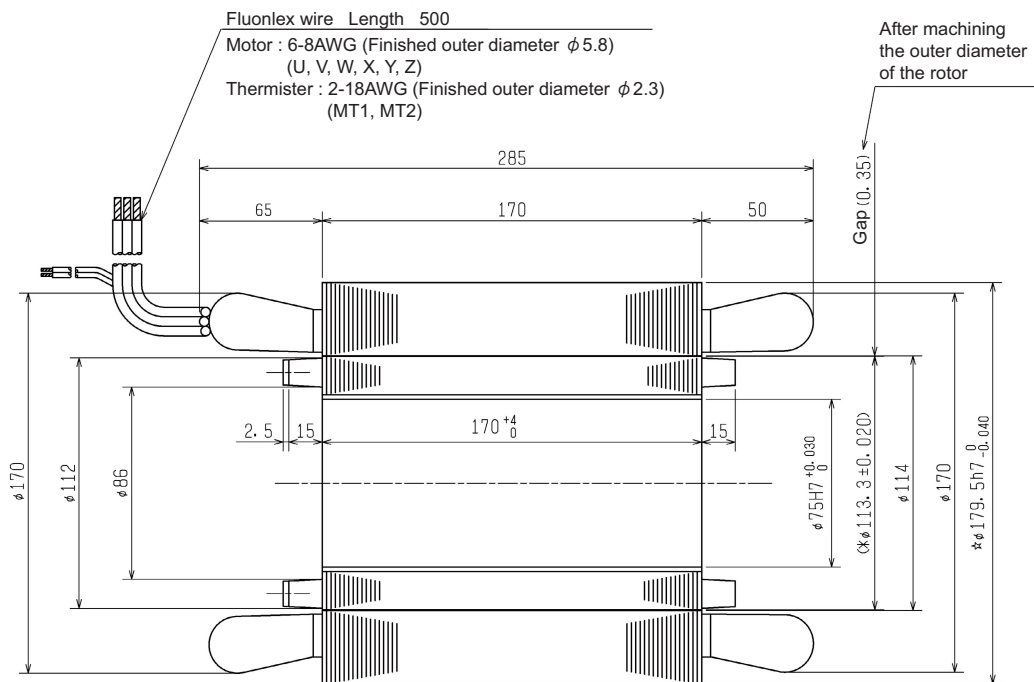
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-200	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	5.5
	Short time rated output	7.5(30-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed	Continuous[r/min]	1000
	Short time[r/min]	2000
Maximum rotation speed[r/min]		12000
Frame No. - Core width	112-170	
Torque (Base rotation speed)	Continuous[N·m]	52.5
	Short time[N·m]	71.6
Rotor GD ² [kg·m ²]	0.070	
Rotor inertia moment[kg·m ²]	0.0175	
Mass	Stator[kg]	20
	Rotor[kg]	7.6
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	4400	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

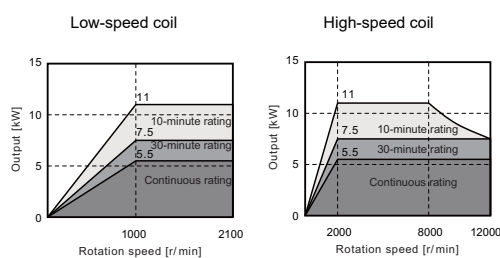
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

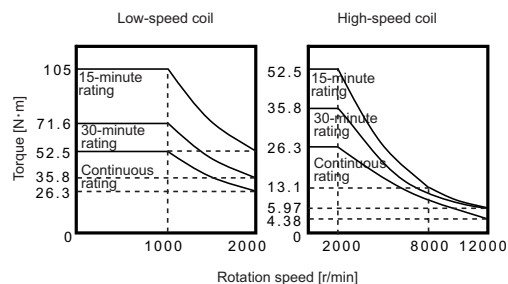


- ☆ These dimensions are the dimensions after machine machining.
- * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
- () These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 10-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor
SJ-2B4325TK

Specifications

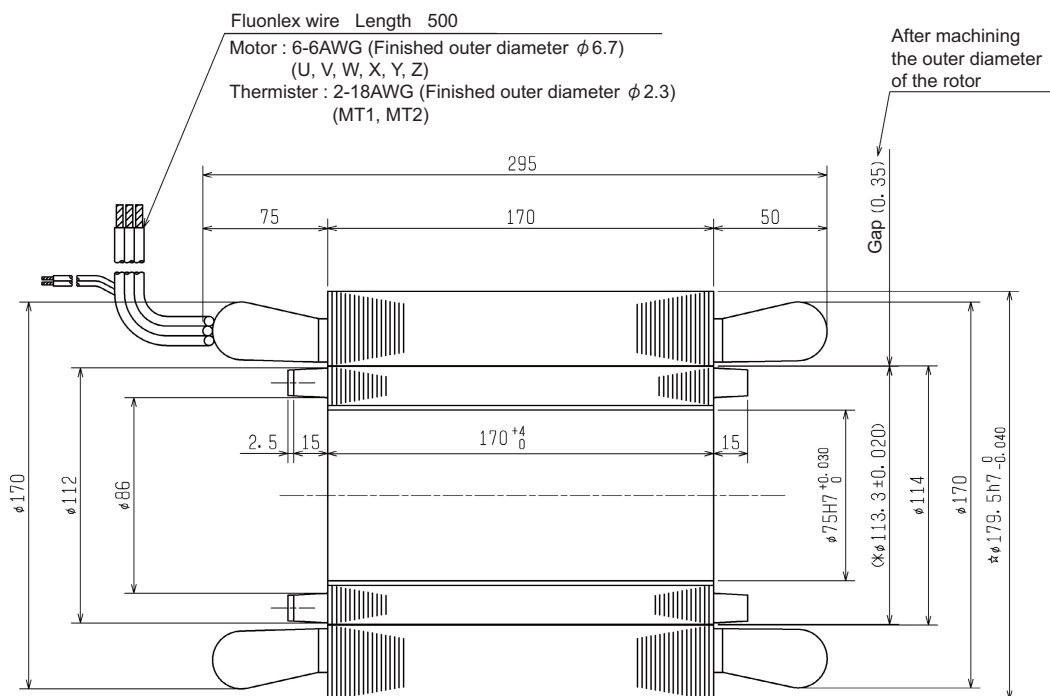
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-240	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	11
	Short time rated output	15(15-minute rating)
	Standard output during acceleration/deceleration	22
	Actual acceleration/deceleration output(*3)	26.4
Base rotation speed	Continuous[r/min]	2000
	Short time[r/min]	2000
Maximum rotation speed[r/min]	5200	4700
Frame No. - Core width	112-170	
Torque (Base rotation speed)	Continuous[N·m]	52.5
	Short time[N·m]	71.6
Rotor GD ² [kg·m ²]	0.070	
Rotor inertia moment[kg·m ²]	0.0175	
Mass	Stator[kg]	20
	Rotor[kg]	7.6
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	2640	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

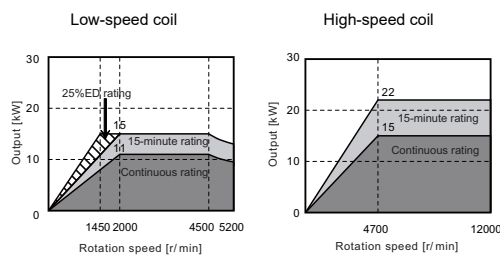
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

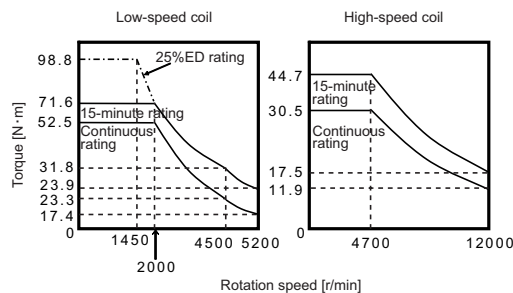


☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

Low-speed coil
120% of the 25%ED rating characteristics is torque at the time of acceleration/deceleration.

High-speed coil
120% of the 15-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B4303TK

Specifications

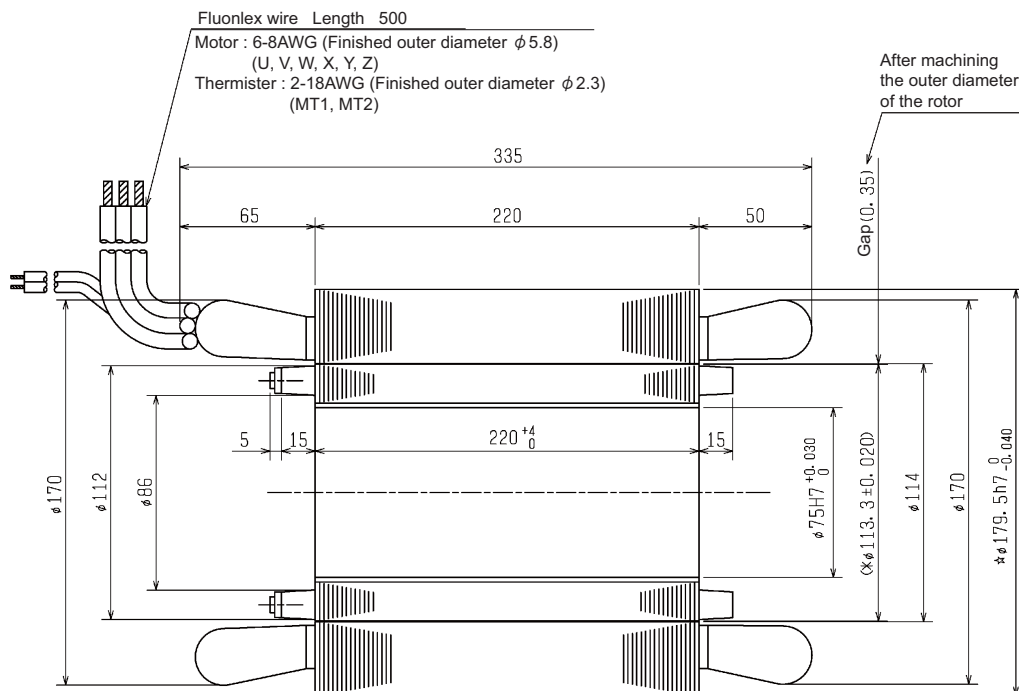
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-200	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	5.5	5.5
	Short time rated output	7.5(30-minute rating)	7.5(30-minute rating)
	Standard output during acceleration/deceleration	11	15
	Actual acceleration/deceleration output(*3)	13.2	18
Base rotation speed	Continuous[r/min]	680	1250
	Short time[r/min]	680	1250
Maximum rotation speed[r/min]		3000	12000
Frame No. - Core width		112-220	
Torque (Base rotation speed)	Continuous[N·m]	77.2	42.0
	Short time[N·m]	105	57.3
Rotor GD ² [kg·m ²]		0.090	
Rotor inertia moment[kg·m ²]		0.0225	
Mass	Stator[kg]	26	
	Rotor[kg]	9.8	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		3200	
Cooling oil amount[l/min (20°C)]		10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

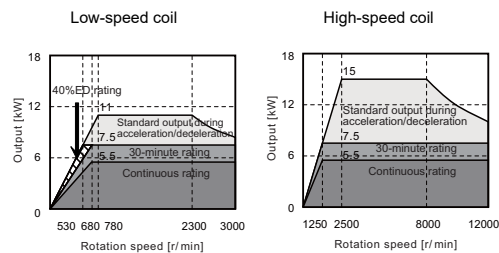
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

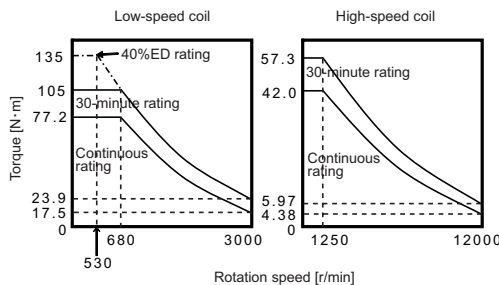


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

Output characteristics

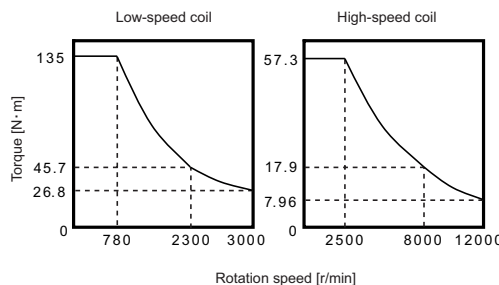


Torque at steady state-rotation speed characteristics



120% of this characteristics is output at the time of actual acceleration/deceleration.

Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor
SJ-2B4326TK

Specifications

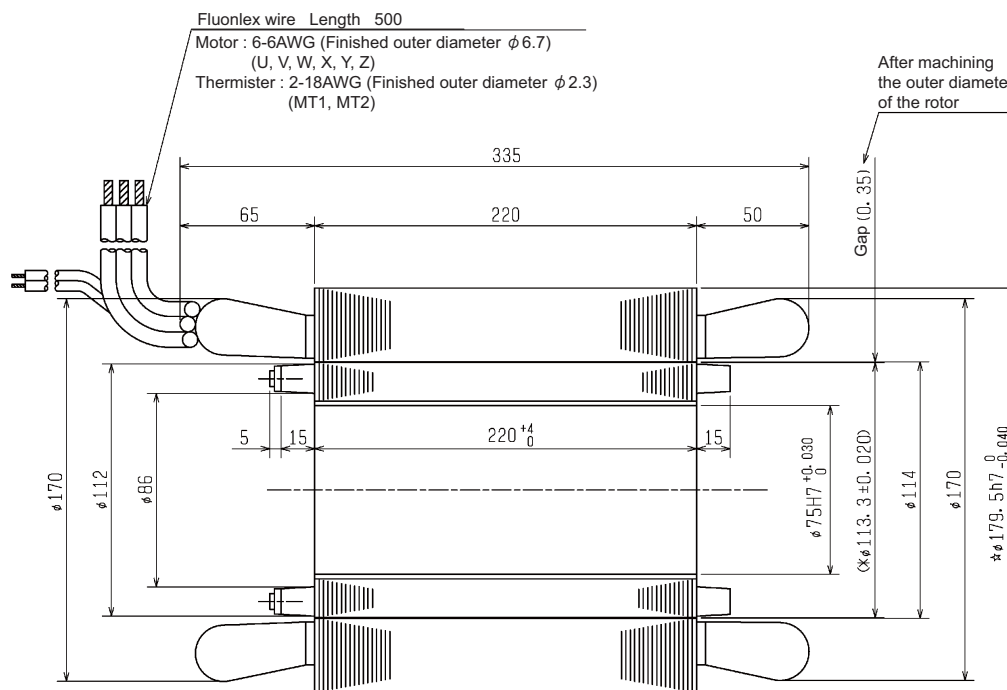
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-240	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	7.5	7.5
	Short time rated output	11(30-minute rating)	11(30-minute rating)
	Standard output during acceleration/deceleration	15	18.5
	Actual acceleration/deceleration output(*3)	18	22.2
Base rotation speed	Continuous[r/min]	1000	1600
	Short time[r/min]	1000	1600
Maximum rotation speed[r/min]		2500	12000
Frame No. - Core width		112-220	
Torque (Base rotation speed)	Continuous[N·m]	71.6	44.8
	Short time[N·m]	105	65.7
Rotor GD ² [kg·m ²]		0.090	
Rotor inertia moment[kg·m ²]		0.0225	
Mass	Stator[kg]	26	
	Rotor[kg]	9.8	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		3330	
Cooling oil amount[l/min (20°C)]		10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

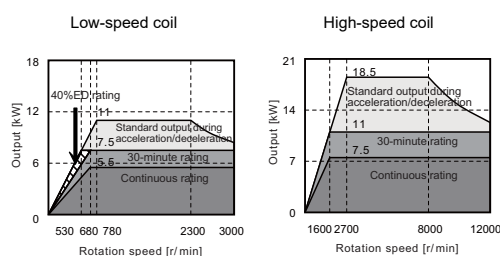
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

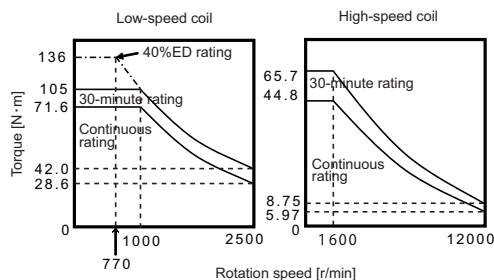


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

Output characteristics

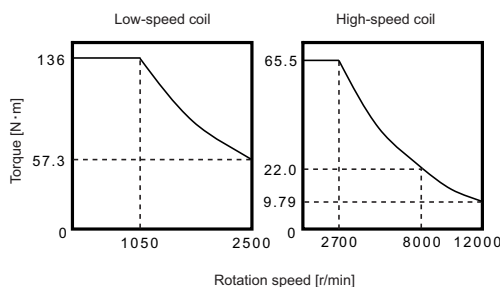


Torque at steady state-rotation speed characteristics



120% of this characteristics is output at the time of actual acceleration/deceleration.

Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor

SJ-2B4304TK

Specifications

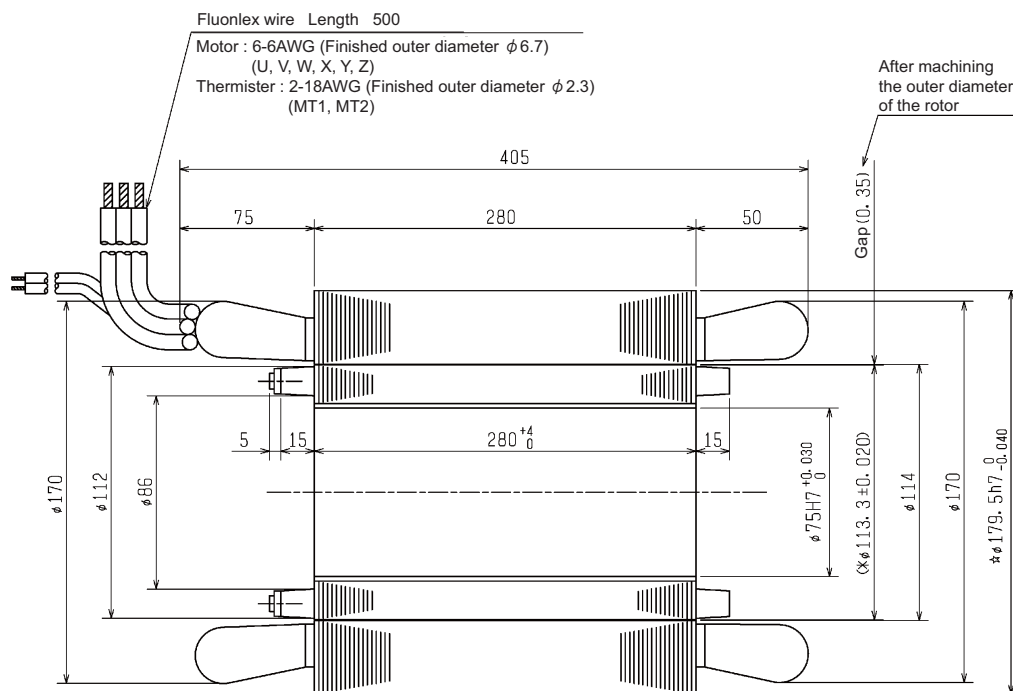
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-320	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	5.5
	Short time rated output	7.5(30-minute rating)
	Standard output during acceleration/deceleration	15
	Actual acceleration/deceleration output(*3)	18
Base rotation speed	Continuous[r/min]	450
	Short time[r/min]	750
Maximum rotation speed[r/min]		12000
Frame No. - Core width	112-280	
Torque (Base rotation speed)	Continuous[N·m]	117
	Short time[N·m]	138
Rotor GD ² [kg·m ²]	0.11	
Rotor inertia moment[kg·m ²]	0.028	
Mass	Stator[kg]	33
	Rotor[kg]	12
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	3870	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

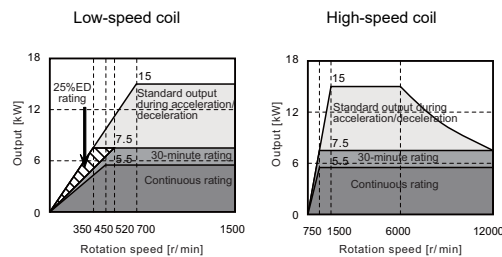
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

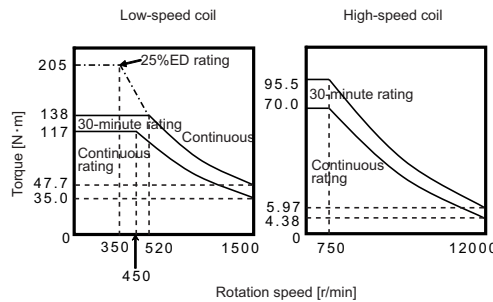


- ☆ These dimensions are the dimensions after machine machining.
- * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
- () These are reference values.

Output characteristics

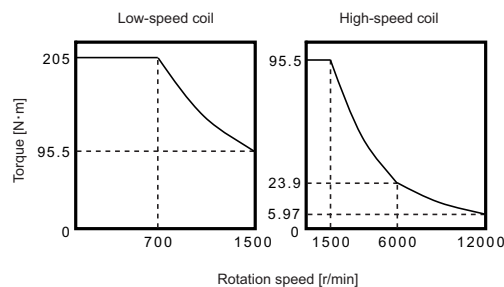


Torque at steady state-rotation speed characteristics



120% of this characteristics is output at the time of actual acceleration/deceleration.

Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor

SJ-2B4318TK

Specifications

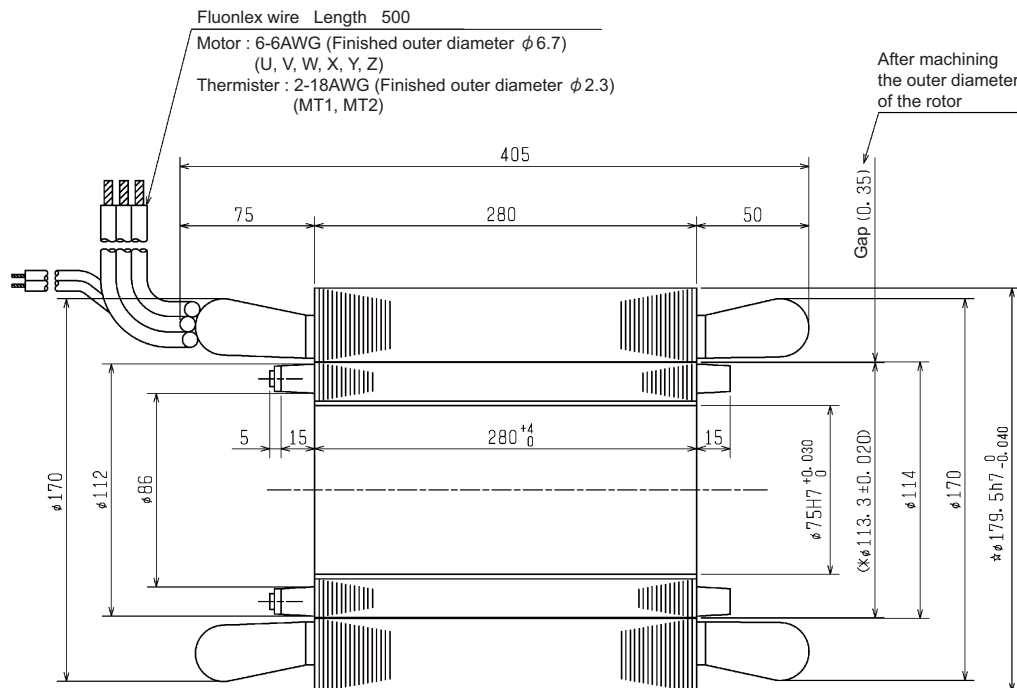
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-320	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	15	18.5
	Short time rated output	18.5(15-minute rating)	22(15-minute rating)
	Standard output during acceleration/deceleration	18.5	22
	Actual acceleration/deceleration output(*3)	22.2	26.4
Base rotation speed	Continuous[r/min]	1200	2500
	Short time[r/min]	1200	2500
Maximum rotation speed[r/min]		3000	12000
Frame No. - Core width		112-280	
Torque (Base rotation speed)	Continuous[N·m]	119	70.7
	Short time[N·m]	147	84.0
Rotor GD ² [kg·m ²]		0.11	
Rotor inertia moment[kg·m ²]		0.028	
Mass	Stator[kg]	33	
	Rotor[kg]	12	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		4950	
Cooling oil amount[l/min (20°C)]		10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

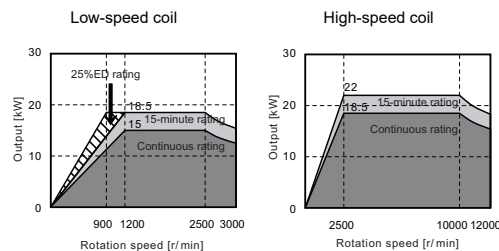
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

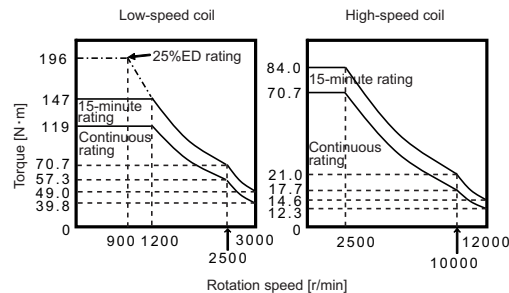


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

Low-speed coil
 120% of the 25%ED rating characteristics is torque at the time of acceleration/deceleration.

High-speed coil
 120% of the 15-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B4412T

Specifications

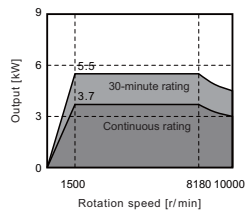
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-160	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5(30-minute rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
Base rotation speed	Continuous[r/min]	1500
	Short time[r/min]	1500
Maximum rotation speed[r/min]	10000	
Frame No. - Core width	132-95	
Torque (Base rotation speed)	Continuous[N·m]	23.6
	Short time[N·m]	35.0
Rotor GD ² [kg·m ²]	0.077	
Rotor inertia moment[kg·m ²]	0.0193	
Mass	Stator[kg]	15
	Rotor[kg]	6.2
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	920	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

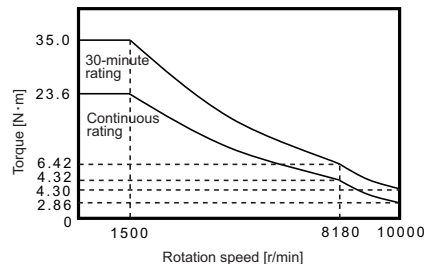
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



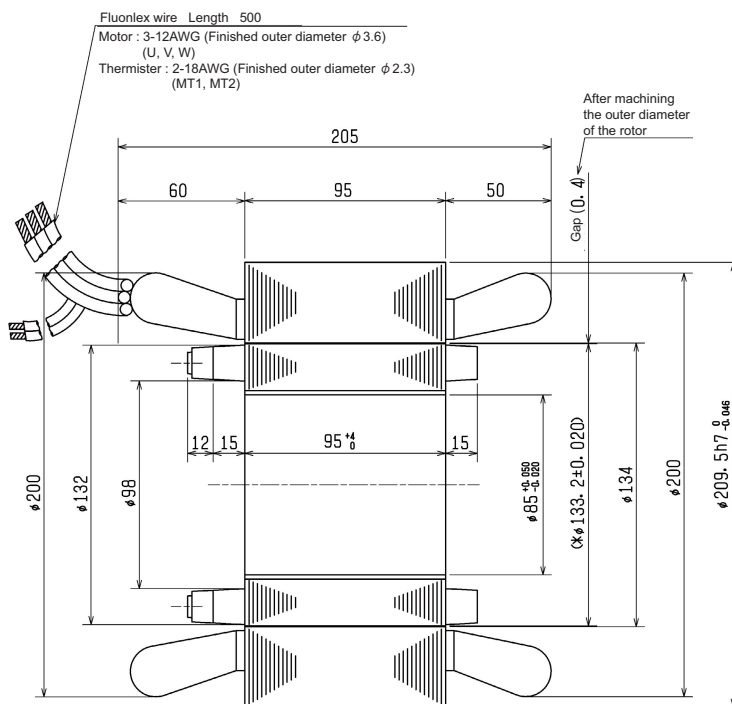
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Built-in IM spindle motor

SJ-2B4501TK

Specifications

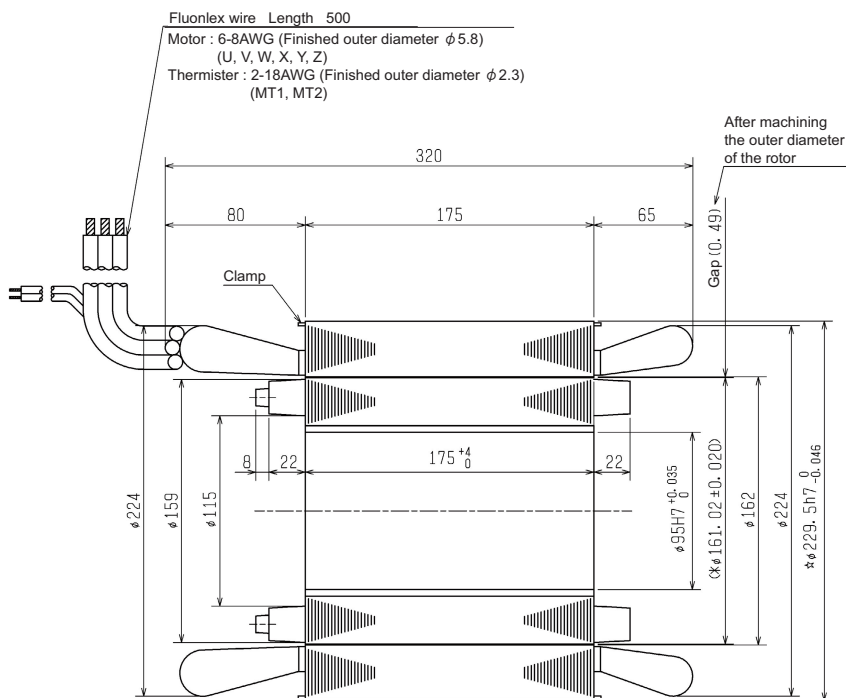
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-200	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	7.5	7.5
	Short time rated output	11(30-minute rating)	11(30-minute rating)
	Standard output during acceleration/deceleration	15	
	Actual acceleration/deceleration output(*3)	18	
Base rotation speed	Continuous[r/min]	700	1320
	Short time[r/min]	700	1320
Maximum rotation speed[r/min]		2250	10000
Frame No. - Core width		160-175	
Torque (Base rotation speed)	Continuous[N·m]	102	54.3
	Short time[N·m]	150	79.6
Rotor GD ² [kg·m ²]		0.32	
Rotor inertia moment[kg·m ²]		0.08	
Mass	Stator[kg]	29	
	Rotor[kg]	18	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		3850	
Cooling oil amount[l/min (20°C)]		10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

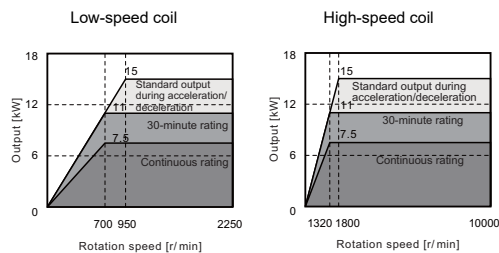
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

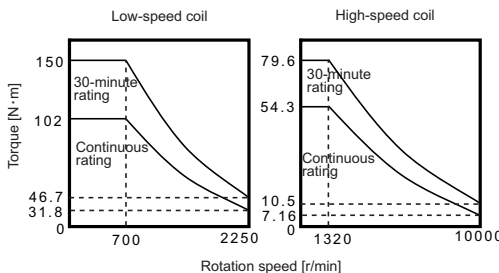


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

Output characteristics

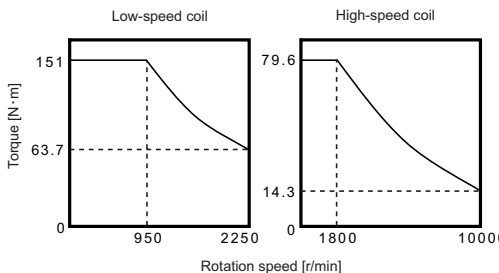


Torque at steady state-rotation speed characteristics



120% of this characteristics is output at the time of actual acceleration/deceleration.

Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor

SJ-2B6611TK

Specifications

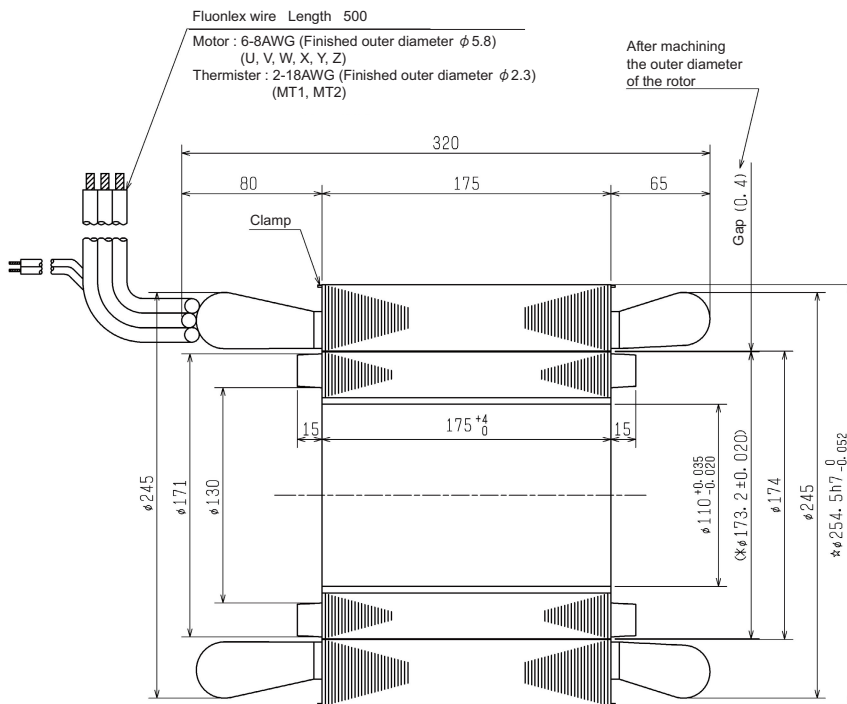
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-200	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	7.5
	Short time rated output	11(30-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed	Continuous[r/min]	500
	Short time[r/min]	500
Maximum rotation speed[r/min]		6000
Frame No. - Core width	160-175	
Torque (Base rotation speed)	Continuous[N·m]	143
	Short time[N·m]	210
Rotor GD ² [kg·m ²]	0.41	
Rotor inertia moment[kg·m ²]	0.102	
Mass	Stator[kg]	37
	Rotor[kg]	19
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	3520	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

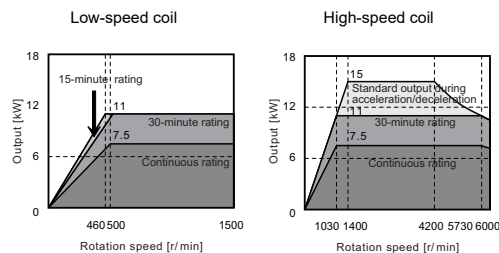
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

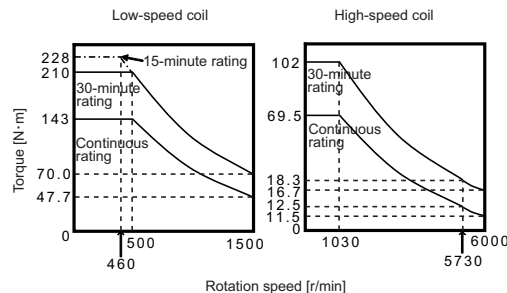


☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Output characteristics

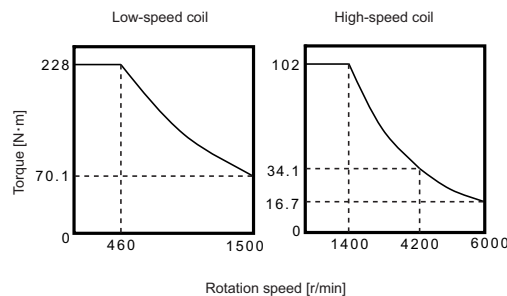


Torque at steady state-rotation speed characteristics



120% of this characteristics is output at the time of actual acceleration/deceleration.

Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor

SJ-2B4502TK

Specifications

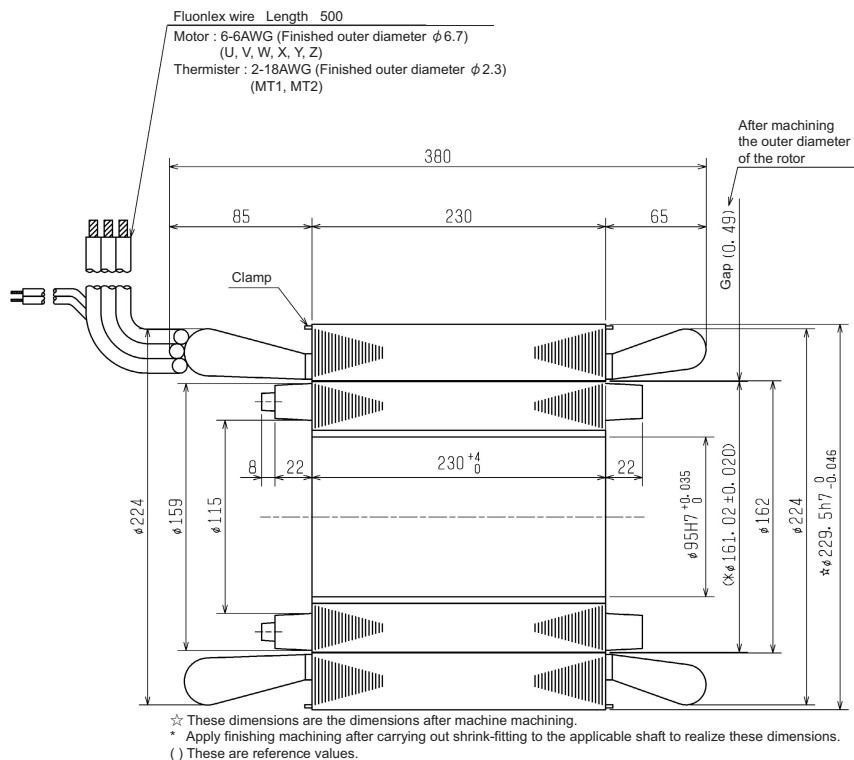
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-320	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	7.5
	Short time rated output	11(30-minute rating)
	Standard output during acceleration/deceleration	22
	Actual acceleration/deceleration output(*3)	26.4
Base rotation speed	Continuous[r/min]	525
	Short time[r/min]	1050
Maximum rotation speed[r/min]		10000
Frame No. - Core width	160-230	
Torque (Base rotation speed)	Continuous[N·m]	136
	Short time[N·m]	200
Rotor GD ² [kg·m ²]	0.42	
Rotor inertia moment[kg·m ²]	0.105	
Mass	Stator[kg]	37
	Rotor[kg]	24
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	4730	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

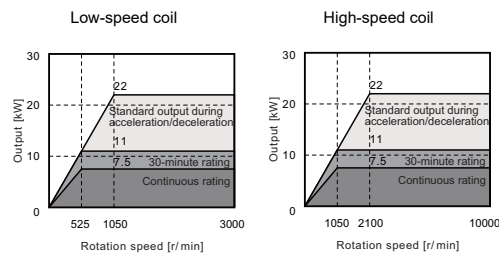
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

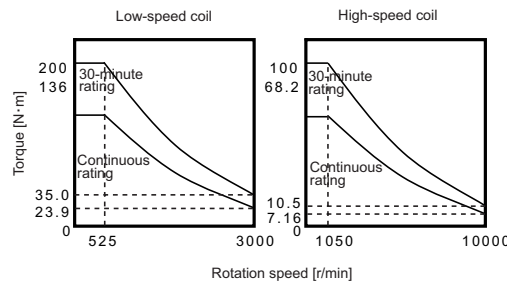
Outline dimension drawings [Unit : mm]



Output characteristics

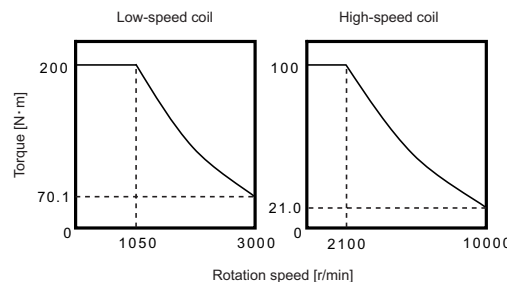


Torque at steady state-rotation speed characteristics



120% of this characteristics is output at the time of actual acceleration/deceleration.

Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor

SJ-2B4601TK

Specifications

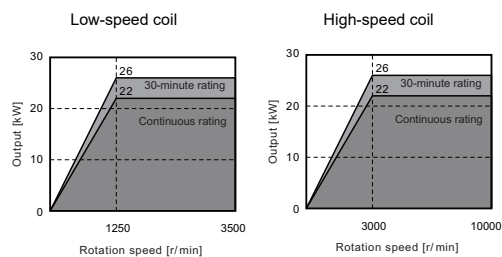
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-320	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	22
	Short time rated output	26(30-minute rating)
	Standard output during acceleration/deceleration	26
	Actual acceleration/deceleration output(*3)	31.2
Base rotation speed	Continuous[r/min]	1250
	Short time[r/min]	3000
Maximum rotation speed[r/min]		10000
Frame No. - Core width	160-230	
Torque (Base rotation speed)	Continuous[N·m]	168
	Short time[N·m]	70.0
Rotor GD ² [kg·m ²]	0.42	
Rotor inertia moment[kg·m ²]	0.105	
Mass	Stator[kg]	55
	Rotor[kg]	24
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	3270	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

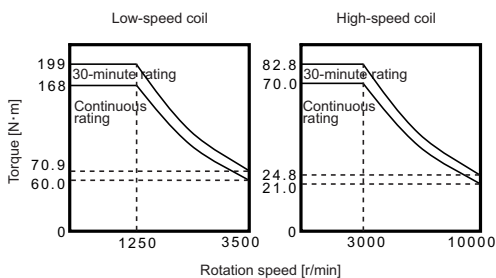
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



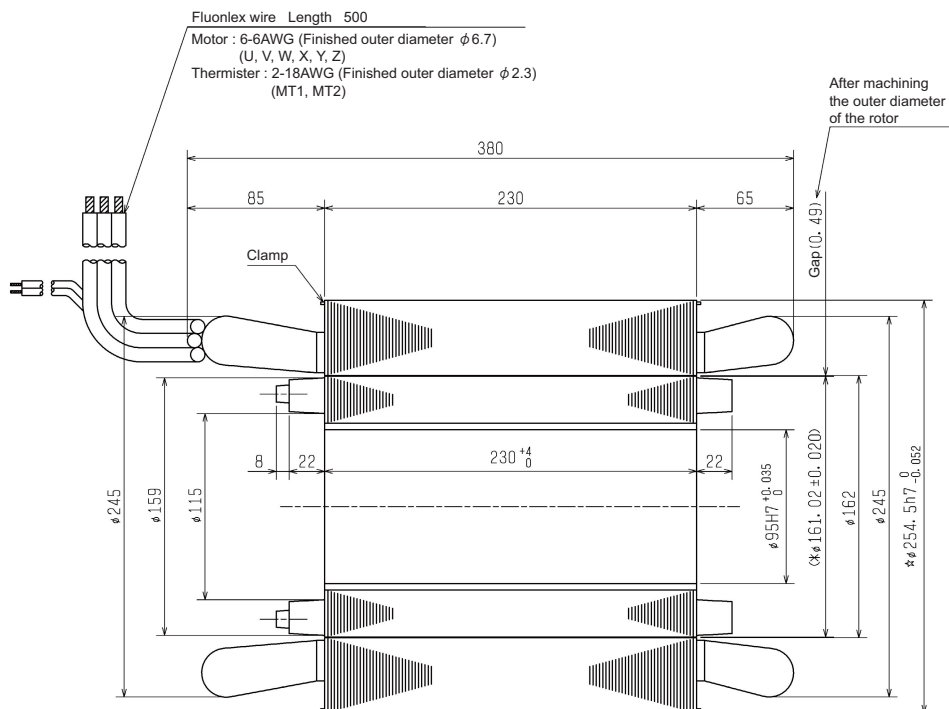
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Built-in IM spindle motor

SJ-2B6605TK

Specifications

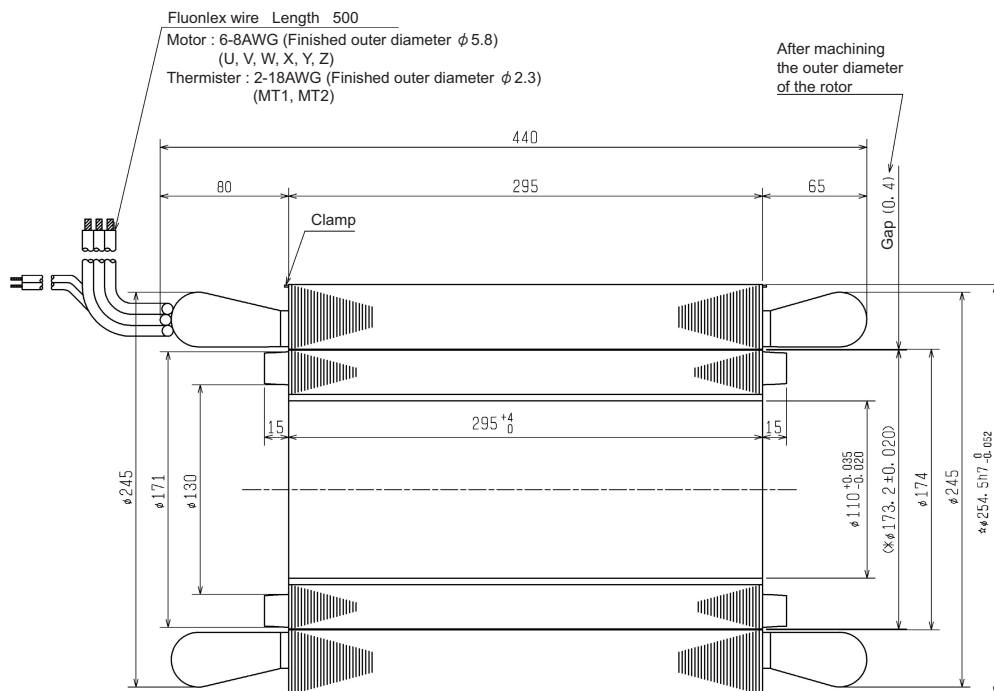
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-240	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	11	11
	Short time rated output	15(30-minute rating)	15(30-minute rating)
	Standard output during acceleration/deceleration	15	
	Actual acceleration/deceleration output(*3)	18	
Base rotation speed	Continuous[r/min]	440	1000
	Short time[r/min]	440	1000
Maximum rotation speed[r/min]		1500	6000
Frame No. - Core width		160-295	
Torque (Base rotation speed)	Continuous[N·m]	239	105
	Short time[N·m]	326	143
Rotor GD ² [kg·m ²]		0.69	
Rotor inertia moment[kg·m ²]		0.173	
Mass	Stator[kg]	63	
	Rotor[kg]	33	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		4450	
Cooling oil amount[l/min (20°C)]		10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

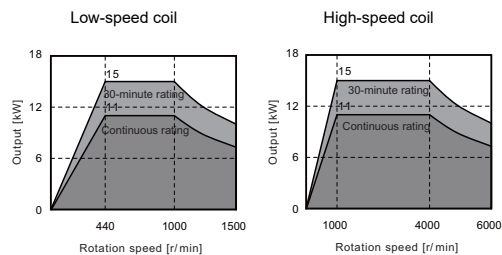
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

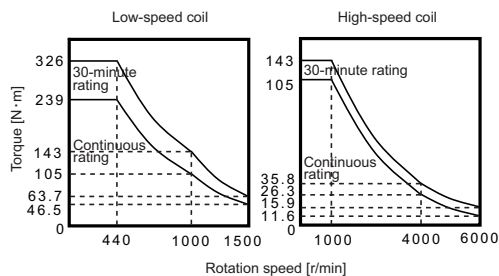
Outline dimension drawings [Unit : mm]



Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor
SJ-2B4503TK

Specifications

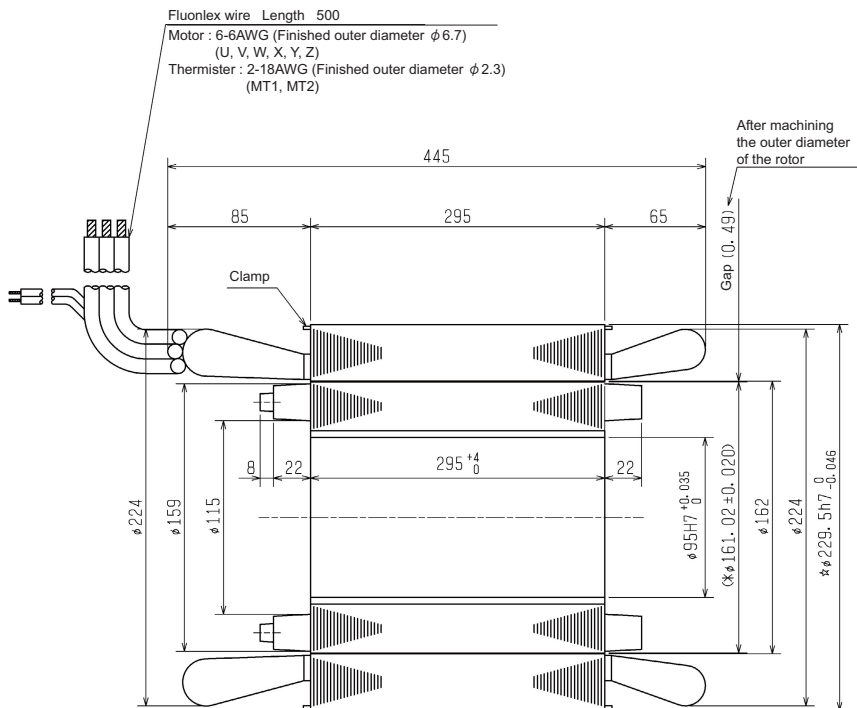
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-320	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	11	15
	Short time rated output	15(30-minute rating)	22(30-minute rating)
	Standard output during acceleration/deceleration	15	22
	Actual acceleration/deceleration output(*3)	18	26.4
Base rotation speed	Continuous[r/min]	475	1250
	Short time[r/min]	475	1250
Maximum rotation speed[r/min]		2000	10000
Frame No. - Core width		160-295	
Torque (Base rotation speed)	Continuous[N·m]	221	115
	Short time[N·m]	302	168
Rotor GD ² [kg·m ²]		0.54	
Rotor inertia moment[kg·m ²]		0.135	
Mass	Stator[kg]	48	
	Rotor[kg]	31	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		7220	
Cooling oil amount[l/min (20°C)]		10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

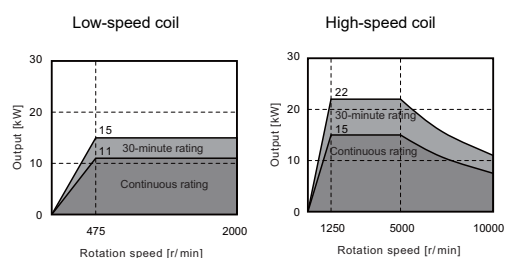
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

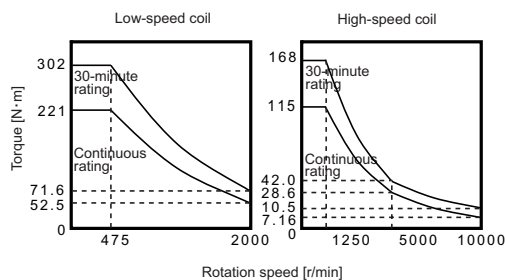


☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B6603TK

Specifications

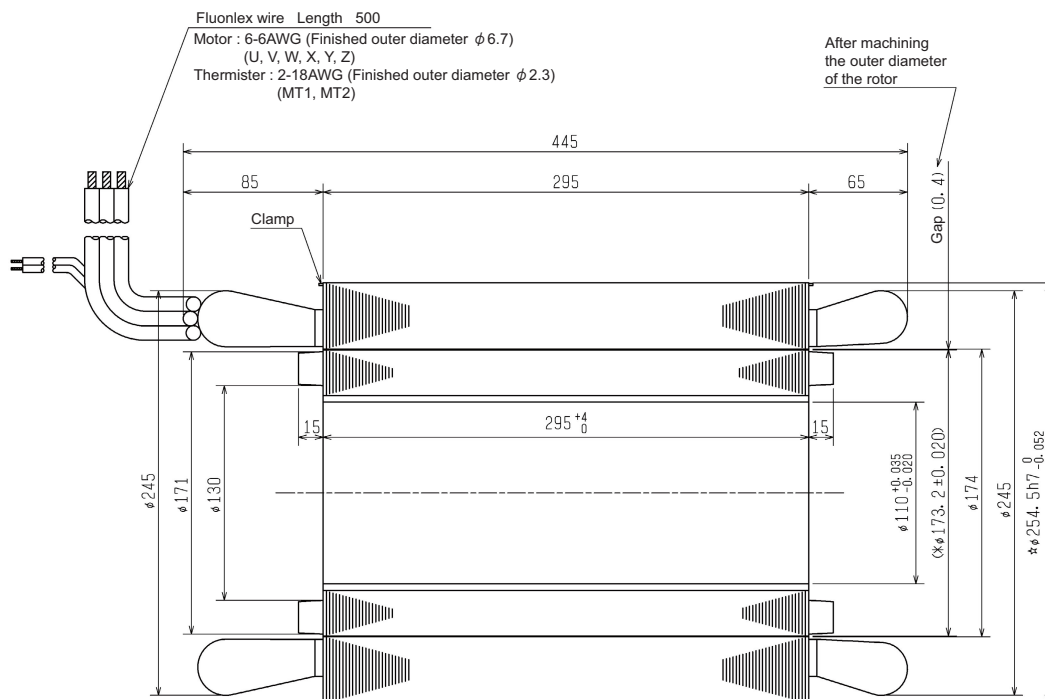
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-320	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	15	15
	Short time rated output	22(30-minute rating)	22(30-minute rating)
	Standard output during acceleration/deceleration	22	
	Actual acceleration/deceleration output(*3)	26.4	
Base rotation speed	Continuous[r/min]	600	1200
	Short time[r/min]	600	1200
Maximum rotation speed[r/min]		1500	6000
Frame No. - Core width		160-295	
Torque (Base rotation speed)	Continuous[N·m]	239	119
	Short time[N·m]	350	175
Rotor GD ² [kg·m ²]		0.69	
Rotor inertia moment[kg·m ²]		0.173	
Mass	Stator[kg]	63	
	Rotor[kg]	33	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		5160	
Cooling oil amount[l/min (20°C)]		15	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

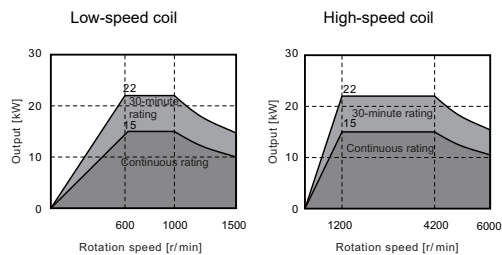
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

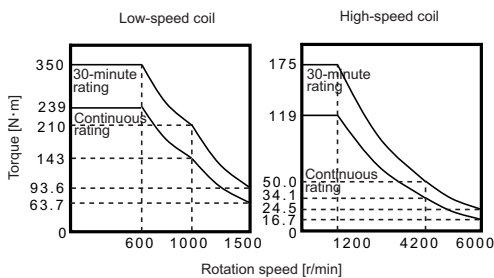


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B4602TK

Specifications

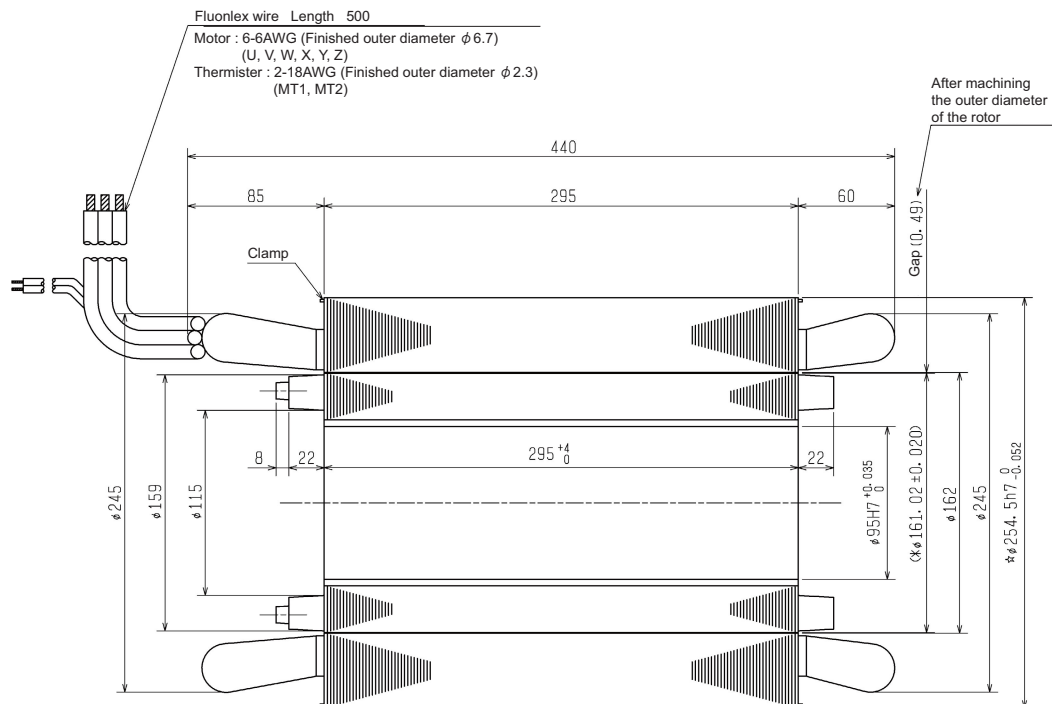
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-320	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	18.5
	Short time rated output	22(30-minute rating)
	Standard output during acceleration/deceleration	22
	Actual acceleration/deceleration output(*3)	26.4
Base rotation speed	Continuous[r/min]	720
	Short time[r/min]	1500
Maximum rotation speed[r/min]		10000
Frame No. - Core width	160-295	
Torque (Base rotation speed)	Continuous[N·m]	245
	Short time[N·m]	292
Rotor GD ² [kg·m ²]	0.54	
Rotor inertia moment[kg·m ²]	0.135	
Mass	Stator[kg]	71
	Rotor[kg]	31
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	4500	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

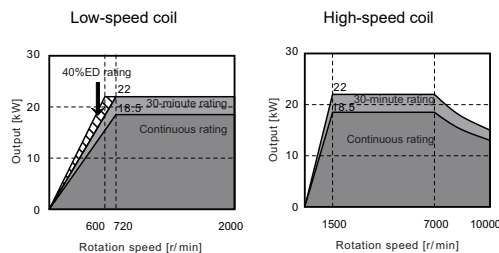
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

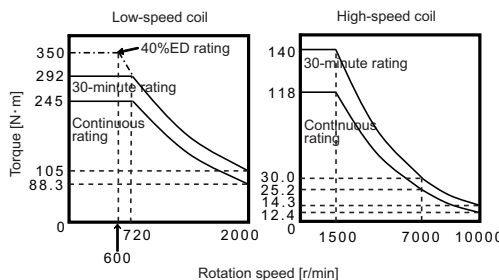


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

Low-speed coil
 120% of the 40%ED rating characteristics is torque at the time of acceleration/deceleration.

High-speed coil
 120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B4511TK

Specifications

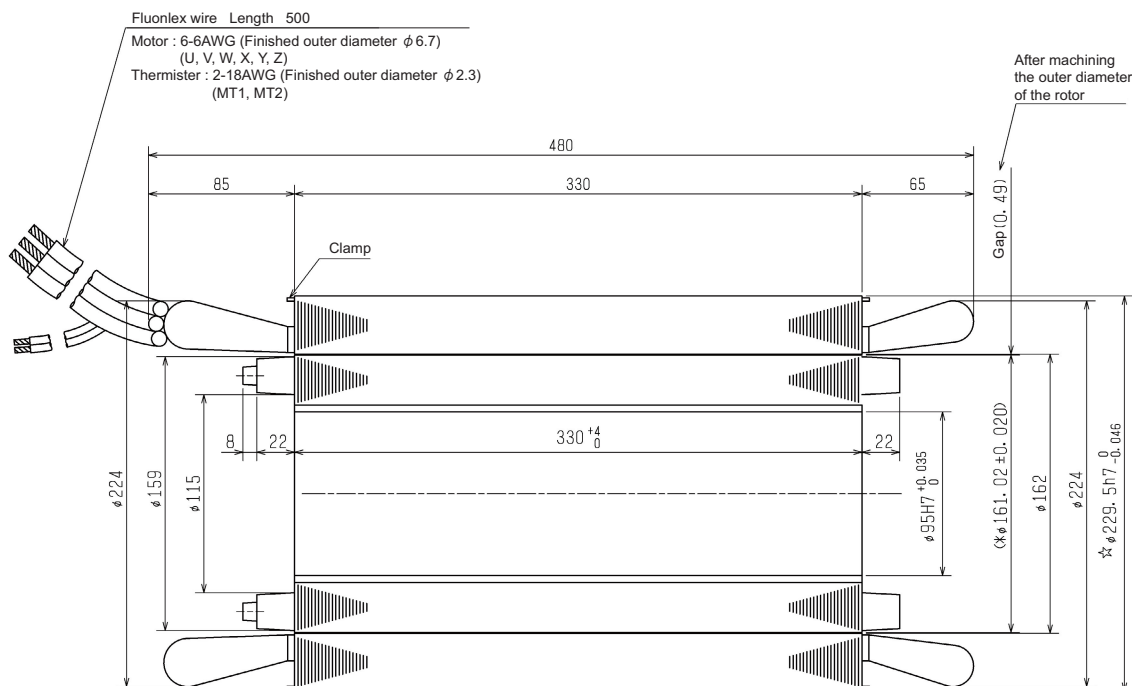
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-320	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	15	22
	Short time rated output	22(10-minute rating)	30(30-minute rating)
	Standard output during acceleration/deceleration	22	30
	Actual acceleration/deceleration output(*3)	26.4	36
Base rotation speed	Continuous[r/min]	600	1600
	Short time[r/min]	600	1600
Maximum rotation speed[r/min]		2000	10000
Frame No. - Core width		160-330	
Torque (Base rotation speed)	Continuous[N·m]	239	131
	Short time[N·m]	350	179
Rotor GD ² [kg·m ²]		0.60	
Rotor inertia moment[kg·m ²]		0.15	
Mass	Stator[kg]	54	
	Rotor[kg]	34	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		8160	
Cooling oil amount[l/min (20°C)]		15	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

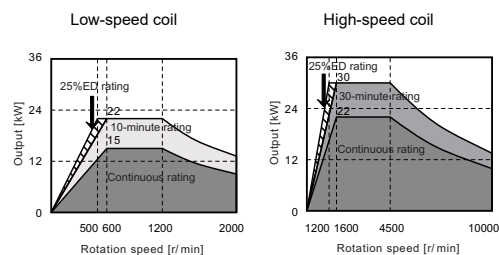
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

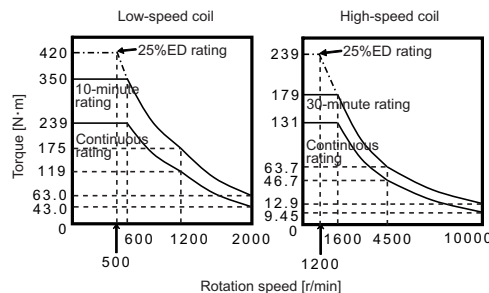


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 25%ED rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B6720TK

Specifications

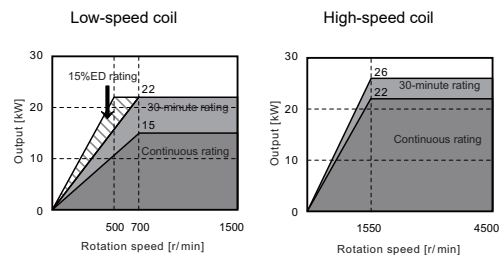
Item	Specifications		
Compatible spindle drive unit (*1)	MDS-D2-SP-320		
AC reactor for spindle motor	-		
Coil changeover	Low-speed coil	High-speed coil	
Output capacity[kW]	Continuous rated output	15	22
	Short time rated output	22(30-minute rating)	26(30-minute rating)
	Standard output during acceleration/deceleration	22	26
	Actual acceleration/deceleration output(*3)	26.4	31.2
Base rotation speed	Continuous[r/min]	700	1550
	Short time[r/min]	700	1550
Maximum rotation speed[r/min]	1500	4500	
Frame No. - Core width	180-160		
Torque (Base rotation speed)	Continuous[N·m]	205	136
	Short time[N·m]	300	160
Rotor GD ² [kg·m ²]	0.80		
Rotor inertia moment[kg·m ²]	0.20		
Mass	Stator[kg]	45	
	Rotor[kg]	26	
Overload capacity (for one minute)	120% of short-time rated output		
Ambient temperature[°C]	0 to 40		
Heat-resistant class	155(F)		
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)		
Required cooling capacity (*2)[W]	5200		
Cooling oil amount[l/min (20°C)]	15		

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

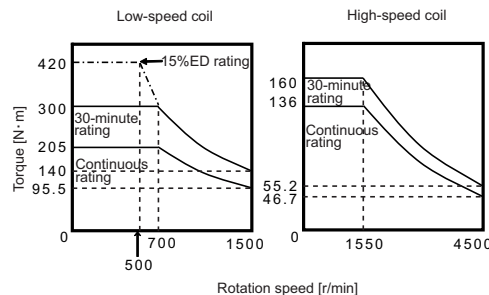
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



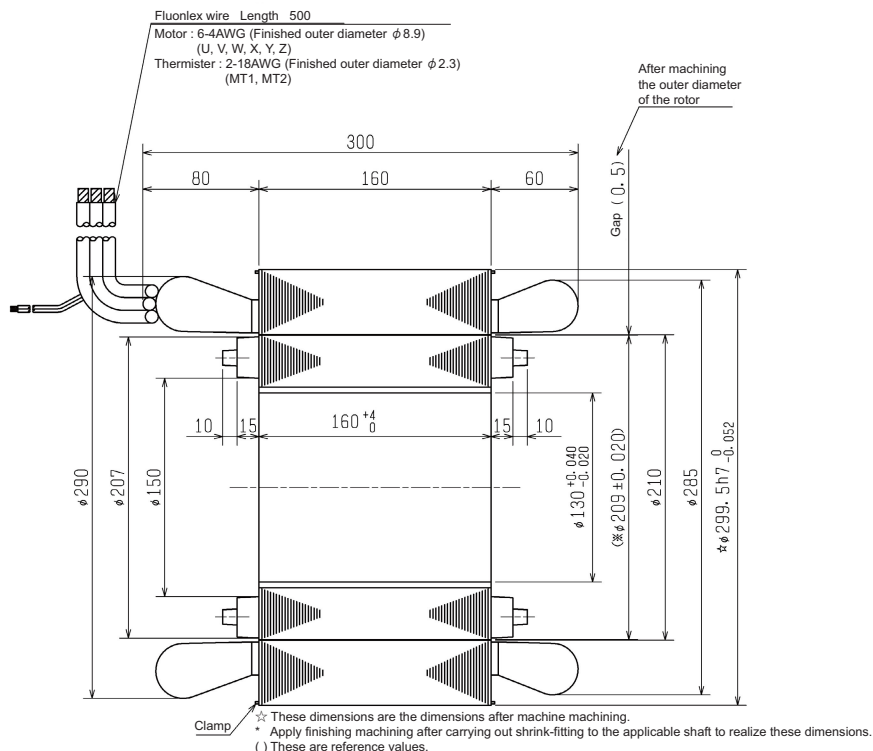
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

- Low-speed coil
120% of the 15%ED rating characteristics is torque at the time of acceleration/deceleration.
- High-speed coil
120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



Built-in IM spindle motor

SJ-2B6705TK

Specifications

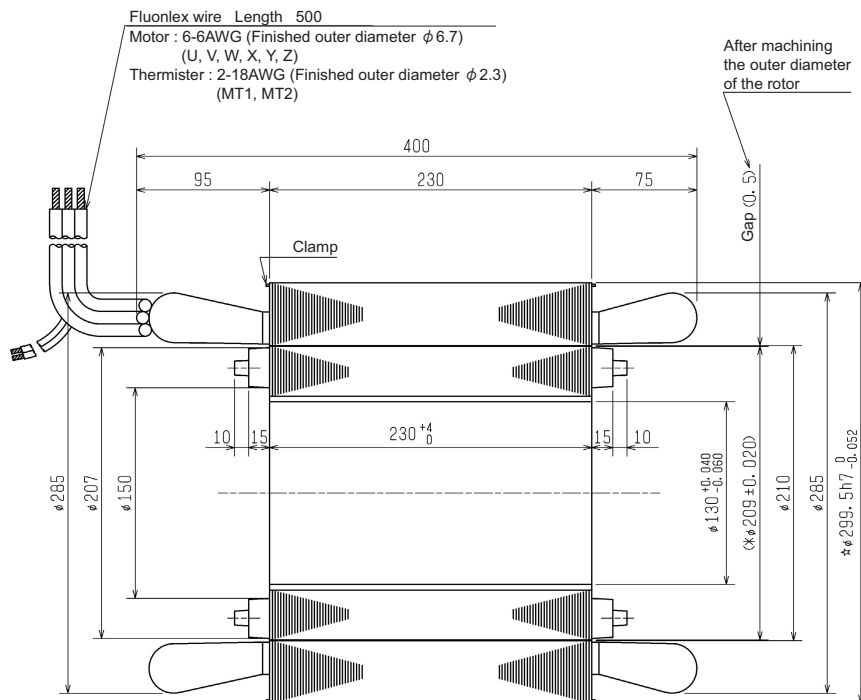
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-200	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	7.5
	Short time rated output	11(30-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed	Continuous[r/min]	270
	Short time[r/min]	540
Maximum rotation speed[r/min]	750	4500
Frame No. - Core width	180-230	
Torque (Base rotation speed)	Continuous[N·m]	265
	Short time[N·m]	389
Rotor GD ² [kg·m ²]	1.15	
Rotor inertia moment[kg·m ²]	0.288	
Mass	Stator[kg]	65
	Rotor[kg]	38
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	4440	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

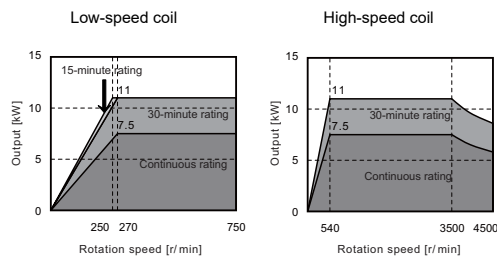
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

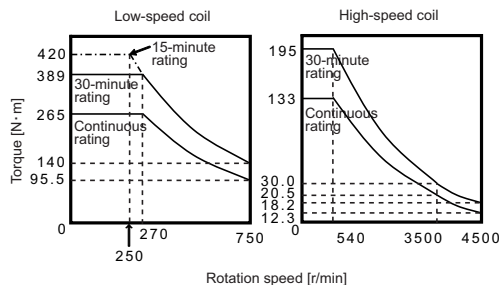


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

Low-speed coil
 120% of the 15%ED rating characteristics is torque at the time of acceleration/deceleration.

High-speed coil
 120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B6711TK

Specifications

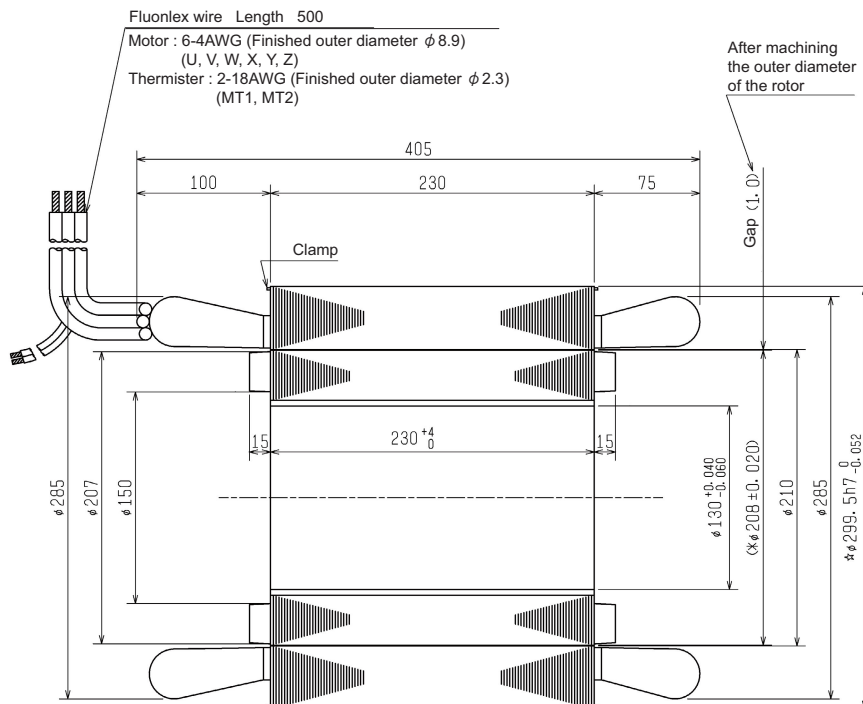
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-320	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	11
	Short time rated output	15(30-minute rating)
	Standard output during acceleration/deceleration	22
	Actual acceleration/deceleration output(*3)	26.4
Base rotation speed	Continuous[r/min]	400
	Short time[r/min]	500
Maximum rotation speed[r/min]	1700	5000
Frame No. - Core width	180-230	
Torque (Base rotation speed)	Continuous[N·m]	263
	Short time[N·m]	114
Rotor GD ² [kg·m ²]	1.12	
Rotor inertia moment[kg·m ²]	0.280	
Mass	Stator[kg]	65
	Rotor[kg]	37
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	3270	
Cooling oil amount[l/min (20°C)]	10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

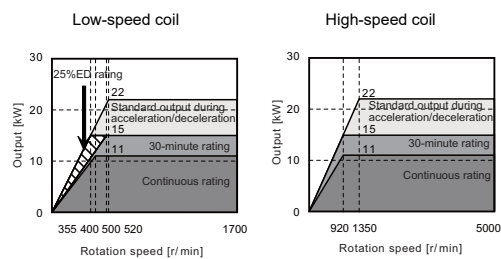
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

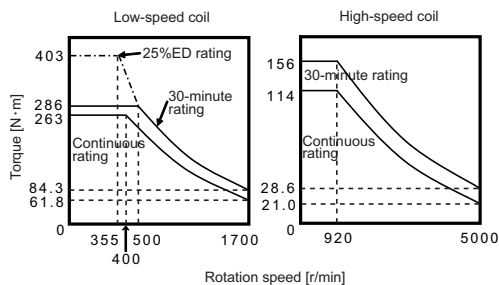


- ☆ These dimensions are the dimensions after machine machining.
- * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
- () These are reference values.

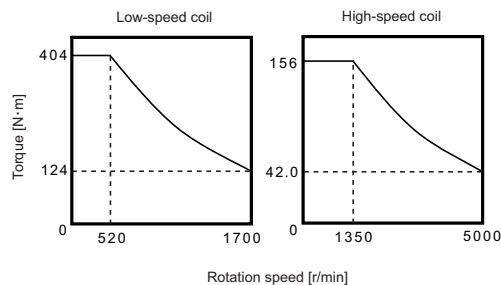
Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor

SJ-2B6706TK

Specifications

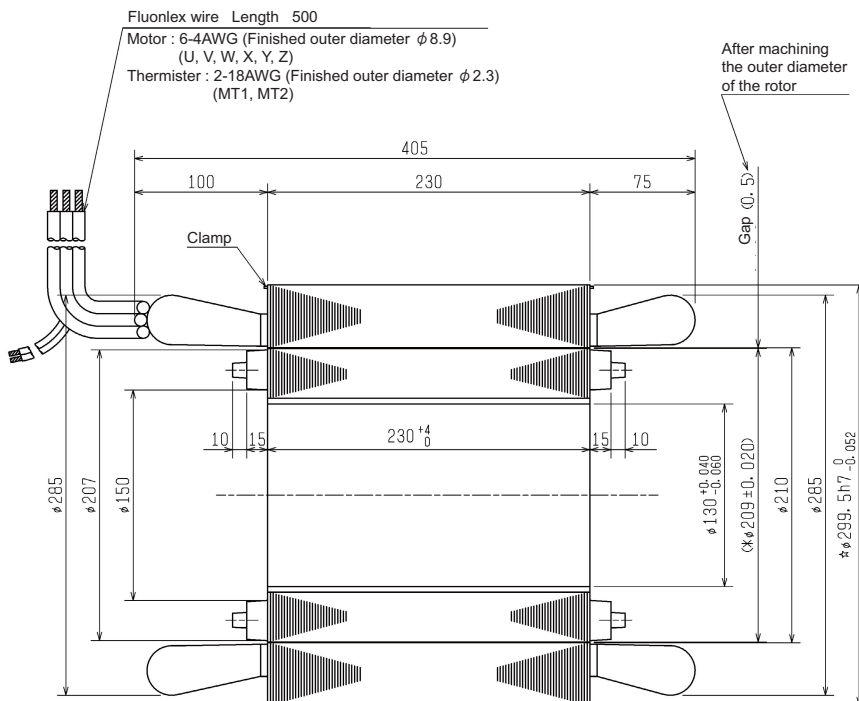
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-400	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	15	15
	Short time rated output	18.5(30-minute rating)	18.5(30-minute rating)
	Standard output during acceleration/deceleration	26	30
	Actual acceleration/deceleration output(*3)	31.2	36
Base rotation speed	Continuous[r/min]	450	1080
	Short time[r/min]	450	1080
Maximum rotation speed[r/min]		2000	6000
Frame No. - Core width		180-230	
Torque (Base rotation speed)	Continuous[N·m]	318	133
	Short time[N·m]	393	164
Rotor GD ² [kg·m ²]		1.15	
Rotor inertia moment[kg·m ²]		0.288	
Mass	Stator[kg]	65	
	Rotor[kg]	38	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		4620	
Cooling oil amount[l/min (20°C)]		10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

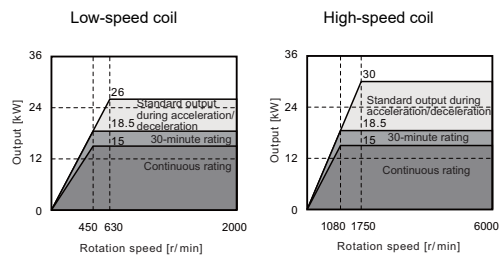
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

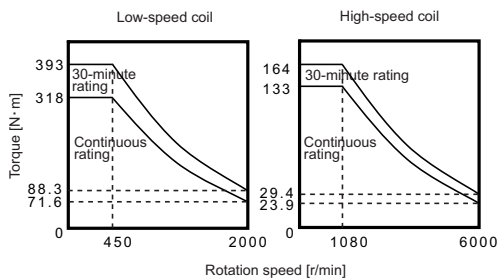


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

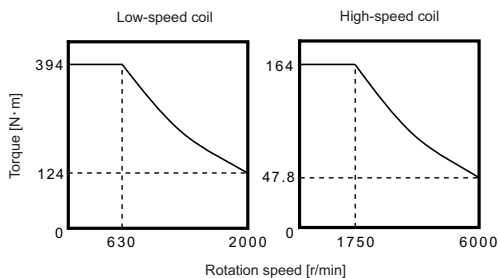
Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor

SJ-2B6716TK

Specifications

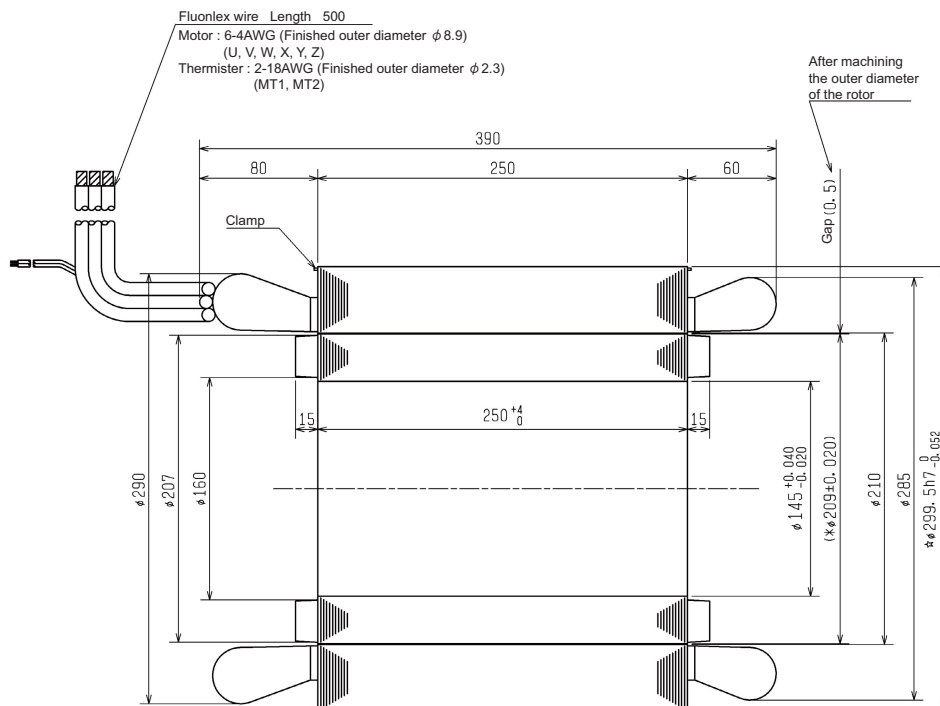
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-400	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	15
	Short time rated output	22(30-minute rating)
	Standard output during acceleration/deceleration	26
	Actual acceleration/deceleration output(*3)	31.2
Base rotation speed	Continuous[r/min]	350
	Short time[r/min]	420
	Maximum rotation speed[r/min]	600
Frame No. - Core width	180-250	
Torque (Base rotation speed)	Continuous[N·m]	409
	Short time[N·m]	500
Rotor GD ² [kg·m ²]	1.13	
Rotor inertia moment[kg·m ²]	0.283	
Mass	Stator[kg]	70
	Rotor[kg]	35
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	7560	
Cooling oil amount[l/min (20°C)]	15	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

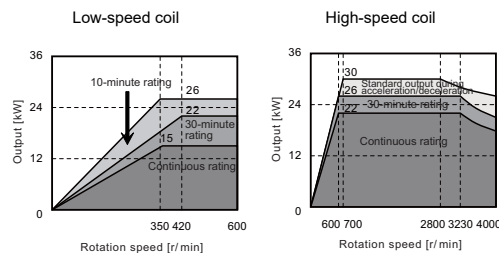
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

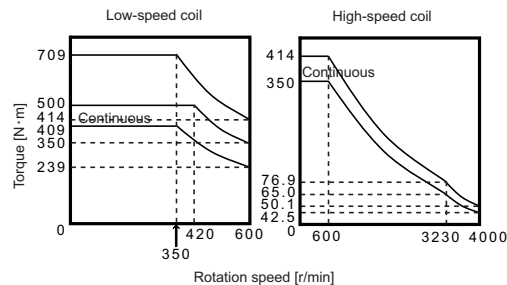


☆ These dimensions are the dimensions after machine machining.
 * Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
 () These are reference values.

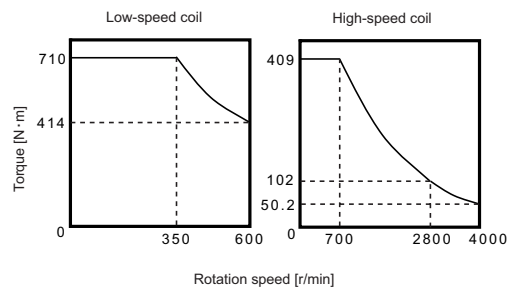
Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor
SJ-2B6721TK

Specifications

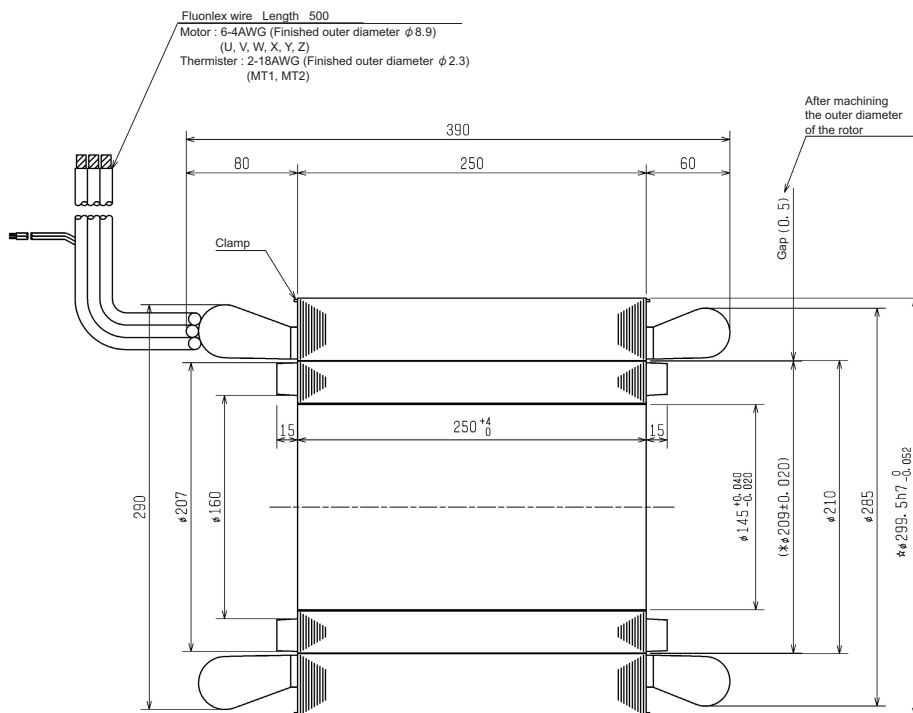
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-320	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	18.5
	Short time rated output	22(30-minute rating)
	Standard output during acceleration/deceleration	22
	Actual acceleration/deceleration output(*3)	26.4
Base rotation speed	Continuous[r/min]	500
	Short time[r/min]	500
Maximum rotation speed[r/min]	1500	6000
Frame No. - Core width	180-250	
Torque (Base rotation speed)	Continuous[N·m]	353
	Short time[N·m]	420
Rotor GD ² [kg·m ²]	1.13	
Rotor inertia moment[kg·m ²]	0.283	
Mass	Stator[kg]	70
	Rotor[kg]	35
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	5230	
Cooling oil amount[l/min (20°C)]	15	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

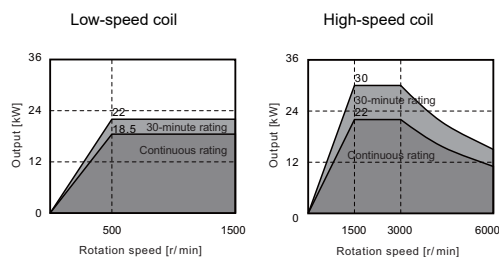
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

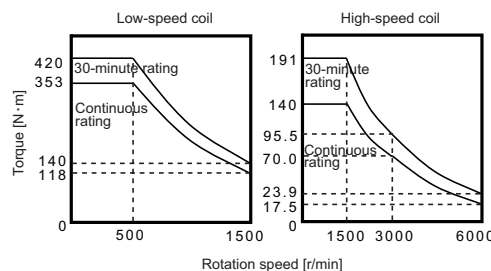


☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B6704TK

Specifications

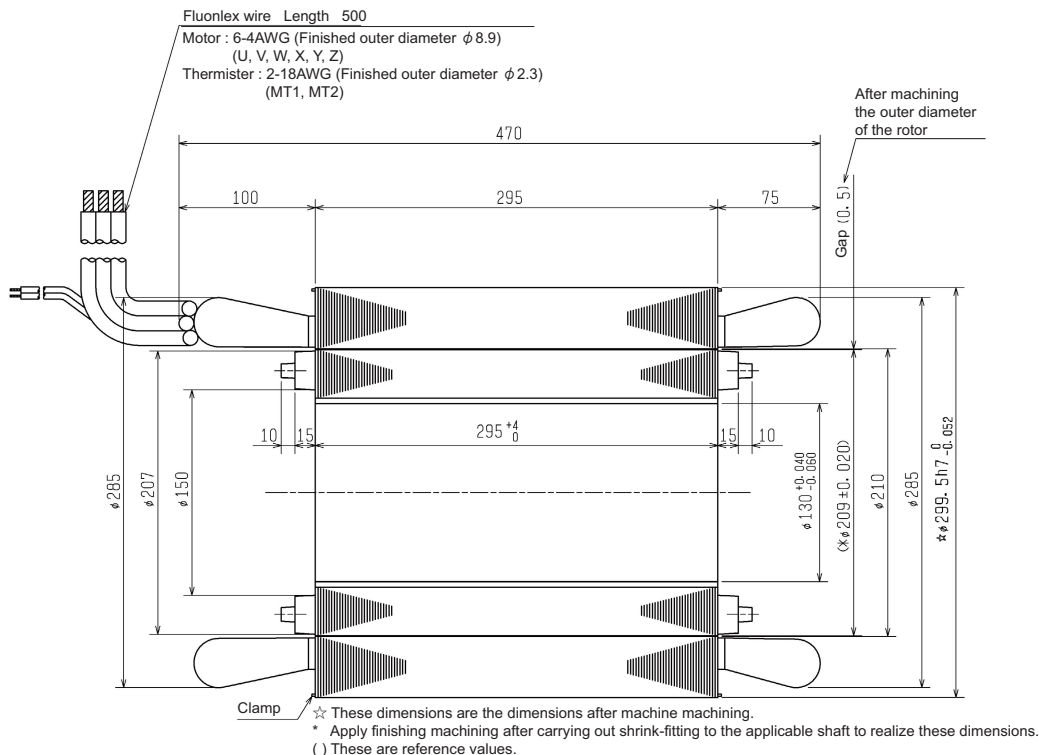
Item	Specifications		
Compatible spindle drive unit (*1)	MDS-D2-SP-320		
AC reactor for spindle motor	-		
Coil changeover	Low-speed coil	High-speed coil	
Output capacity[kW]	Continuous rated output	15	22
	Short time rated output	22(30-minute rating)	30(30-minute rating)
	Standard output during acceleration/deceleration	22	30
	Actual acceleration/deceleration output(*3)	26.4	36
Base rotation speed	Continuous[r/min]	475	1200
	Short time[r/min]	475	1200
Maximum rotation speed[r/min]	1150	6000	
Frame No. - Core width	180-295		
Torque (Base rotation speed)	Continuous[N·m]	302	175
	Short time[N·m]	442	239
Rotor GD ² [kg·m ²]	1.48		
Rotor inertia moment[kg·m ²]	0.37		
Mass	Stator[kg]	83	
	Rotor[kg]	49	
Overload capacity (for one minute)	120% of short-time rated output		
Ambient temperature[°C]	0 to 40		
Heat-resistant class	155(F)		
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)		
Required cooling capacity (*2)[W]	5210		
Cooling oil amount[l/min (20°C)]	15		

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

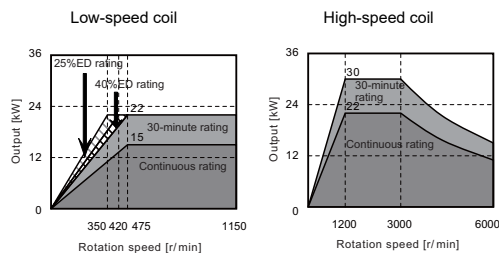
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

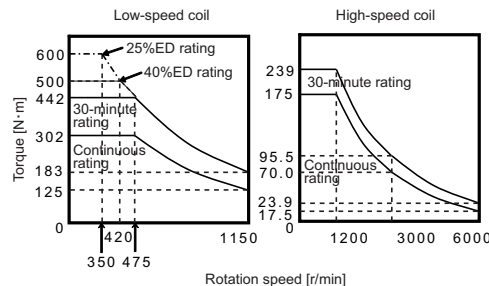
Outline dimension drawings [Unit : mm]



Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

Low-speed coil
 120% of the 25%ED rating characteristics is torque at the time of acceleration/deceleration.

High-speed coil
 120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B6709TK

Specifications

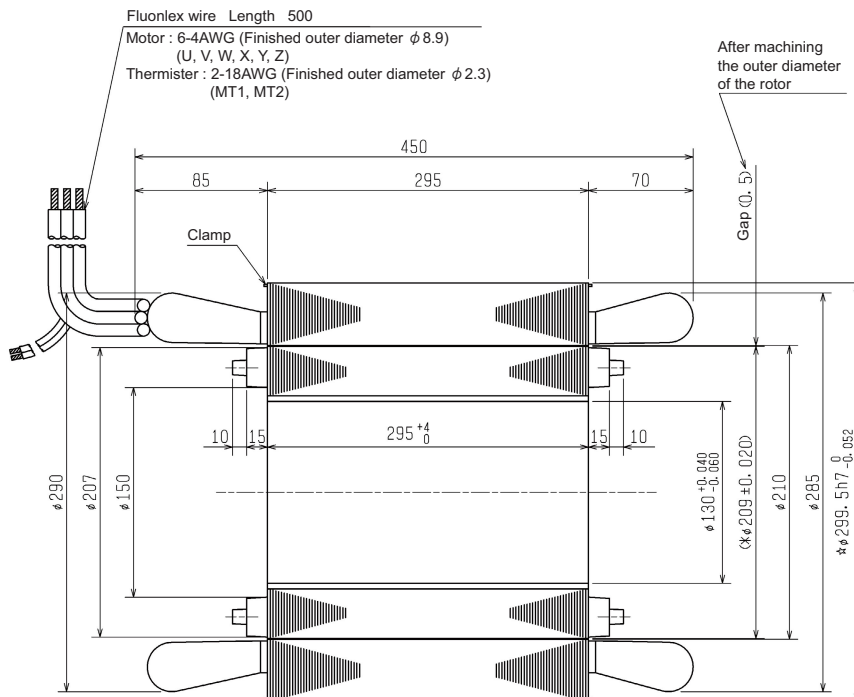
Item	Specifications		
Compatible spindle drive unit (*1)	MDS-D2-SP-400		
AC reactor for spindle motor	-		
Coil changeover	Low-speed coil	High-speed coil	
Output capacity[kW]	Continuous rated output	15	22
	Short time rated output	22(30-minute rating)	30(30-minute rating)
	Standard output during acceleration/deceleration	22	30
	Actual acceleration/deceleration output(*3)	26.4	36
Base rotation speed	Continuous[r/min]	350	1000
	Short time[r/min]	420	1000
Maximum rotation speed[r/min]		1500	6000
Frame No. - Core width	180-295		
Torque (Base rotation speed)	Continuous[N·m]	409	210
	Short time[N·m]	500	286
Rotor GD ² [kg·m ²]	1.48		
Rotor inertia moment[kg·m ²]	0.37		
Mass	Stator[kg]	83	
	Rotor[kg]	49	
Overload capacity (for one minute)	120% of short-time rated output		
Ambient temperature[°C]	0 to 40		
Heat-resistant class	155(F)		
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)		
Required cooling capacity (*2)[W]	6180		
Cooling oil amount[l/min (20°C)]	15		

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

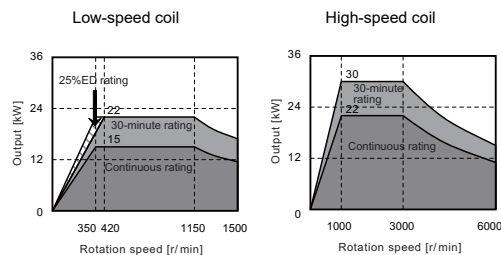
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

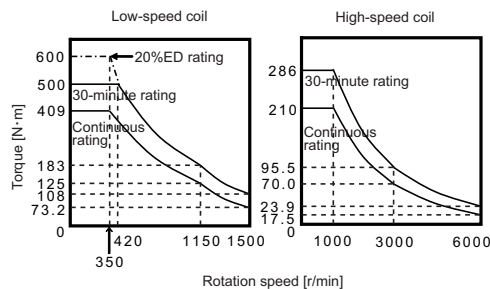


☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

Low-speed coil
120% of the 25%ED rating characteristics is torque at the time of acceleration/deceleration.

High-speed coil
120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor
SJ-2B6905TK

Specifications

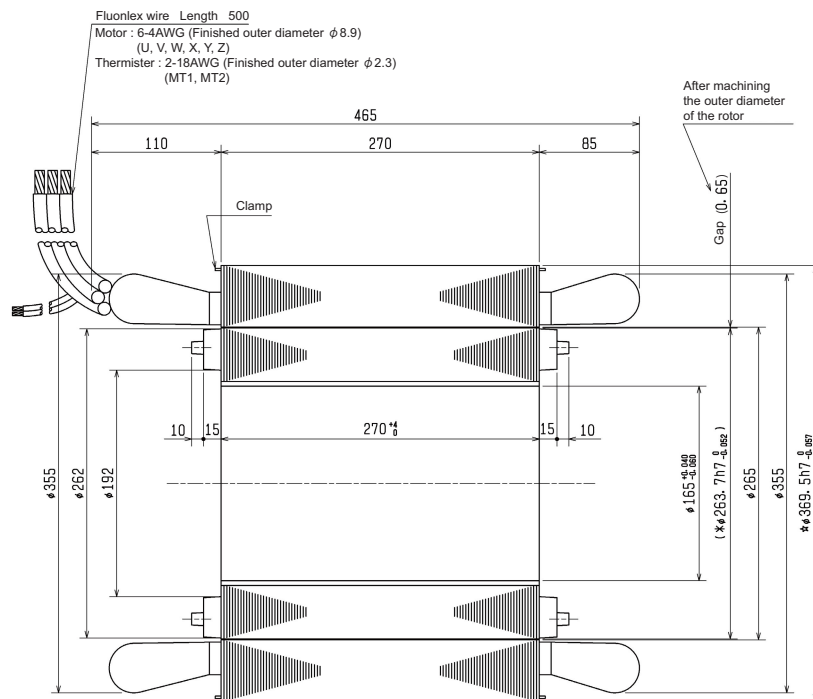
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-320	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	22	22
	Short time rated output	26(30-minute rating)	26(30-minute rating)
	Standard output during acceleration/deceleration	26	
	Actual acceleration/deceleration output(*3)	31.2	
Base rotation speed	Continuous[r/min]	420	1000
	Short time[r/min]	420	1000
Maximum rotation speed[r/min]		1500	4000
Frame No. - Core width		225-270	
Torque (Base rotation speed)	Continuous[N·m]	500	210
	Short time[N·m]	591	248
Rotor GD ² [kg·m ²]		3.41	
Rotor inertia moment[kg·m ²]		0.853	
Mass	Stator[kg]	110	
	Rotor[kg]	70	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		4040	
Cooling oil amount[l/min (20°C)]		10	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

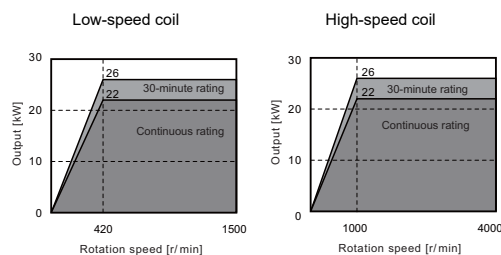
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

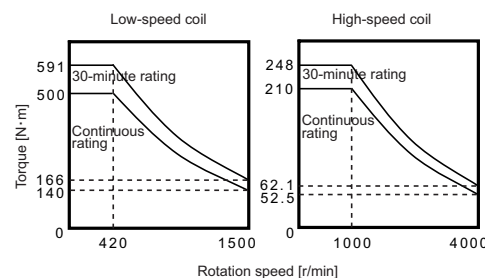


☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor
SJ-2B6908TK

Specifications

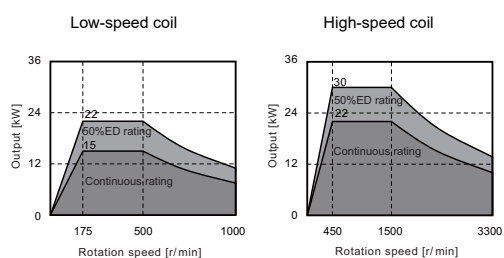
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-320	
AC reactor for spindle motor	-	
Coil changeover	Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	15 22
	Short time rated output	22(50%ED rating) 30(50%ED rating)
	Standard output during acceleration/deceleration	22 30
	Actual acceleration/deceleration output(*3)	26.4 36
Base rotation speed	Continuous[r/min]	175 450
	Short time[r/min]	175 450
Maximum rotation speed[r/min]	1000	3300
Frame No. - Core width	225-350	
Torque (Base rotation speed)	Continuous[N·m]	819 467
	Short time[N·m]	1200 637
Rotor GD ² [kg·m ²]	4.42	
Rotor inertia moment[kg·m ²]	1.105	
Mass	Stator[kg]	143
	Rotor[kg]	91
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	9920	
Cooling oil amount[l/min (20°C)]	15	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

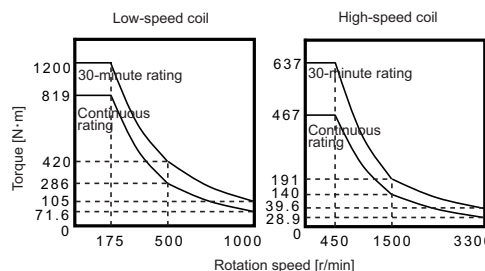
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



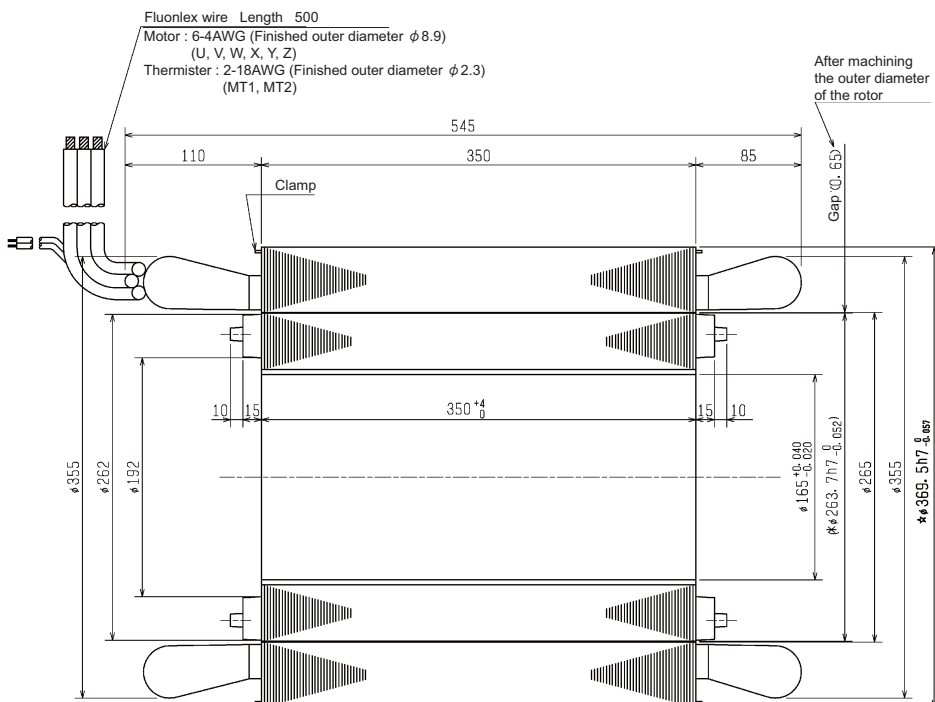
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 50%ED rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

Built-in IM spindle motor
SJ-2B6906TK

Specifications

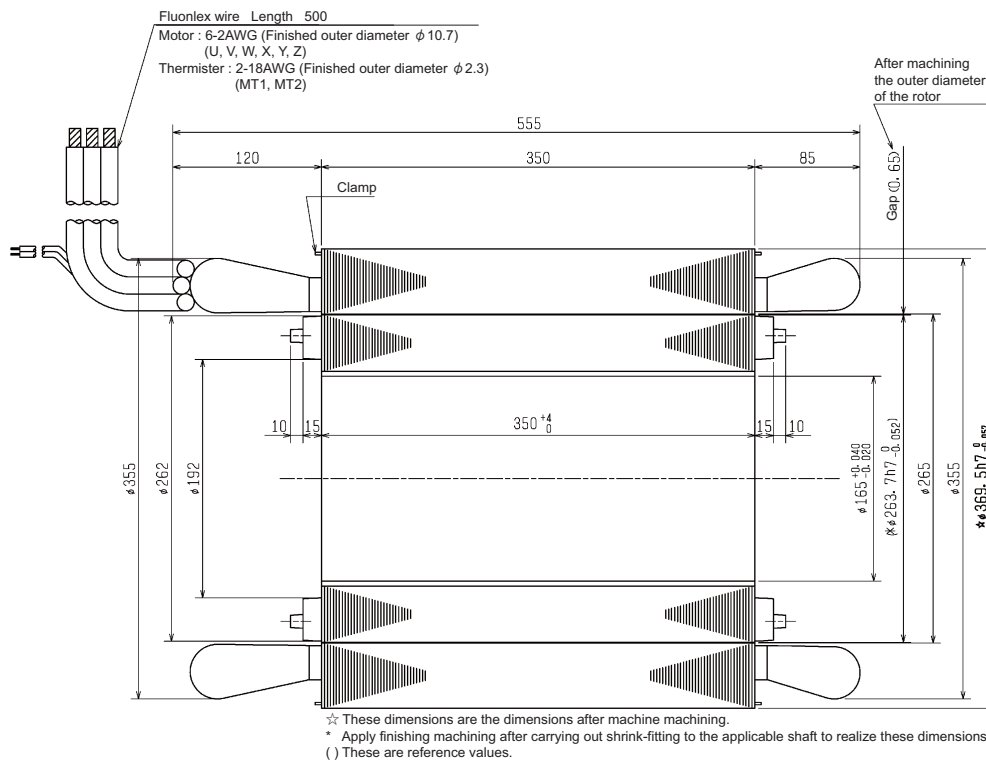
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-400	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	15	30
	Short time rated output	22(30-minute rating)	37(30-minute rating)
	Standard output during acceleration/deceleration	22	37
	Actual acceleration/deceleration output(*3)	26.4	44.4
Base rotation speed	Continuous[r/min]	175	600
	Short time[r/min]	175	600
Maximum rotation speed[r/min]		1000	3300
Frame No. - Core width		225-350	
Torque (Base rotation speed)	Continuous[N·m]	819	477
	Short time[N·m]	1200	589
Rotor GD ² [kg·m ²]		4.42	
Rotor inertia moment[kg·m ²]		1.105	
Mass	Stator[kg]	143	
	Rotor[kg]	91	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		9820	
Cooling oil amount[l/min (20°C)]		15	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

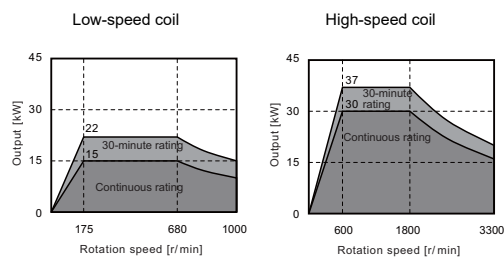
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

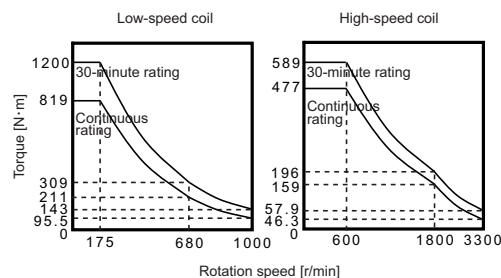
Outline dimension drawings [Unit : mm]



Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 30-minute rating characteristics is torque at the time of acceleration/deceleration.

Built-in IM spindle motor

SJ-2B6914TK

Specifications

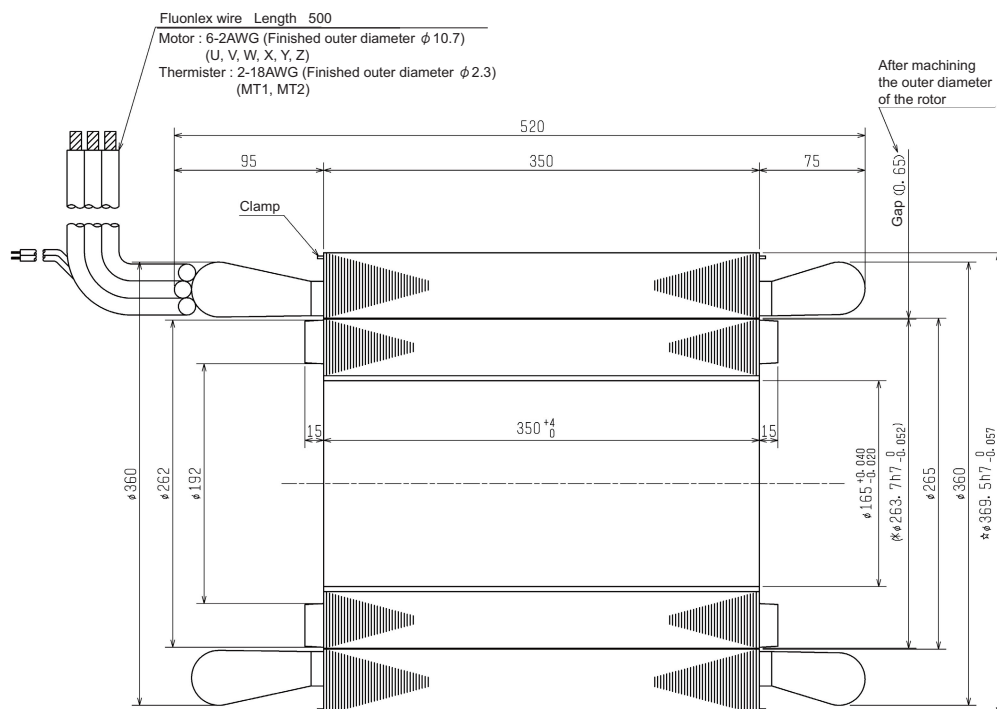
Item	Specifications		
Compatible spindle drive unit (*1)	MDS-D2-SP-640		
AC reactor for spindle motor	-		
Coil changeover	Low-speed coil	High-speed coil	
Output capacity[kW]	Continuous rated output	25	25
	Short time rated output	30(30-minute rating)	30(30-minute rating)
	Standard output during acceleration/deceleration	30	45
	Actual acceleration/deceleration output(*3)	36	54
Base rotation speed	Continuous[r/min]	240	470
	Short time[r/min]	240	470
Maximum rotation speed[r/min]	1000	3300	
Frame No. - Core width	225-350		
Torque (Base rotation speed)	Continuous[N·m]	995	508
	Short time[N·m]	1194	610
Rotor GD ² [kg·m ²]	4.42		
Rotor inertia moment[kg·m ²]	1.105		
Mass	Stator[kg]	143	
	Rotor[kg]	91	
Overload capacity (for one minute)	120% of short-time rated output		
Ambient temperature[°C]	0 to 40		
Heat-resistant class	155(F)		
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)		
Required cooling capacity (*2)[W]	9480		
Cooling oil amount[l/min (20°C)]	15		

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

Environmental conditions

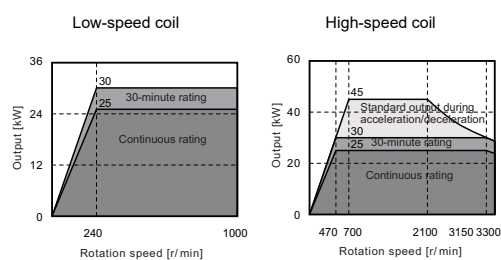
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -20°C to +65°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

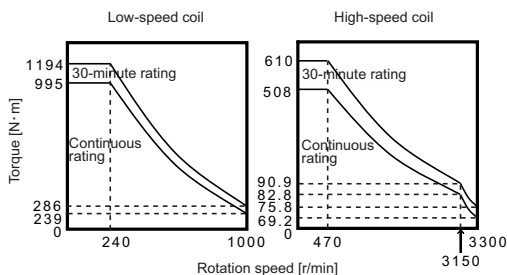


☆ These dimensions are the dimensions after machine machining.
* Apply finishing machining after carrying out shrink-fitting to the applicable shaft to realize these dimensions.
() These are reference values.

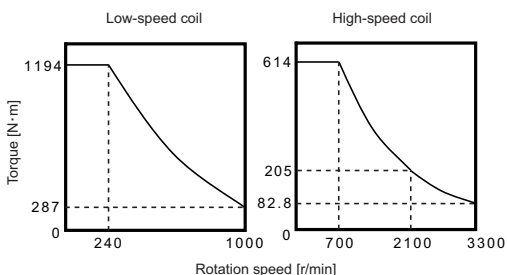
Output characteristics



Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics



120% of this characteristics is torque at the time of actual acceleration/deceleration.

Built-in IM spindle motor

SJ-PMB02215T-02

Specifications

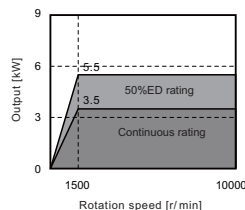
Item	Specifications	
Compatible spindle drive unit (*1)	MDS-D2-SP-240	
AC reactor for spindle motor	-	
Coil changeover	-	
Output capacity[kW]	Continuous rated output	3.5
	Short time rated output	5.5(50%ED rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
Base rotation speed	Continuous[r/min]	1500
	Short time[r/min]	1500
Maximum rotation speed[r/min]	10000	
Frame No. - Core width	80	
Torque (Base rotation speed)	Continuous[N·m]	22.3
	Short time[N·m]	35.0
Rotor GD ² [kg·m ²]	0.024	
Rotor inertia moment[kg·m ²]	0.006	
Mass	Stator[kg]	4.4
	Rotor[kg]	3.7
Overload capacity (for one minute)	120% of short-time rated output	
Ambient temperature[°C]	0 to 40	
Heat-resistant class	155(F)	
Tolerable vibration	Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]	1400	
Cooling oil amount[l/min (20°C)]	5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

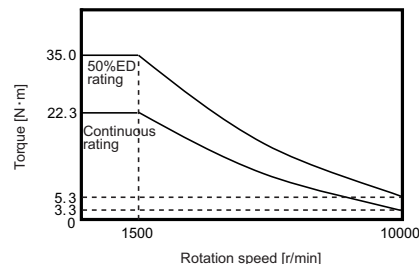
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



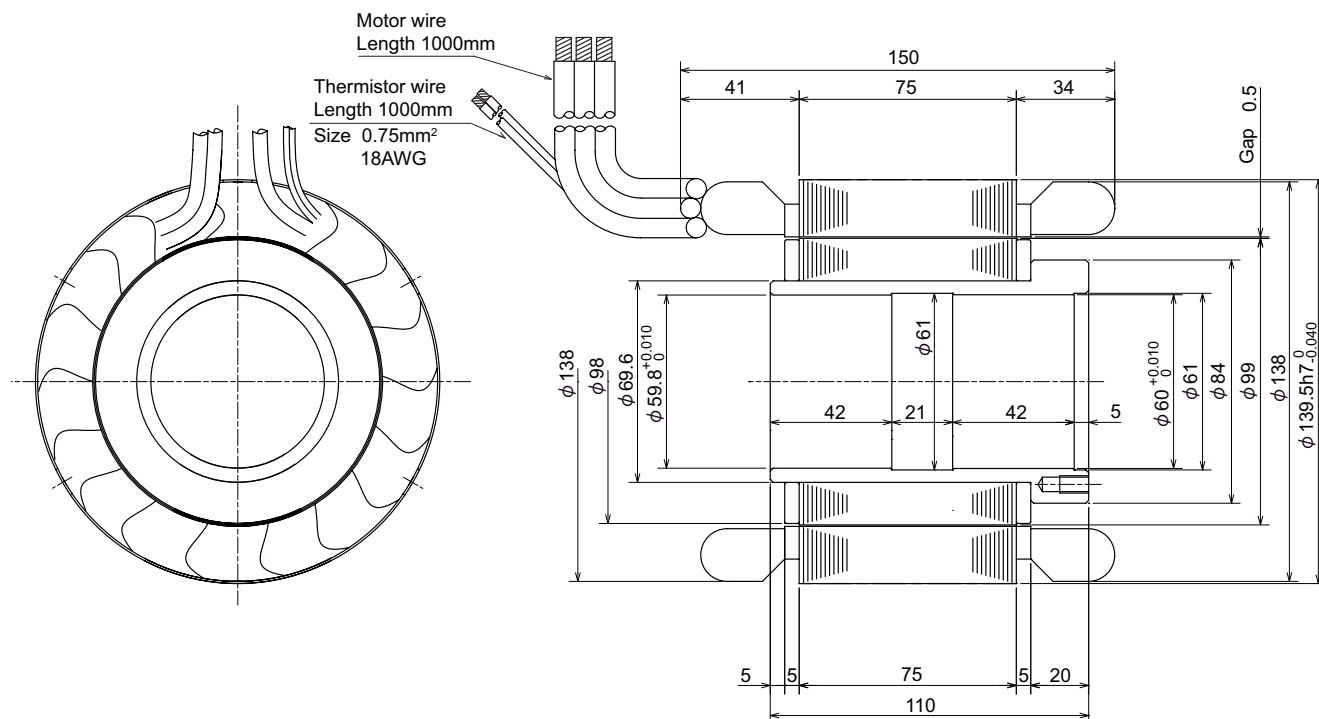
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 50%ED rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



Built-in IM spindle motor

SJ-PMB04412T-B0

Specifications

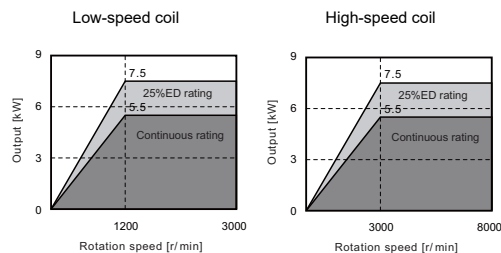
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-200	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	5.5	5.5
	Short time rated output	7.5(25%ED rating)	7.5(25%ED rating)
	Standard output during acceleration/deceleration	7.5	
	Actual acceleration/deceleration output(*3)	9	
Base rotation speed	Continuous[r/min]	1200	3000
	Short time[r/min]	1200	3000
Maximum rotation speed[r/min]		3000	8000
Frame No. - Core width		112	
Torque (Base rotation speed)	Continuous[N·m]	43.8	17.5
	Short time[N·m]	59.7	23.9
Rotor GD ² [kg·m ²]		0.0649	
Rotor inertia moment[kg·m ²]		0.0162	
Mass	Stator[kg]	14.0	
	Rotor[kg]	8.0	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		1200	
Cooling oil amount[l/min (20°C)]		5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

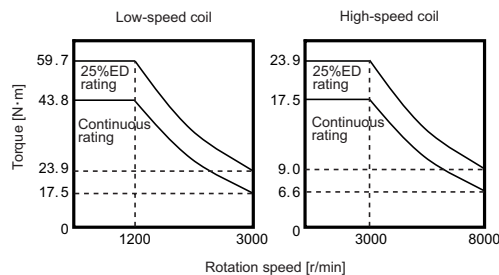
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



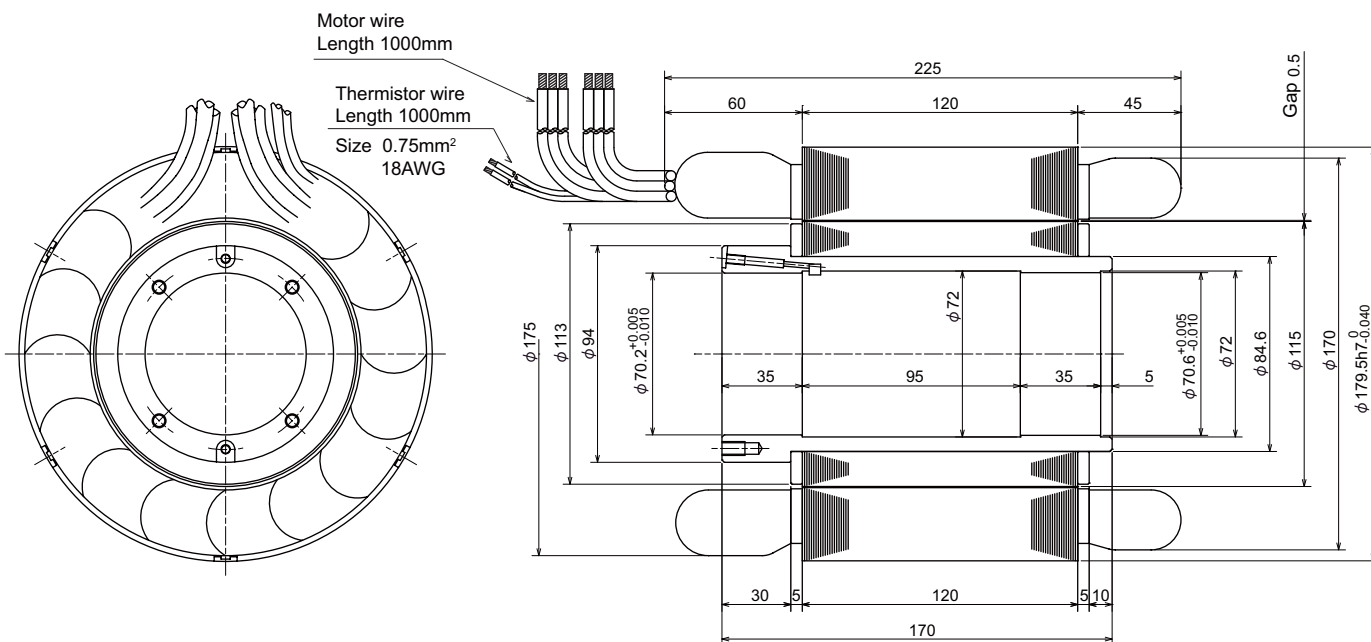
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 25%ED rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



Built-in IM spindle motor

SJ-PMB14007T-01

Specifications

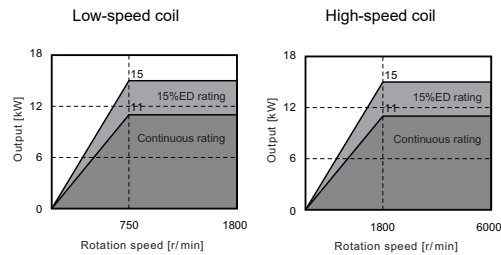
Item		Specifications	
Compatible spindle drive unit (*1)		MDS-D2-SP-320	
AC reactor for spindle motor		-	
Coil changeover		Low-speed coil	High-speed coil
Output capacity[kW]	Continuous rated output	11	11
	Short time rated output	15(15%ED rating)	15(15%ED rating)
	Standard output during acceleration/deceleration	15	
	Actual acceleration/deceleration output(*3)	18	
Base rotation speed	Continuous[r/min]	750	1800
	Short time[r/min]	750	1800
Maximum rotation speed[r/min]		1800	6000
Frame No. - Core width		160	
Torque (Base rotation speed)	Continuous[N·m]	140	58.4
	Short time[N·m]	191(15%ED rating)	79.6(15%ED rating)
Rotor GD ² [kg·m ²]		0.253	
Rotor inertia moment[kg·m ²]		0.0633	
Mass	Stator[kg]	30	
	Rotor[kg]	15	
Overload capacity (for one minute)		120% of short-time rated output	
Ambient temperature[°C]		0 to 40	
Heat-resistant class		155(F)	
Tolerable vibration		Maximum stationary tolerable value 9.8m/s ² (1G), Momentary stationary tolerable value 29.4m/s ² (3G)	
Required cooling capacity (*2)[W]		1500	
Cooling oil amount[l/min (20°C)]		5	

- (*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
- (*2) The value for the short-time rated output is shown for the required cooling capacity. Install a cooling jacket around the stator and use fluid cooling (oil cooling).
- (*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

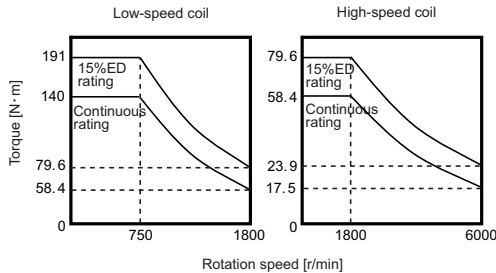
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Output characteristics



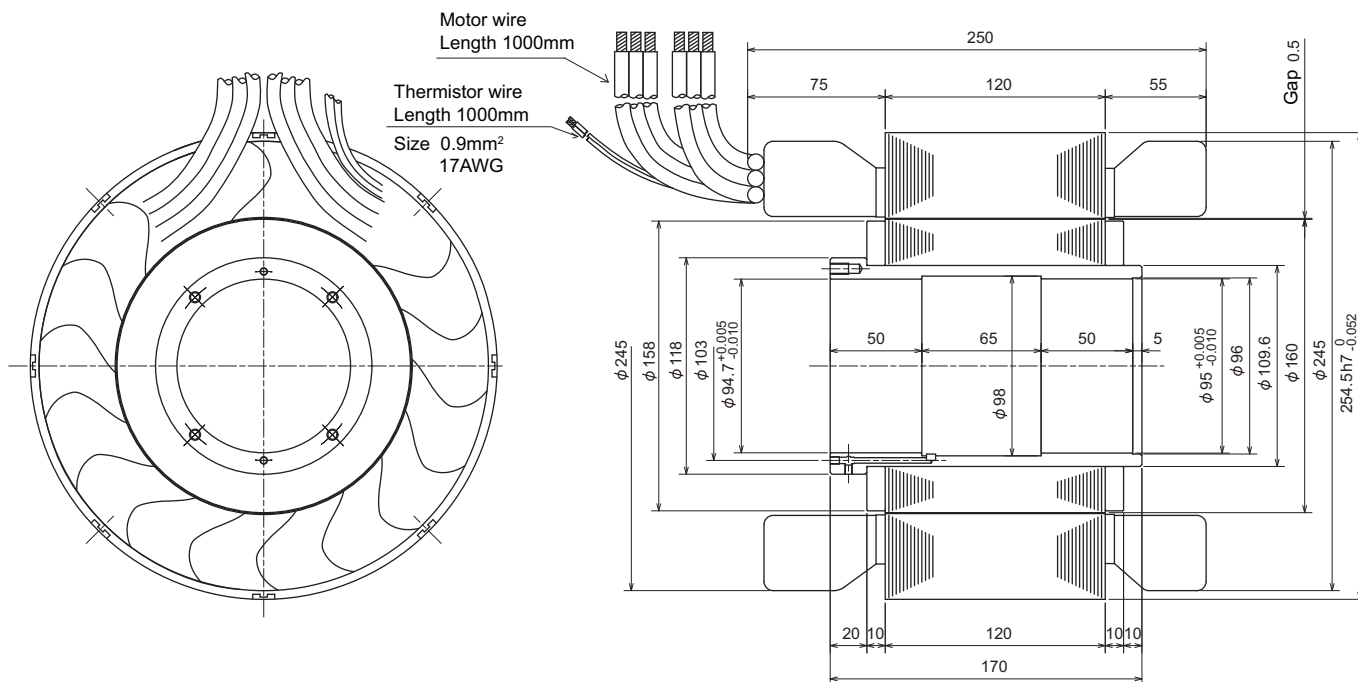
Torque at steady state-rotation speed characteristics



Torque at acceleration/deceleration-rotation speed characteristics

120% of the 15%ED rating characteristics is torque at the time of acceleration/deceleration.

Outline dimension drawings [Unit : mm]



Tool Spindle Motor

200V System Tool Spindle Motor HF-KP Series

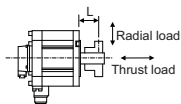
Rated torque	Rated rotation speed	Tool spindle motor type	Option	
0.64N·m	6000r/min	HF-KP46 J□W09	(1) Keyway	K With keyway (with key) None Without keyway

Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-20
	2-axis type	MDS-D2-SP2-2020 (L,M) MDS-D2-SP2-4020 (M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-20 MDS-DJ-SP2-2020 (L,M)
Continuous characteristics	Rated output[kW]	0.4
	Rated current[A]	1.5
	Rated torque[N·m]	0.64
Maximum momentary output (For power supply selection)[kW]		0.9
Rated rotation speed[r/min]		6000
Maximum rotation speed[r/min]		6000
Maximum current[A]		5.5
Maximum torque[N·m]		2.5
Motor inertia[×10 ⁻⁴ kg·m ²]		0.24
Mass[kg]		1.2
Heat-resistant class		130(B)
Degree of protection		IP67 (The shaft-through portion is excluded.)
Quakeproof level[m/s ²] ((G))		X:49(5), Y:49(5)
Axis tolerable load	Radial load (*2)[N] ((mm))	245 (L=30)
	Thrust load[N]	98
Encoder	260,000 p/rev (W09)	MDS-D2-SP MDS-D2-SP2 MDS-DJ-SP

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



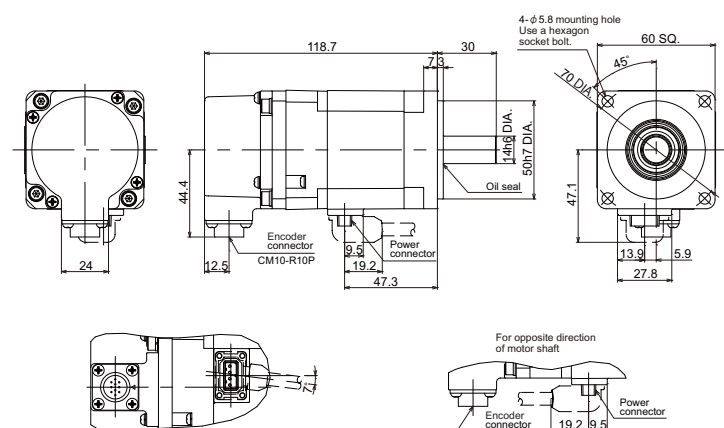
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

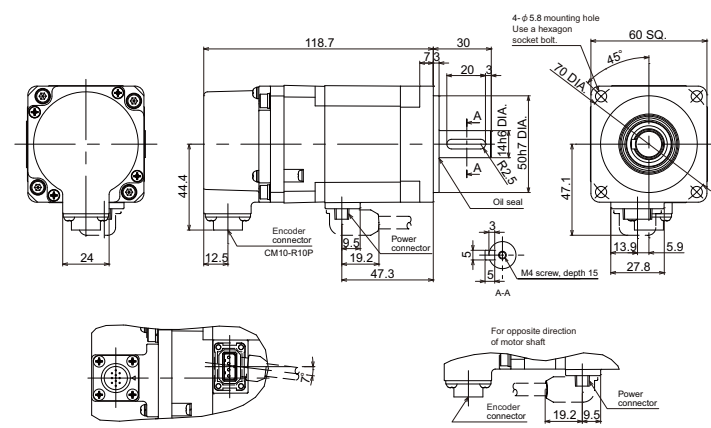
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

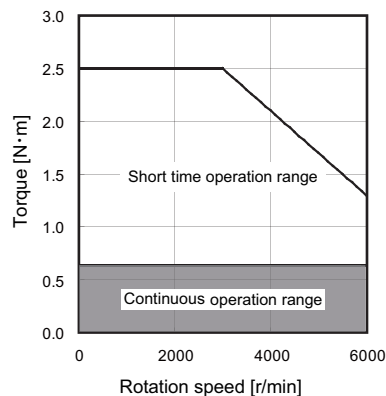
HF-KP46JW09



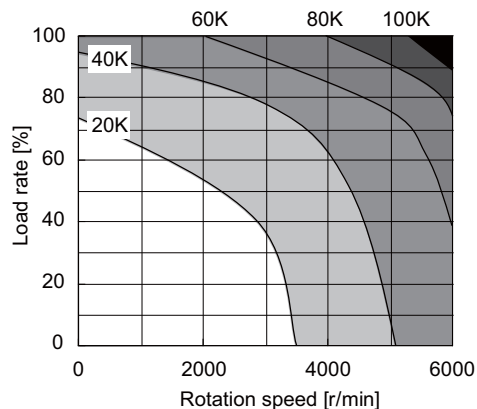
HF-KP46JKW09



Torque characteristics



Temperature characteristics



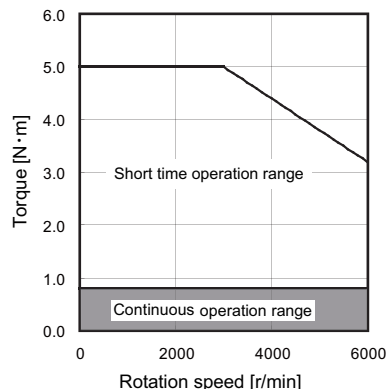
200V System Tool Spindle Motor HF-KP Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
0.80N·m	6000r/min	HF-KP56 J□W09	(1) Keyway	K With keyway (with key) None Without keyway

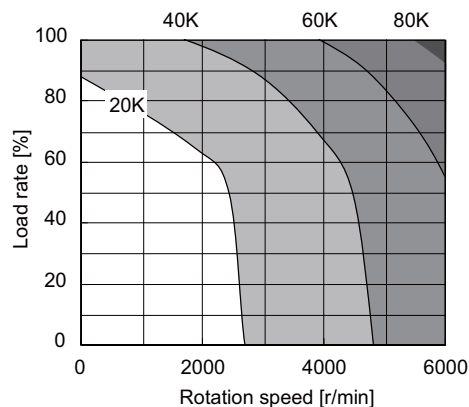
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-20
	2-axis type	MDS-D2-SP2-2020 (L,M) MDS-D2-SP2-4020 (M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-20
Continuous characteristics	Rated output[kW]	0.5
	Rated current[A]	1.8
	Rated torque[N·m]	0.80
Maximum momentary output (For power supply selection)[kW]	2.0	
Rated rotation speed[r/min]	6000	
Maximum rotation speed[r/min]	6000	
Maximum current[A]	11.3	
Maximum torque[N·m]	5.0	
Motor inertia[×10 ⁻⁴ kg·m ²]	0.42	
Mass[kg]	1.7	
Heat-resistant class	130(B)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:49(5), Y:49(5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	245 (L=30)
	Thrust load[N]	98
Encoder	260,000 p/rev (W09)	MDS-D2-SP MDS-D2-SP2 MDS-DJ-SP

Torque characteristics

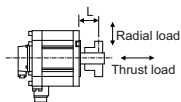


Temperature characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



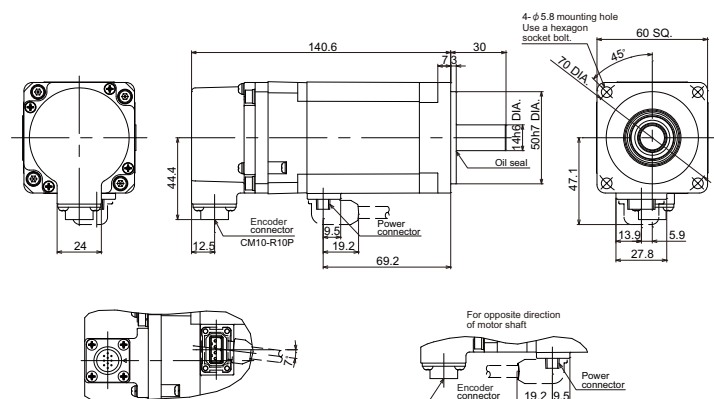
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

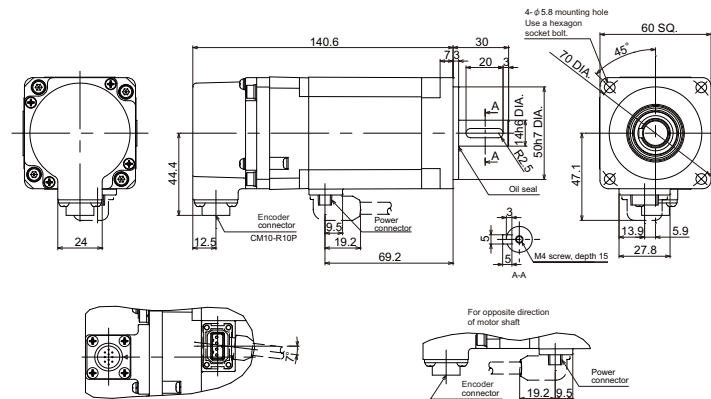
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF-KP56JW09



HF-KP56JKW09



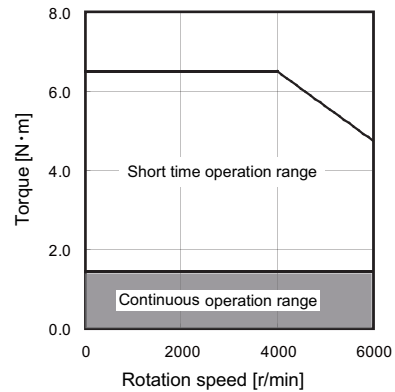
200V System Tool Spindle Motor HF-KP Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
1.43N·m	6000r/min	HF-KP96 J□W09	(1) Keyway	K With keyway (with key) None Without keyway
		(1)		

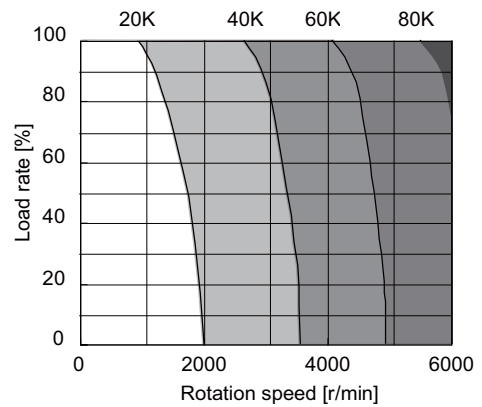
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-20
	2-axis type	MDS-D2-SP2-2020 (L,M) MDS-D2-SP2-4020 (M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-20
Continuous characteristics	Rated output[kW]	0.9
	Rated current[A]	3.4
	Rated torque[N·m]	1.43
Maximum momentary output (For power supply selection)[kW]	3.0	
Rated rotation speed[r/min]	6000	
Maximum rotation speed[r/min]	6000	
Maximum current[A]	15.5	
Maximum torque[N·m]	6.5	
Motor inertia[×10 ⁻⁴ kg·m ²]	1.43	
Mass[kg]	2.9	
Heat-resistant class	130(B)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:49(5), Y:49(5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	392 (L=40)
	Thrust load[N]	147
Encoder	260,000 p/rev (W09)	MDS-D2-SP MDS-D2-SP2 MDS-DJ-SP

Torque characteristics

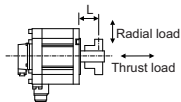


Temperature characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



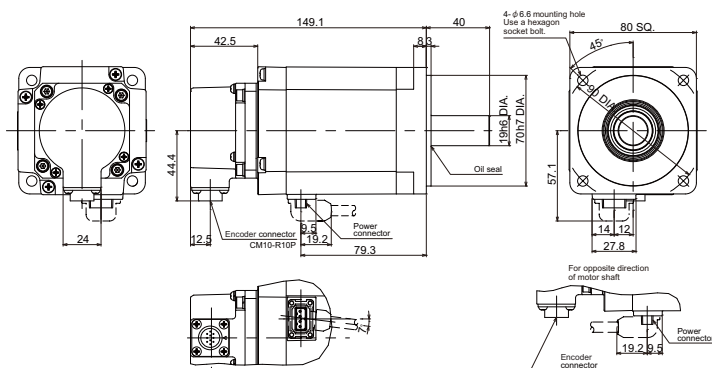
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

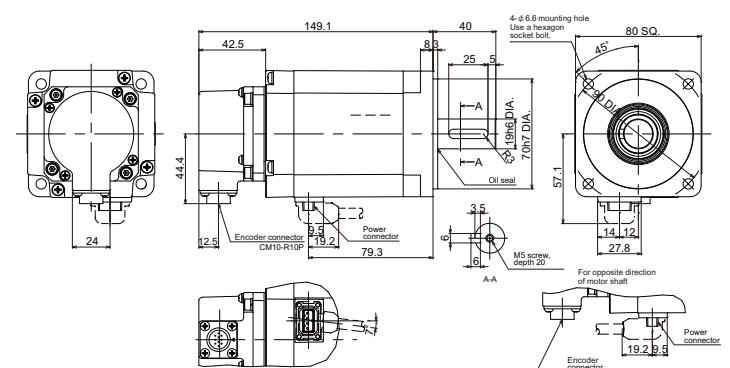
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF-KP96JW09



HF-KP96JKW09



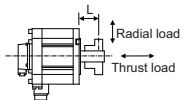
Rated torque	Rated rotation speed	Tool spindle motor type	Option	
3.5N·m	6000r/min	HF-SP226 J□W09	(1) Keyway	K With keyway (without key)
				None Without keyway

Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-80
	2-axis type	MDS-D2-SP2-8040 (L)
		MDS-D2-SP2-16080S (M)
		MDS-D2-SP2-8080 (L, M)
		MDS-D2-SP2-16080 (M)
3-axis type	-	
Continuous characteristics	Multi axis integrated type	-
	Regenerative resistor type	-
	Rated output[kW]	2.2
Maximum momentary output (For power supply selection)[kW]	Rated current[A]	8.2
	Rated torque[N·m]	3.5
	Rated rotation speed[r/min]	6000
Maximum rotation speed[r/min]	6000	
Maximum current[A]	44.0	
Maximum torque[N·m]	22.0	
Motor inertia[×10 ⁻⁴ kg·m ²]	11.9	
Mass[kg]	2.9	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	980 (L=55)
	Thrust load[N]	490
Encoder	260,000 p/rev (W09)	MDS-D2-SP MDS-D2-SP2

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



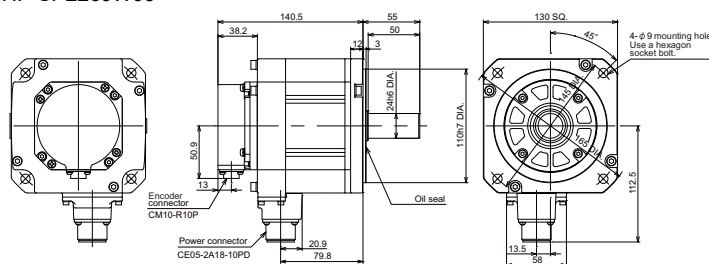
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

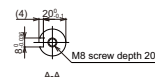
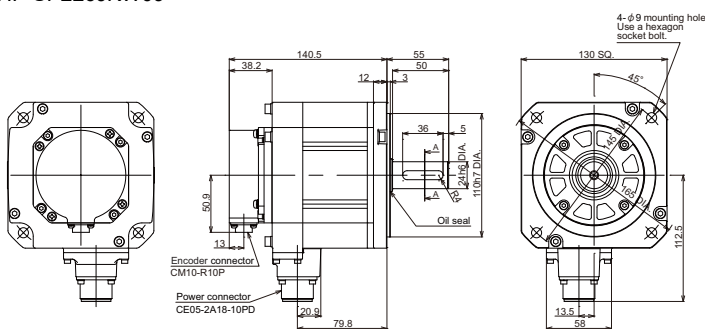
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

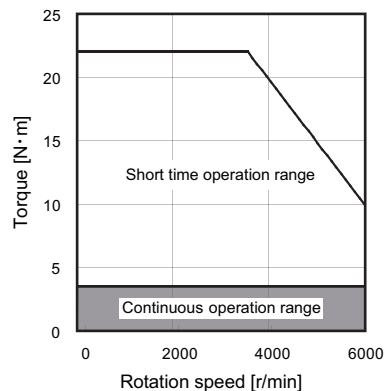
HF-SP226JW09



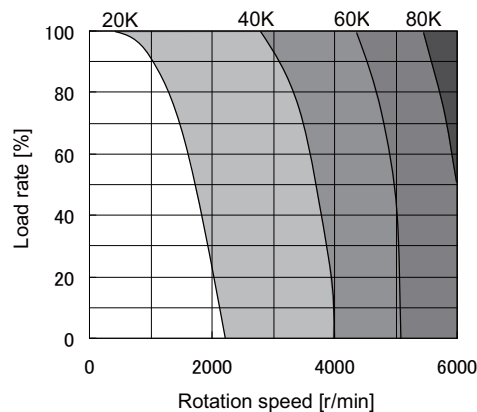
HF-SP226JKW09



Torque characteristics



Temperature characteristics



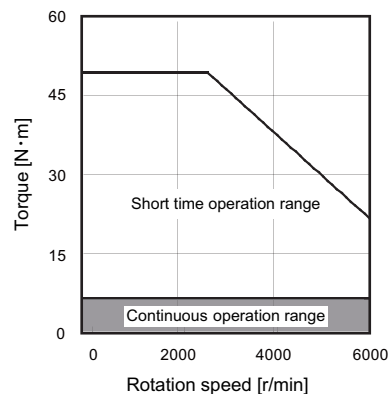
200V System Tool Spindle Motor HF-SP Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
6.37N·m	6000r/min	HF-SP406 J□W09	(1) Keyway	K With keyway (without key)
				None Without keyway

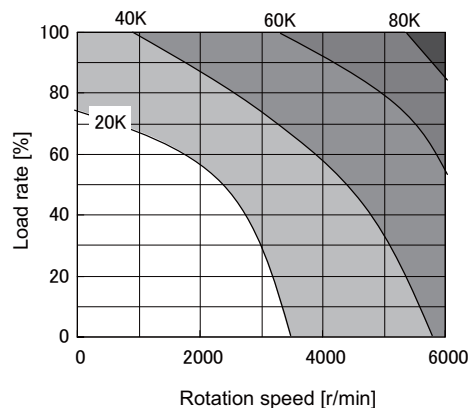
Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L) MDS-D2-SP2-16080 (L)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	4.0
	Rated current[A]	14.4
	Rated torque[N·m]	6.37
Maximum momentary output (For power supply selection)[kW]	16.0	
Rated rotation speed[r/min]	6000	
Maximum rotation speed[r/min]	6000	
Maximum current[A]	95.0	
Maximum torque[N·m]	50.0	
Motor inertia[×10 ⁻⁴ kg·m ²]	23.7	
Mass[kg]	10.0	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] (GG)	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	980 (L=55)
	Thrust load[N]	490
Encoder	260,000 p/rev (W09)	MDS-D2-SP MDS-D2-SP2

Torque characteristics

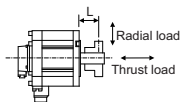


Temperature characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



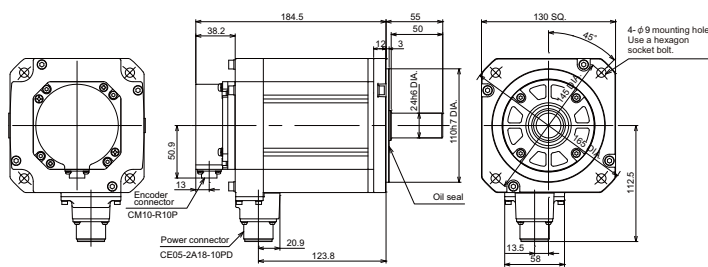
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

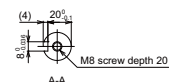
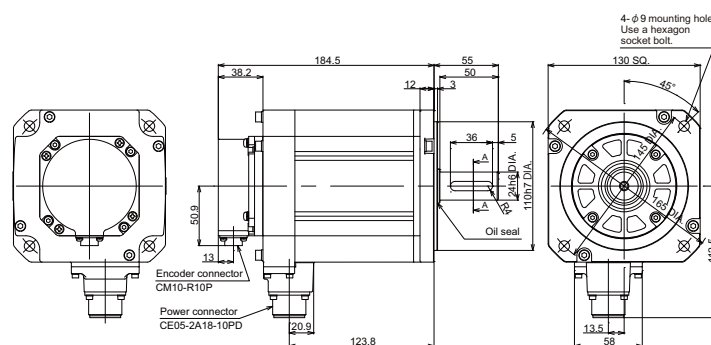
Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF-SP406JW09



HF-SP406JKW09



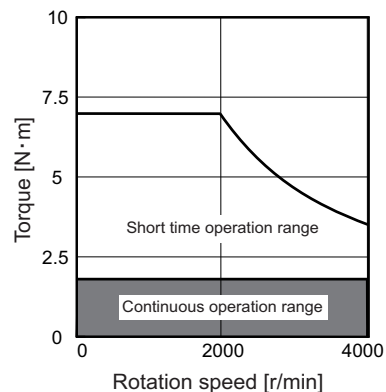
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
1.8N·m	4000r/min	(1) HF75 □-A48	(1) Shaft end	S Straight

Specifications

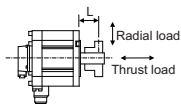
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-20
	2-axis type	MDS-D2-SP2-2020 (L,M) MDS-D2-SP2-4020 (M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-20 MDS-DJ-SP2-2020 (L,M)
Continuous characteristics	Rated output[kW]	0.75
	Rated current[A]	3.1
	Rated torque[N·m]	1.8
Maximum momentary output (For power supply selection)[kW]	2.6	
Rated rotation speed[r/min]	4000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	14.0	
Maximum torque[N·m]	7.0	
Motor inertia[×10 ⁻⁴ kg·m ²]	2.62	
Mass[kg]	2.5	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	245 (L=33)
	Thrust load[N]	147
Encoder	260,000 p/rev (A48)	MDS-D2-SP MDS-DJ-SP

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



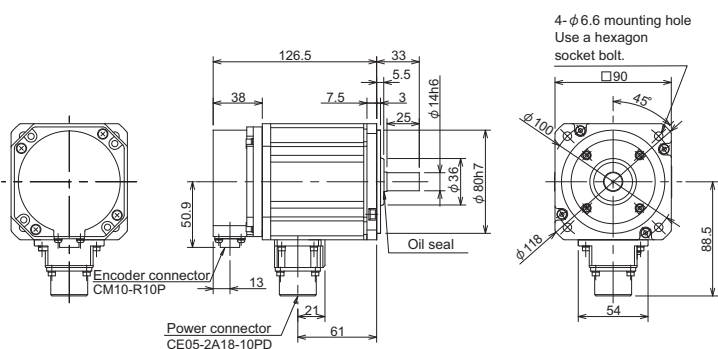
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF75S-A48



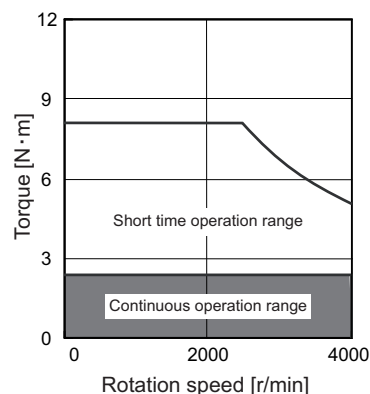
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
2.4N·m	4000r/min	HF105 □-A48	(1) Shaft end	S Straight

Specifications

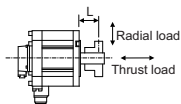
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-20
	2-axis type	MDS-D2-SP2-2020 (L,M) MDS-D2-SP2-4020 (M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-20 MDS-DJ-SP2-2020 (L,M)
Continuous characteristics	Rated output[kW]	1.0
	Rated current[A]	3.7
	Rated torque[N·m]	2.4
Maximum momentary output (For power supply selection)[kW]	3.6	
Rated rotation speed[r/min]	4000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	15.5	
Maximum torque[N·m]	8.1	
Motor inertia[×10 ⁻⁴ kg·m ²]	5.1	
Mass[kg]	4.3	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	245 (L=33)
	Thrust load[N]	147
Encoder	260,000 p/rev (A48)	MDS-D2-SP MDS-DJ-SP

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



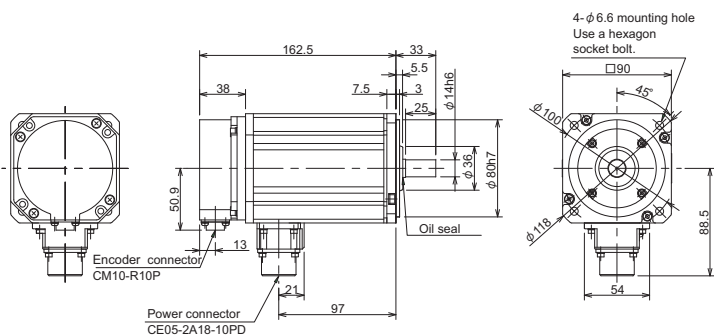
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF105S-A48



200V System Tool Spindle Motor HF Series

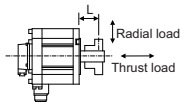
Rated torque	Rated rotation speed	Tool spindle motor type	Option	
1.6N·m	3000r/min	HF54 □-A48	(1) Shaft end	S Straight

Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-40
	2-axis type	MDS-D2-SP2-4020 (L) MDS-D2-SP2-4040S (L,M) MDS-D2-SP2-4040 (L,M) MDS-D2-SP2-8040 (M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-20 MDS-DJ-SP2-2020 (L,M)
Continuous characteristics	Rated output[kW]	0.5
	Rated current[A]	2.0
	Rated torque[N·m]	1.6
Maximum momentary output (For power supply selection)[kW]		2.3
Rated rotation speed[r/min]		3000
Maximum rotation speed[r/min]		3000
Maximum current[A]		16.8
Maximum torque[N·m]		12.1
Motor inertia $\times 10^{-4}$ kg·m ²		6.1
Mass[kg]		4.8
Heat-resistant class		155(F)
Degree of protection		IP67 (The shaft-through portion is excluded.)
Quakeproof level[m/s ² ((G))]		X:24.5(2.5),Y:24.5(2.5)
Axis tolerable load	Radial load (*2)[N] ((mm))	980 (L=55)
	Thrust load[N]	490
Encoder	260,000 p/rev (A48)	MDS-D2-SP MDS-DJ-SP

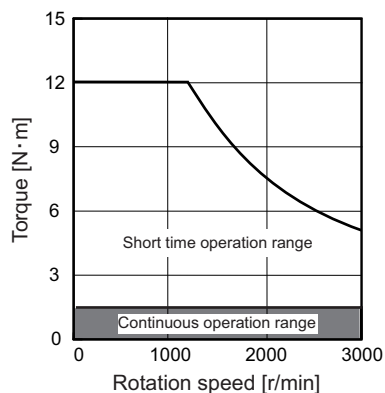
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

Torque characteristics

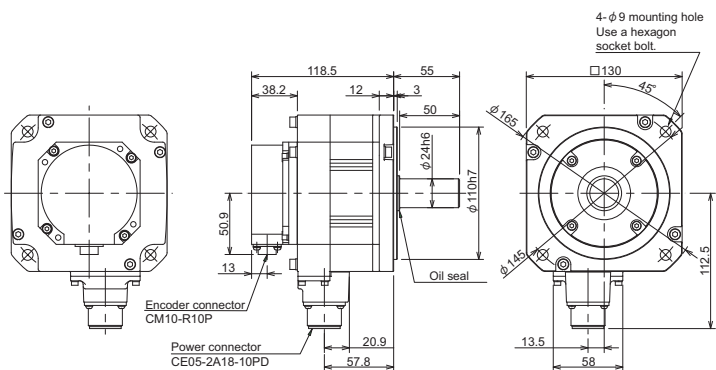


Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF54S-A48



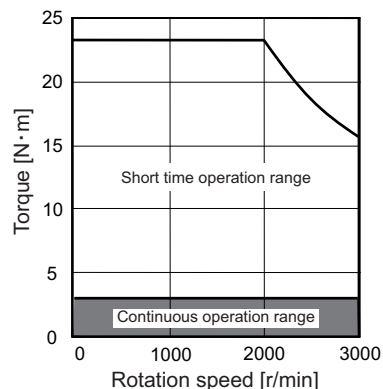
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
3.2N·m	3000r/min	HF104 □-A48	(1) Shaft end	S Straight

Specifications

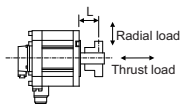
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-40
	2-axis type	MDS-D2-SP2-4020 (L) MDS-D2-SP2-4040S (L,M) MDS-D2-SP2-4040 (L,M) MDS-D2-SP2-8040 (M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-40
Continuous characteristics	Rated output[kW]	1.0
	Rated current[A]	3.9
	Rated torque[N·m]	3.2
Maximum momentary output (For power supply selection)[kW]	5.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	29.0	
Maximum torque[N·m]	23.3	
Motor inertia[×10 ⁻⁴ kg·m ²]	11.9	
Mass[kg]	6.5	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	980 (L=55)
	Thrust load[N]	490
Encoder	260,000 p/rev (A48)	MDS-D2-SP MDS-DJ-SP

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



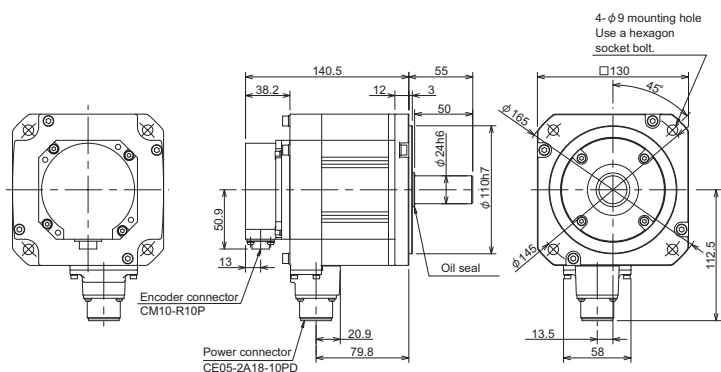
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF104S-A48



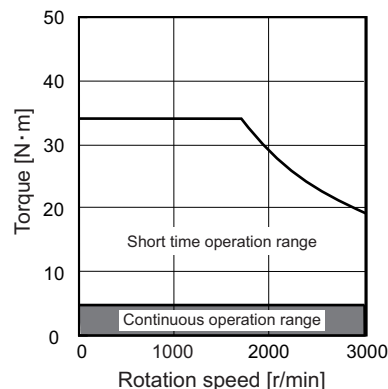
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
4.8N·m	3000r/min	HF154 □-A48	(1) Shaft end	S Straight
		(1)		

Specifications

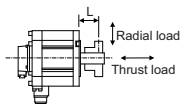
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-80
	2-axis type	MDS-D2-SP2-8040 (L) MDS-D2-SP2-16080S (M) MDS-D2-SP2-8080 (L, M) MDS-D2-SP2-16080 (M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-80
Continuous characteristics	Rated output[kW]	1.5
	Rated current[A]	5.6
	Rated torque[N·m]	4.8
Maximum momentary output (For power supply selection)[kW]	9.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	52.0	
Maximum torque[N·m]	33.9	
Motor inertia[×10 ⁻⁴ kg·m ²]	17.8	
Mass[kg]	8.3	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	980 (L=55)
	Thrust load[N]	490
Encoder	260,000 p/rev (A48)	MDS-D2-SP MDS-DJ-SP

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



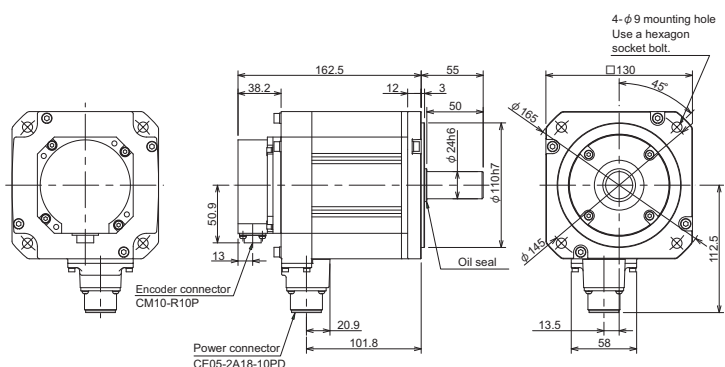
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF154S-A48



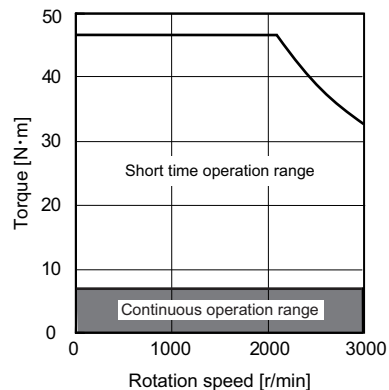
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
7.0N·m	3000r/min	HF224 □-A48	(1) Shaft end	S Straight
		(1)		

Specifications

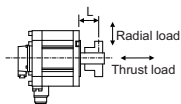
Item	Specifications
Compatible drive unit (*1)	1-axis type
	2-axis type
	3-axis type
	Multi axis integrated type
	Regenerative resistor type
Continuous characteristics	Rated output[kW]
	Rated current[A]
	Rated torque[N·m]
Maximum momentary output (For power supply selection)[kW]	
Rated rotation speed[r/min]	
Maximum rotation speed[r/min]	
Maximum current[A]	
Maximum torque[N·m]	
Motor inertia×10 ⁻⁴ kg·m ²	
Mass[kg]	
Heat-resistant class	
Degree of protection	
Quakeproof level[m/s ²] ((G))	
Axis tolerable load	Radial load (*2)[N] ((mm))
	Thrust load[N]
Encoder	

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



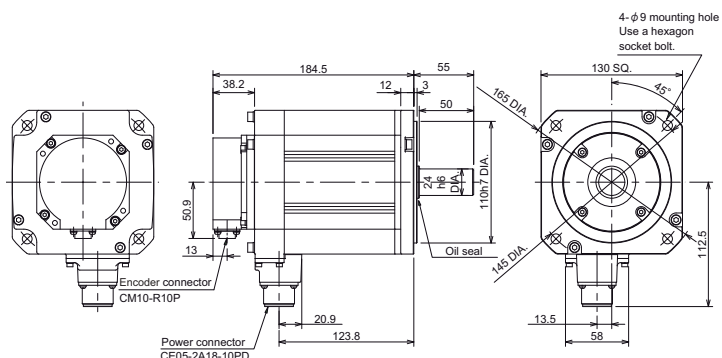
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF224S-A48



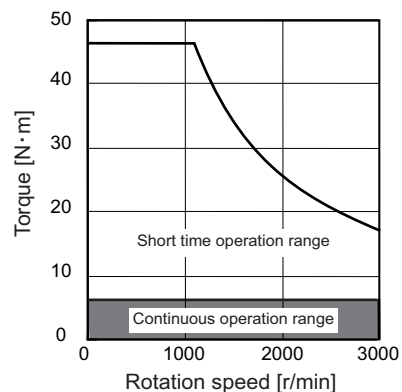
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
6.4N·m	3000r/min	HF204 □-A48	(1) Shaft end	S Straight

Specifications

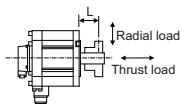
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-80
	2-axis type	MDS-D2-SP2-8040 (L) MDS-D2-SP2-16080S (M) MDS-D2-SP2-8080 (L,M) MDS-D2-SP2-16080 (M)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	MDS-DJ-SP-80
Continuous characteristics	Rated output[kW]	2.0
	Rated current[A]	6.8
	Rated torque[N·m]	6.4
Maximum momentary output (For power supply selection)[kW]	8.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	57.0	
Maximum torque[N·m]	46.5	
Motor inertia[×10 ⁻⁴ kg·m ²]	38.3	
Mass[kg]	12.0	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Encoder	260,000 p/rev (A48)	MDS-D2-SP MDS-DJ-SP

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



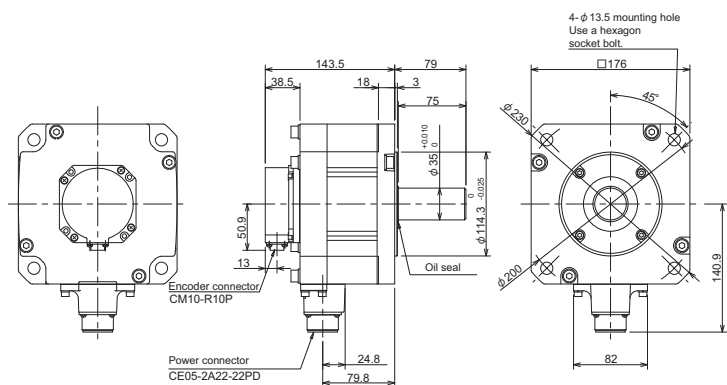
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF204S-A48



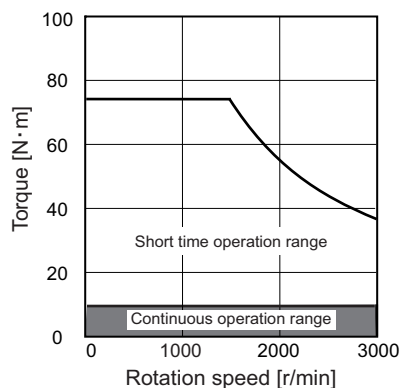
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
11.1N·m	3000r/min	HF354 □-A48	(1) Shaft end	S Straight

Specifications

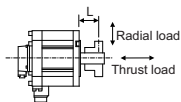
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L) MDS-D2-SP2-16080 (L)
	3-axis type	-
	Multi axis integrated type	-
Continuous characteristics	Rated output[kW]	3.5
	Rated current[A]	12
	Rated torque[N·m]	11.1
Maximum momentary output (For power supply selection)[kW]	18.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	116.0	
Maximum torque[N·m]	74.5	
Motor inertia[×10 ⁻⁴ kg·m ²]	75.0	
Mass[kg]	19.0	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Encoder	260,000 p/rev (A48) MDS-D2-SP	

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



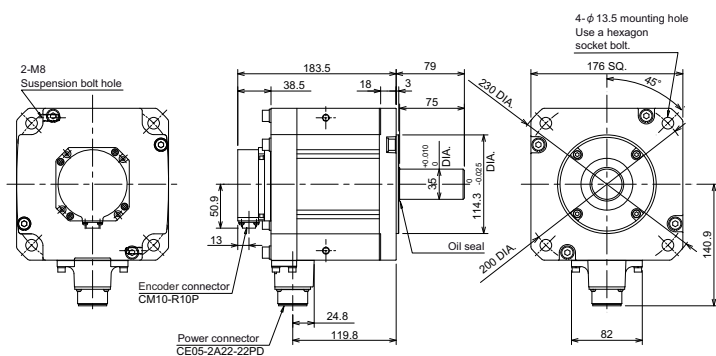
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF354S-A48



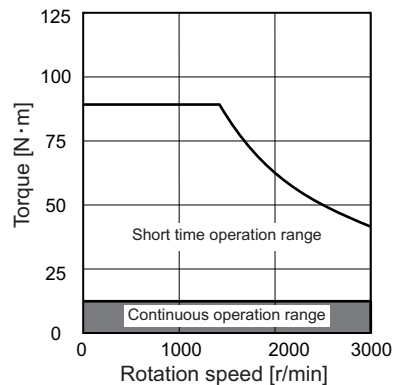
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
14.3N·m	3000r/min	HF453 □-A48	(1) Shaft end	S Straight

Specifications

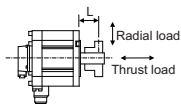
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L) MDS-D2-SP2-16080 (L)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	4.5
	Rated current[A]	19
	Rated torque[N·m]	14.3
Maximum momentary output (For power supply selection)[kW]	22.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	104.2	
Maximum torque[N·m]	89.3	
Motor inertia[×10 ⁻⁴ kg·m ²]	112.0	
Mass[kg]	25.0	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Encoder	260,000 p/rev (A48) MDS-D2-SP	

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



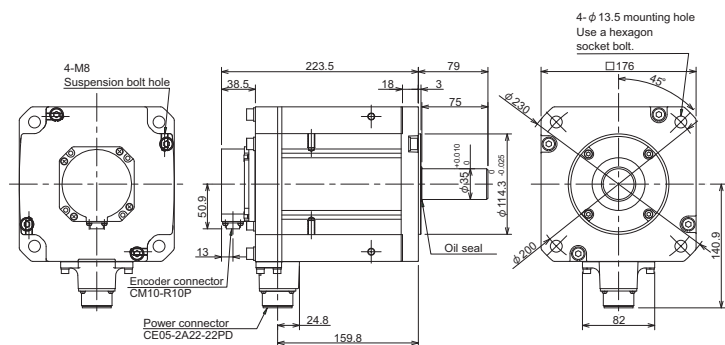
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF453S-A48



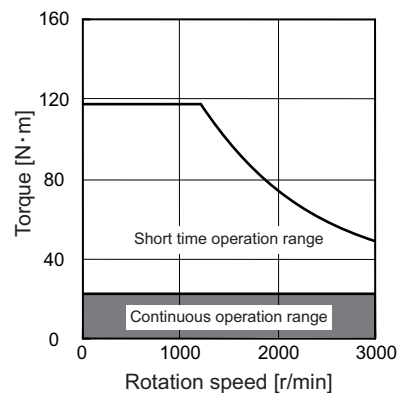
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
22.3N·m	3000r/min	HF703 □-A48	(1) Shaft end	S Straight
		(1)		

Specifications

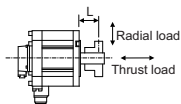
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-160
	2-axis type	MDS-D2-SP2-16080S (L) MDS-D2-SP2-16080 (L)
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	7.0
	Rated current[A]	34
	Rated torque[N·m]	22.3
Maximum momentary output (For power supply selection)[kW]	28.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	108.4	
Maximum torque[N·m]	116.5	
Motor inertia[×10 ⁻⁴ kg·m ²]	154.0	
Mass[kg]	32.0	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Encoder	260,000 p/rev (A48) MDS-D2-SP	

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



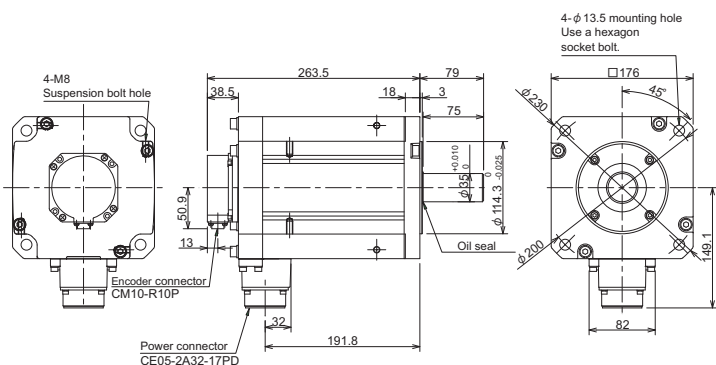
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

HF703S-A48



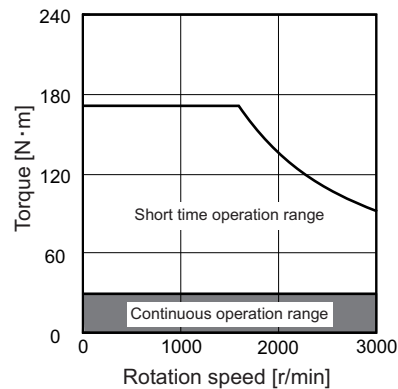
200V System Tool Spindle Motor HF Series

Rated torque	Rated rotation speed	Tool spindle motor type	Option	
28.7N·m	3000r/min	HF903 □-A48	(1) Shaft end	S Straight
		(1)		

Specifications

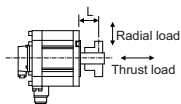
Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-D2-SP-320
	2-axis type	-
	3-axis type	-
	Multi axis integrated type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	9.0
	Rated current[A]	30
	Rated torque[N·m]	28.6
Maximum momentary output (For power supply selection)[kW]	41.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	204.0	
Maximum torque[N·m]	171.0	
Motor inertia[×10 ⁻⁴ kg·m ²]	196.0	
Mass[kg]	43.0	
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:9.8(1), Y:9.8(1)	
Axis tolerable load	Radial load (*2)[N] ((mm))	2450 (L=85)
	Thrust load[N]	980
Encoder	260,000 p/rev (A48)	MDS-D2-SP

Torque characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



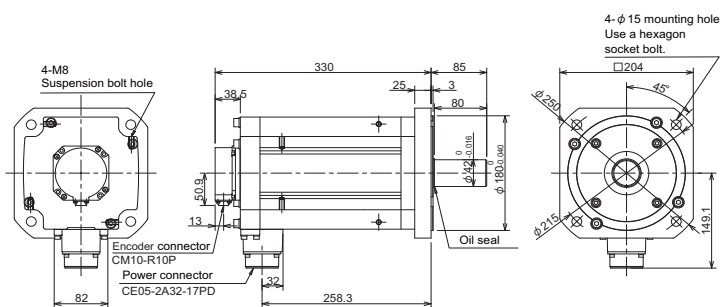
L: Length from flange installation surface to center of load weight [mm]

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

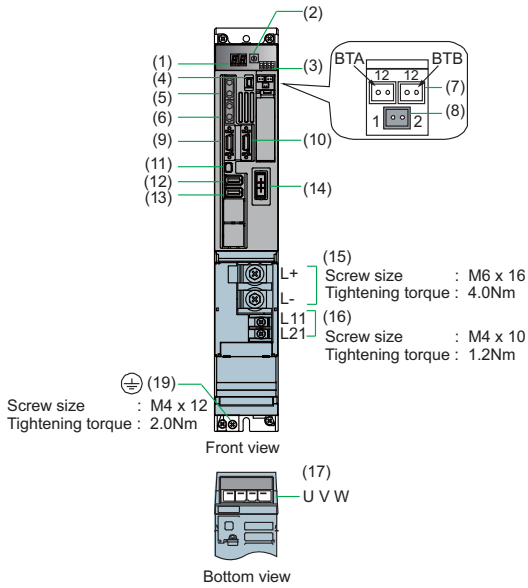
HF903S-A48



Servo Drive Unit

Servo drive unit

MDS-D2-V1-20



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake unit control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output connector (3-phase AC output)
(19)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	20
Output	
Rated voltage[V]	155AC
Rated current[A]	6.4
Input	
Rated voltage[V]	270 to 311DC
Rated current[A]	7.0
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	18
Outside panel[W]	22
Cooling method	Forced air cooling
Mass[kg]	3.8

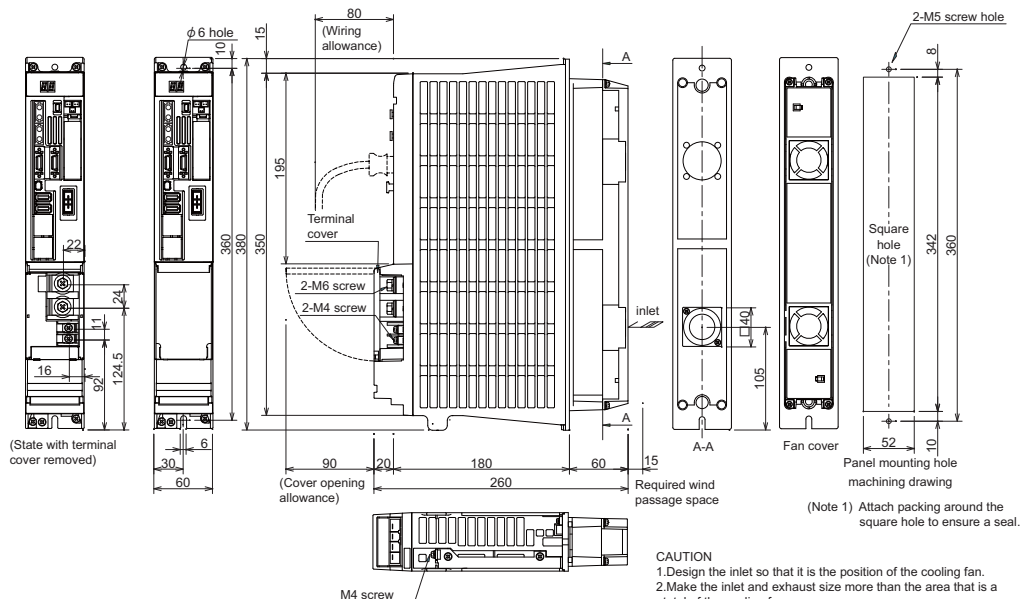
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

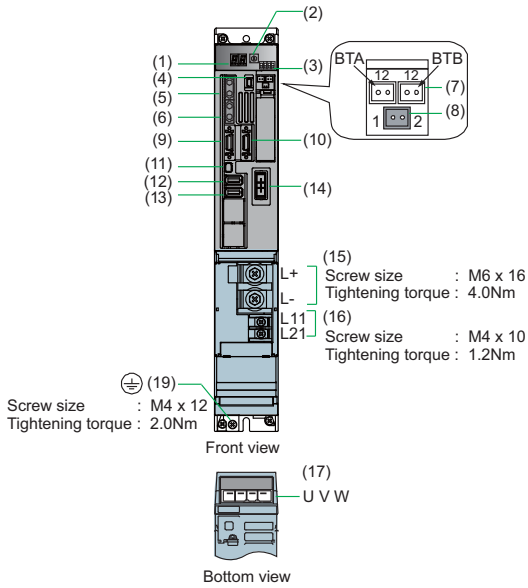
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-D2-V1-40



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake unit control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output connector (3-phase AC output)
(19)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	40
Output	
Rated voltage[V]	155AC
Rated current[A]	11
Input	
Rated voltage[V]	270 to 311DC
Rated current[A]	7.0
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
	Built-in
Heating value	
Inside panel[W]	20
Outside panel[W]	38
Cooling method	Forced air cooling
Mass[kg]	3.8

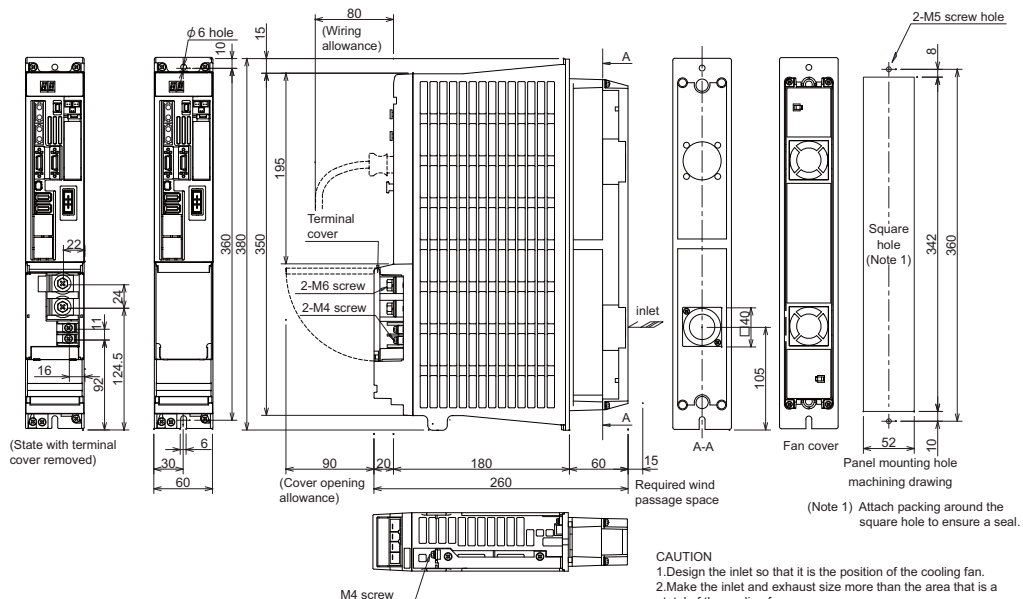
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

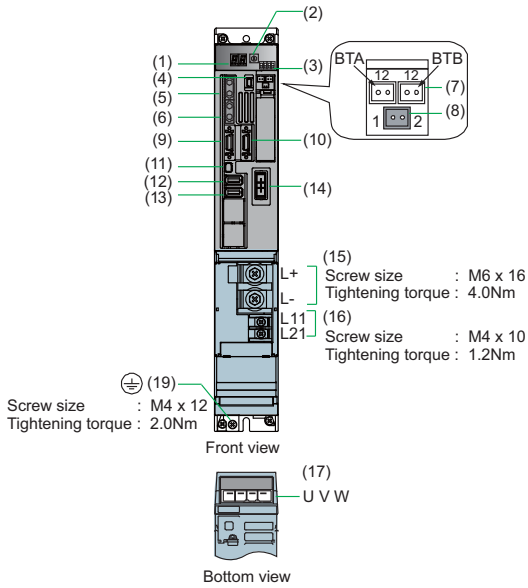
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-D2-V1-80



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake unit control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output connector (3-phase AC output)
(19)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	80
Output	
Rated voltage[V]	155AC
Rated current[A]	16
Input	
Rated voltage[V]	270 to 311DC
Rated current[A]	14
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	25
Outside panel[W]	71
Cooling method	Forced air cooling
Mass[kg]	3.8

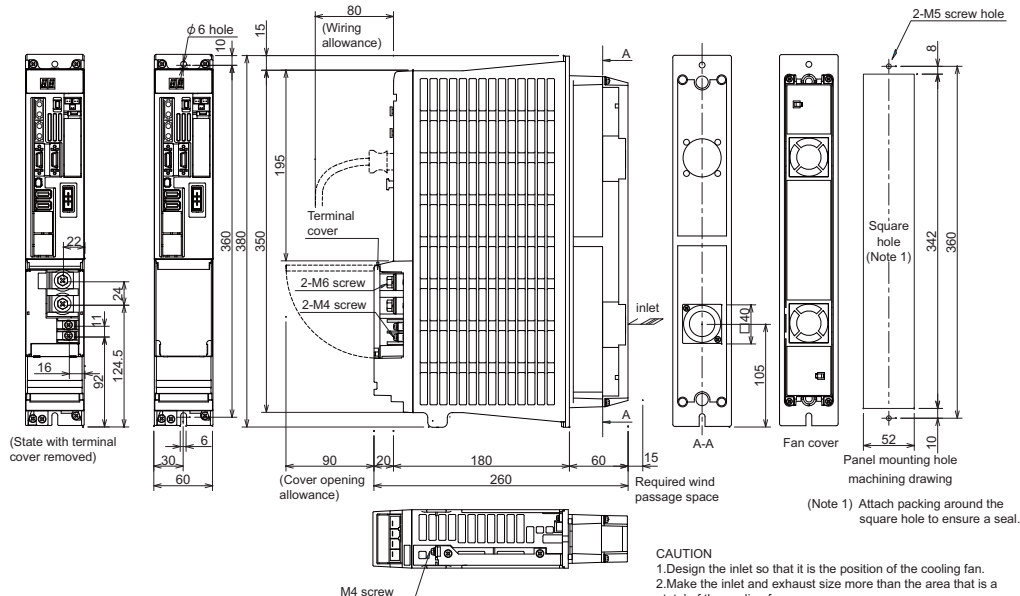
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

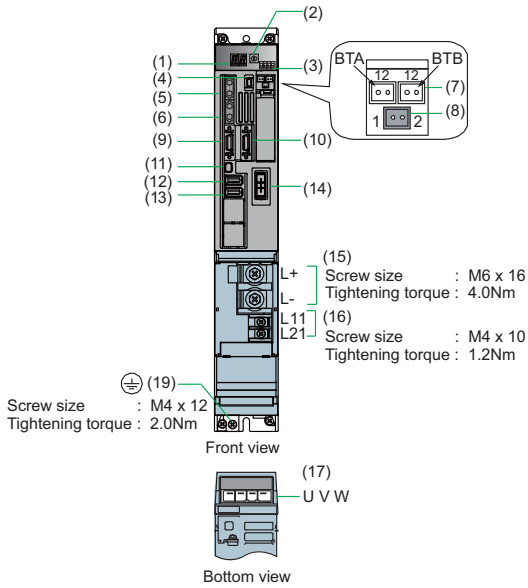
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-D2-V1-160



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake unit control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output connector (3-phase AC output)
(19)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	160
Output	
Rated voltage[V]	155AC
Rated current[A]	29.6
Input	
Rated voltage[V]	270 to 311DC
Rated current[A]	30
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	36
Outside panel[W]	148
Cooling method	Forced air cooling
Mass[kg]	3.8

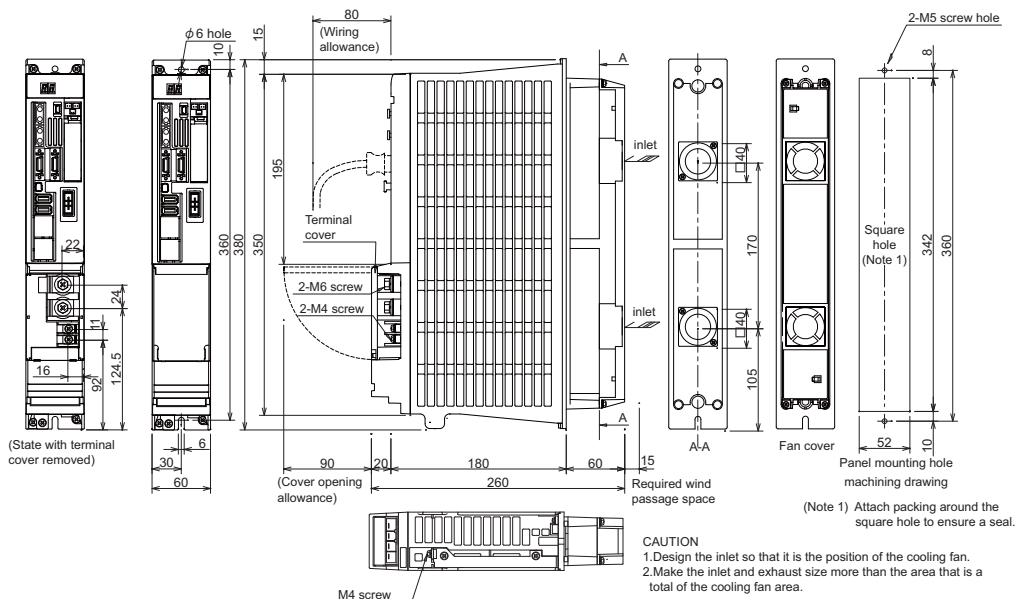
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

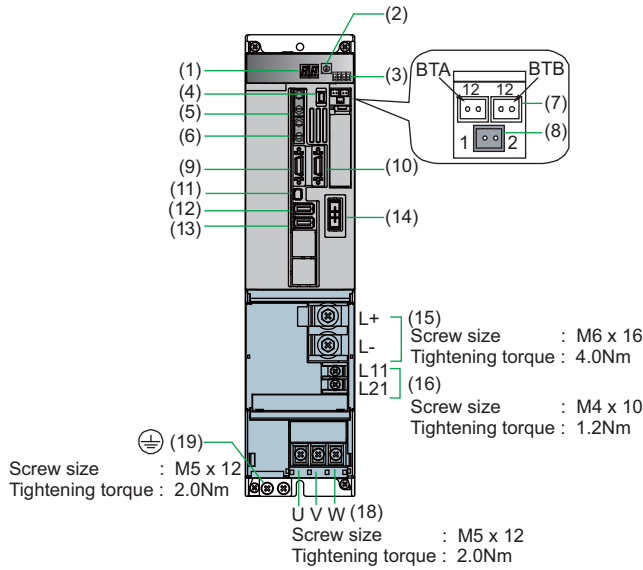
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5	12			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-D2-V1-160W



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake unit control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output terminal (3-phase AC output)
(19)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	160
Output	
Rated voltage[V]	155AC
Rated current[A]	40.2
Input	
Rated voltage[V]	270 to 311DC
Rated current[A]	35
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	44
Outside panel[W]	201
Cooling method	Forced air cooling
Mass[kg]	4.5

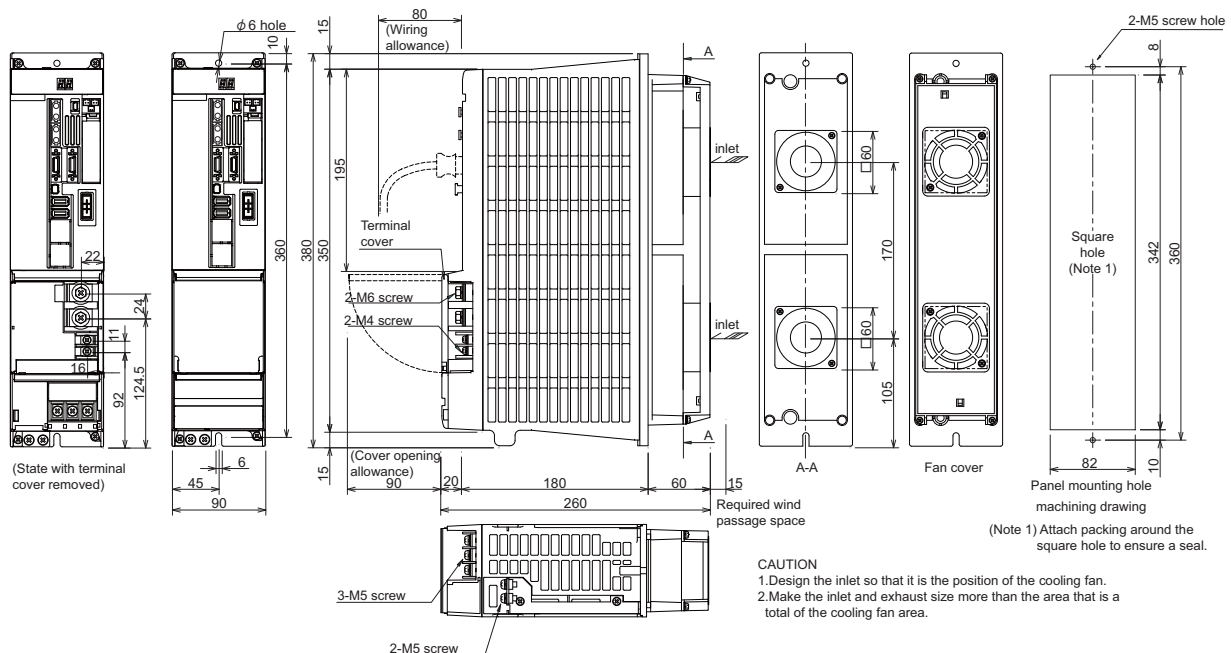
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	14	6	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	8	8			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	5.5	10			1.25 to 2	16 to 14

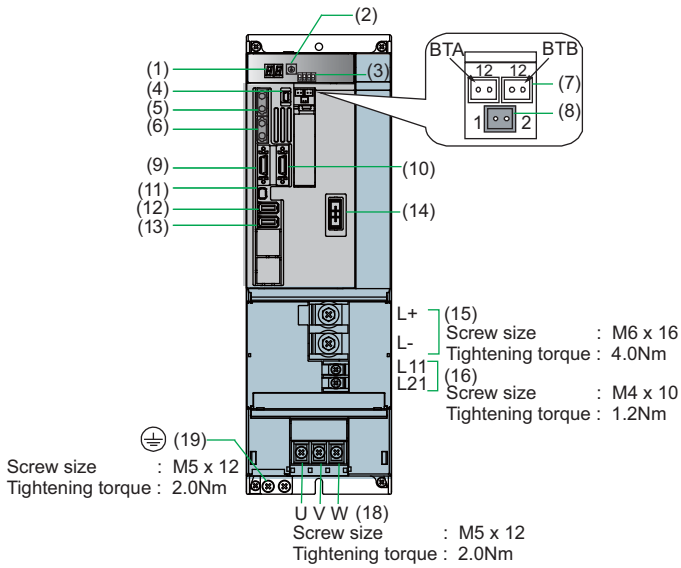
Outline dimension drawings [Unit : mm]



CAUTION
 1.Design the inlet so that it is the position of the cooling fan.
 2.Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-D2-V1-320



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA	For connecting converged battery unit
(8)	BTB	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake unit control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	320	
Output	Rated voltage[V]	155AC
	Rated current[A]	59.6
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	45
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
	Max. rush conductivity time[ms]	6
	Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes	Built-in
	Dynamic brakes	Built-in
Heating value	Inside panel[W]	59
	Outside panel[W]	307
Cooling method	Forced air cooling	
Mass[kg]	5.8	

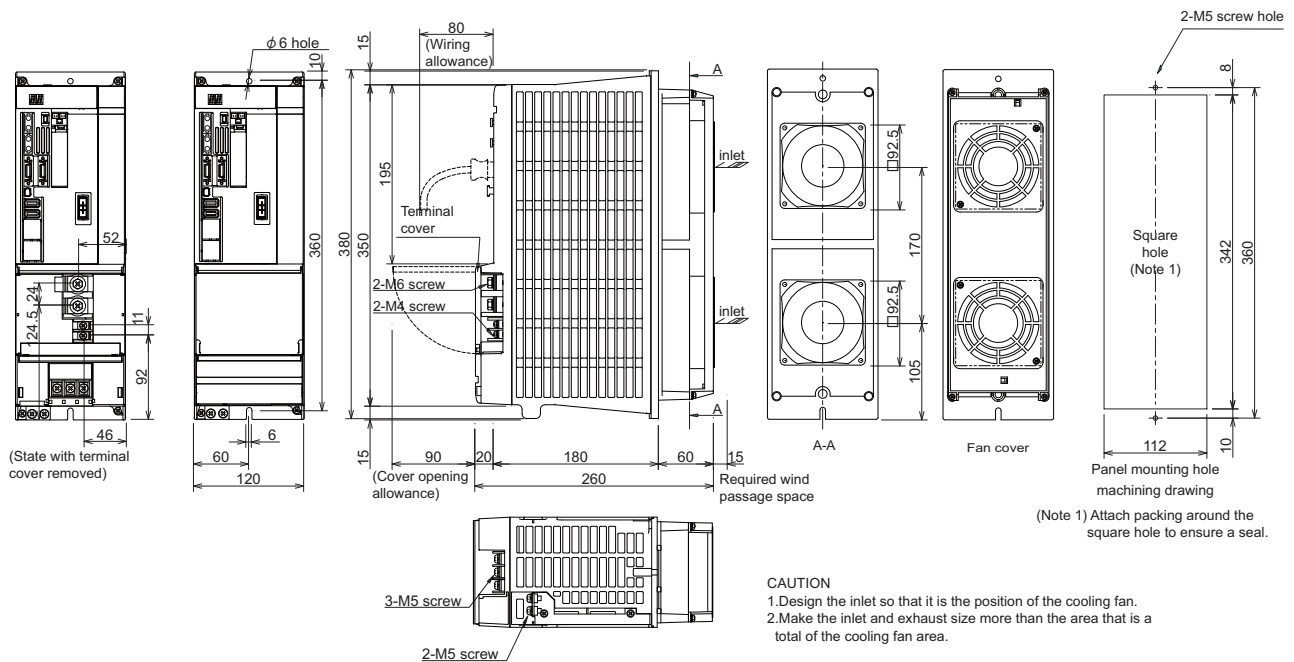
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	22	4			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	14	6	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6			1.25 to 2	16 to 14

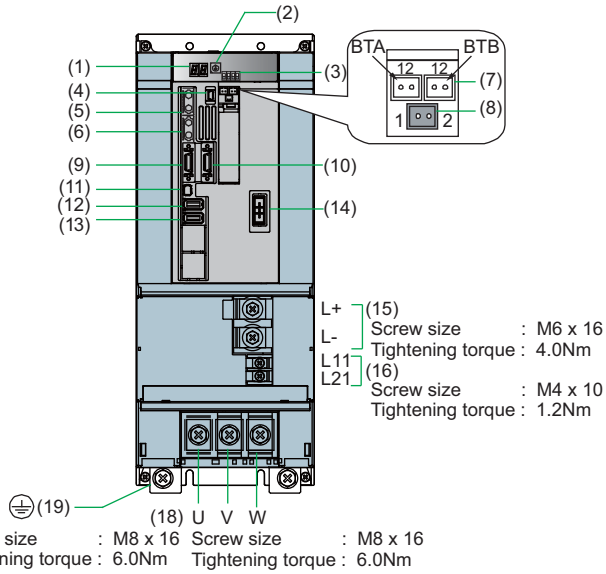
Outline dimension drawings [Unit : mm]



CAUTION
1. Design the inlet so that it is the position of the cooling fan.
2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-D2-V1-320W



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA	For connecting converged battery unit
(8)	BTB	
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake unit control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output terminal (3-phase AC output)
(19)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	320
Output	
Rated voltage[V]	155AC
Rated current[A]	97
Input	
Rated voltage[V]	270 to 311DC
Rated current[A]	55
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Heating value	External (MDS-D-DBU)
Dynamic brakes	
Inside panel[W]	72
Outside panel[W]	399
Cooling method	Forced air cooling
Mass[kg]	7.5

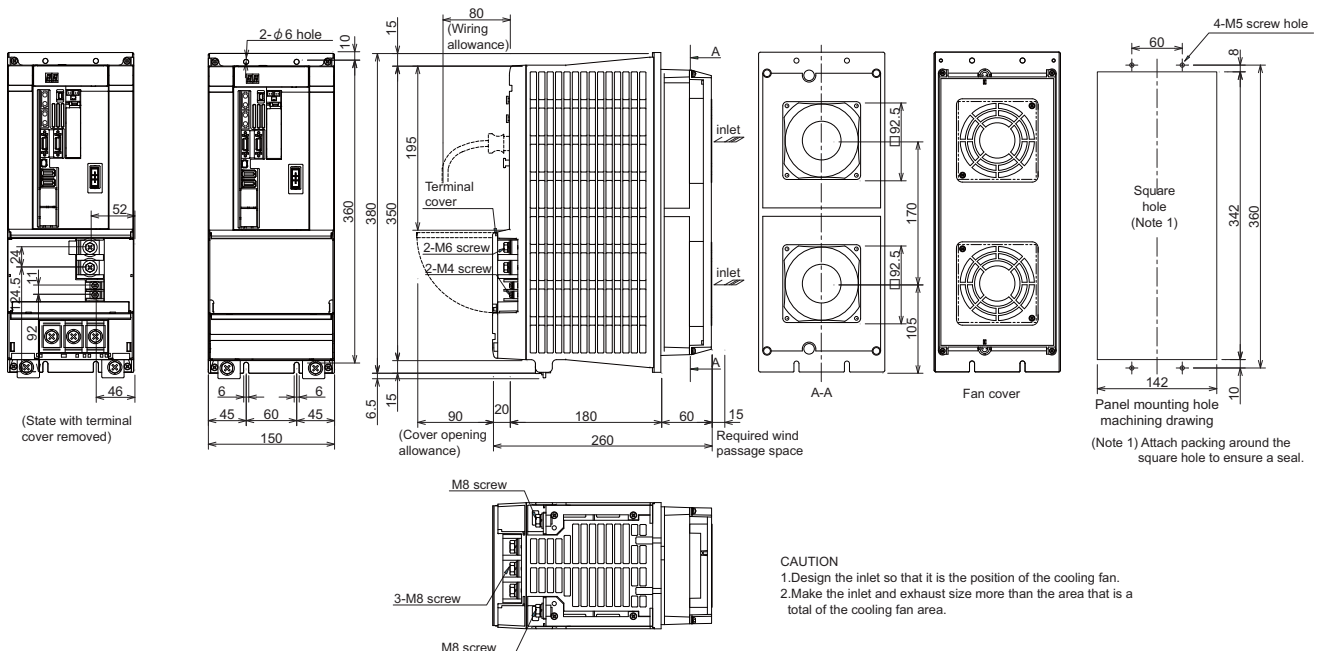
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

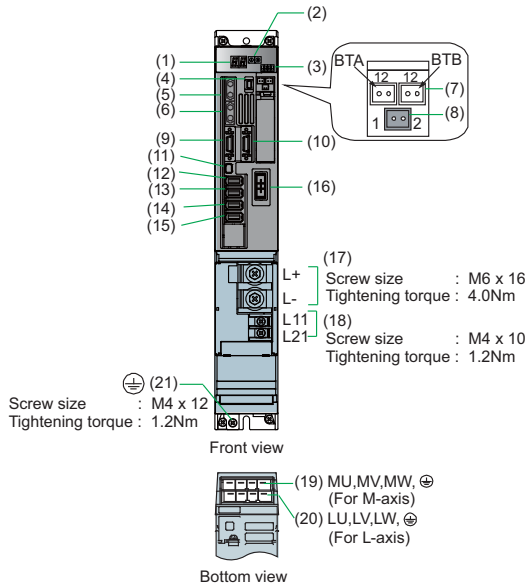
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	60	1/0	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	38	2			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	22	4			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-D2-V2-2020



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)		Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding .

Specifications

Item	Specifications		
	L	M	
Nominal maximum current(peak)[A]	20	20	
Output	Rated voltage[V]	155AC	
	Rated current[A]	6.4 6.4	
Input	Rated voltage[V]	270 to 311DC	
	Rated current[A]	14	
Control power	Frequency[Hz]	50 / 60	
	Tolerable frequency fluctuation[%]	±3% max	
	Voltage(50Hz)[V]	200AC	
	Voltage(60Hz)[V]	200 to 230AC	
	Tolerable voltage fluctuation[%]	+10%, -15%	
	Max. current[A]	0.2	
	Max. rush current[A]	30	
Max. rush conductivity time[ms]	6		
Max. earth leakage current[mA]	2	2	
Braking	Regenerative braking and dynamic brakes		
	Built-in		
Heating value	Dynamic brakes		
	Inside panel[W]	26	
Cooling method	Outside panel[W]	44	
	Mass[kg]	Forced air cooling	
		4.5	

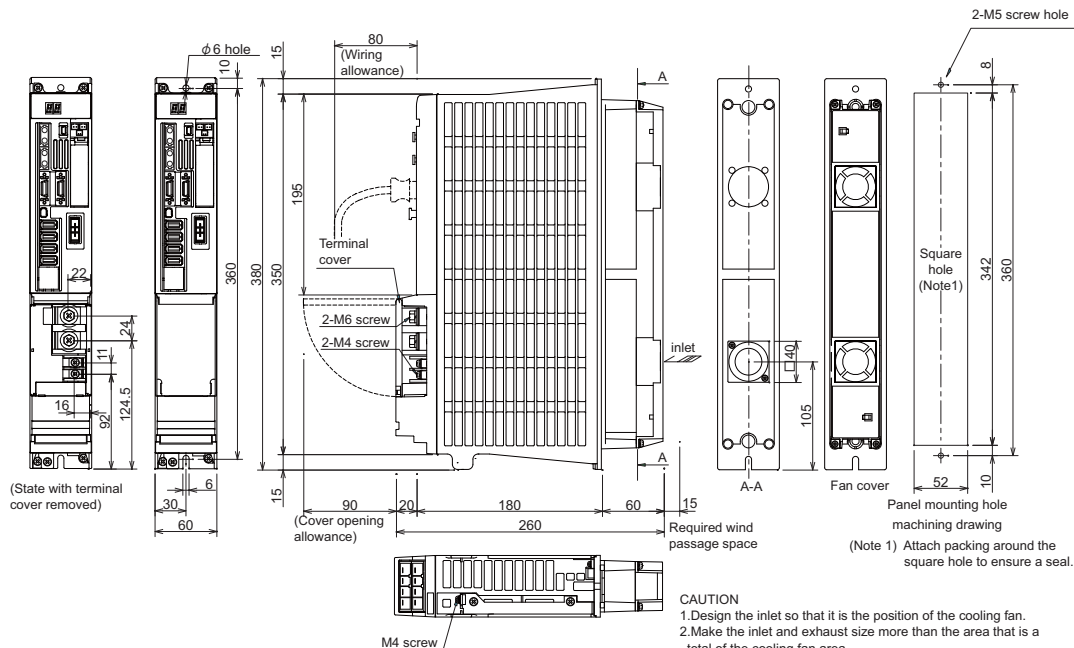
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

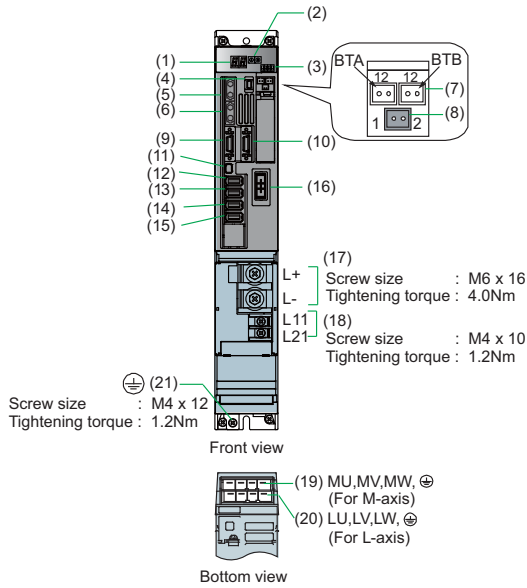
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-D2-V2-4020



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)		Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding .

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	40	20
Output	Rated voltage[V]	155AC
	Rated current[A]	11 6.4
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	14
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Inside panel[W]	28
	Outside panel[W]	60
Cooling method	Forced air cooling	
Mass[kg]	4.5	

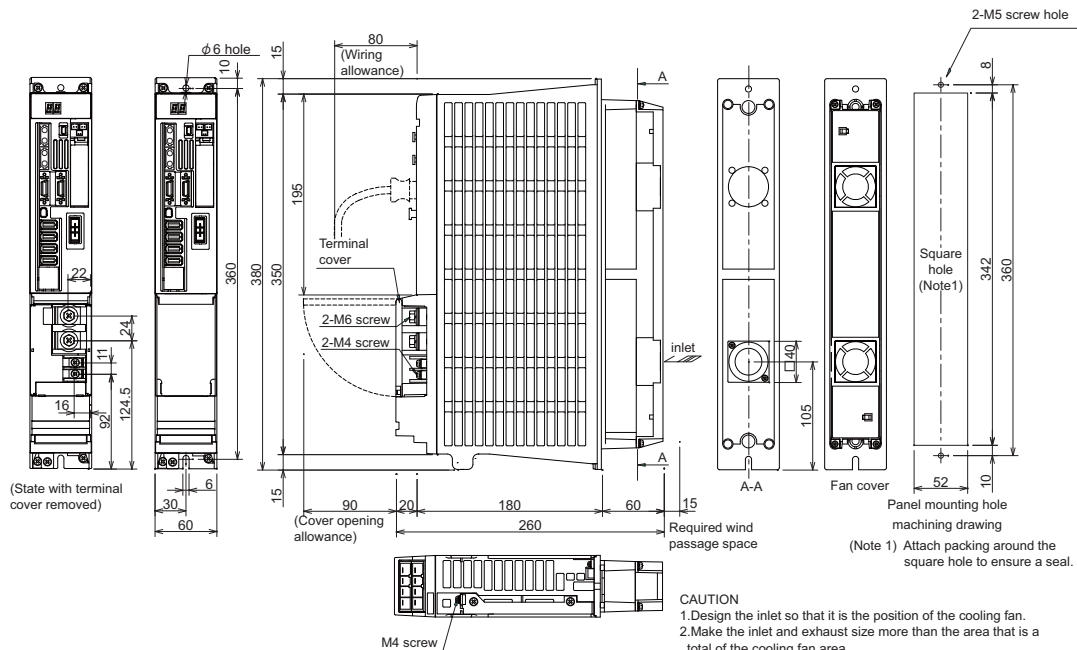
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

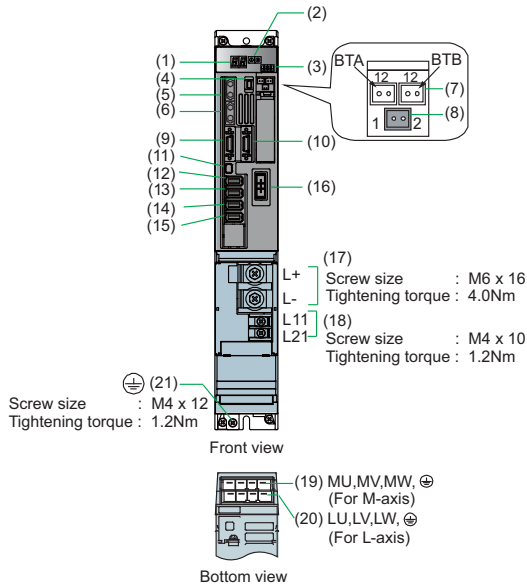
Outline dimension drawings [Unit : mm]



CAUTION
 1. Design the inlet so that it is the position of the cooling fan.
 2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-D2-V2-4040



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)		Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding .

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	40	40
Output	Rated voltage[V]	155AC
	Rated current[A]	11 11
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	14
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Inside panel[W]	31
	Outside panel[W]	75
Cooling method	Forced air cooling	
Mass[kg]	4.5	

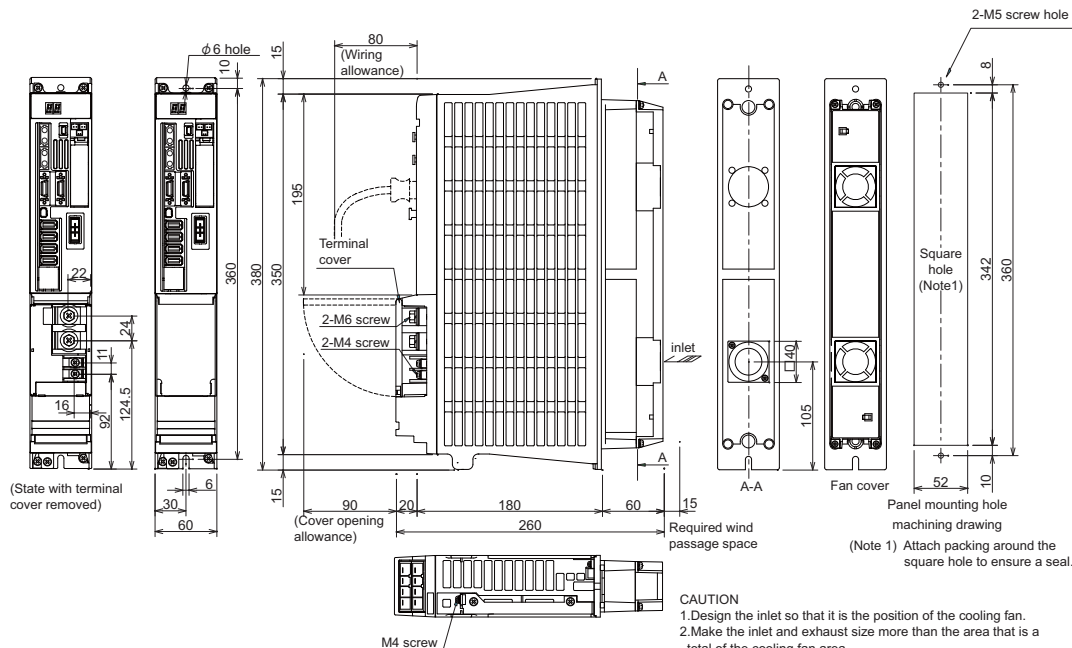
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

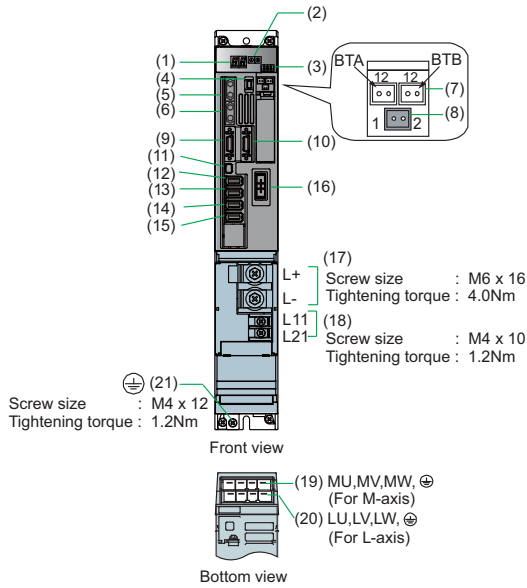
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-D2-V2-8040



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)		Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding .

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	80	40
Output	Rated voltage[V]	155AC
	Rated current[A]	16 11
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	21
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
	Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Inside panel[W]	35
	Outside panel[W]	109
Cooling method	Forced air cooling	
Mass[kg]	4.5	

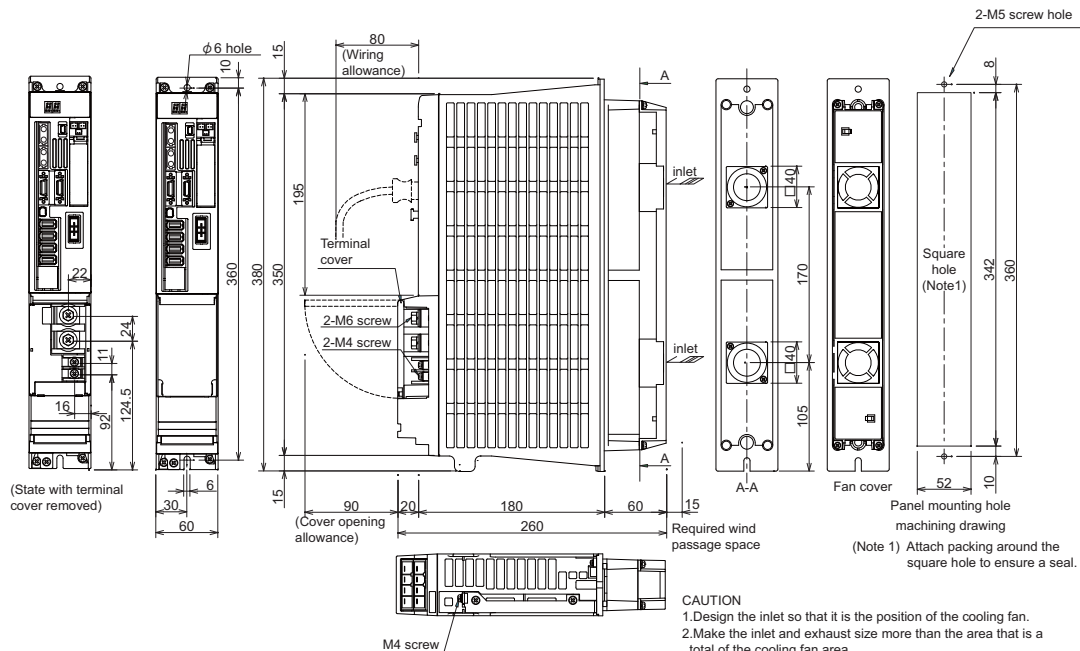
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	3.5(2)	12(14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5(2)	12(14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

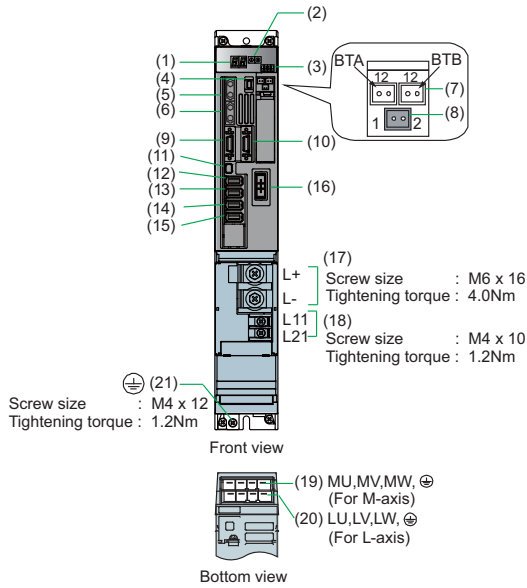
Outline dimension drawings [Unit : mm]



CAUTION
 1. Design the inlet so that it is the position of the cooling fan.
 2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-D2-V2-8080



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)		Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding .

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	80	80
Output	Rated voltage[V]	155AC
	Rated current[A]	16 16
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	28
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Dynamic brakes	
	Inside panel[W]	40
Outside panel[W]	142	
Cooling method	Forced air cooling	
Mass[kg]	4.5	

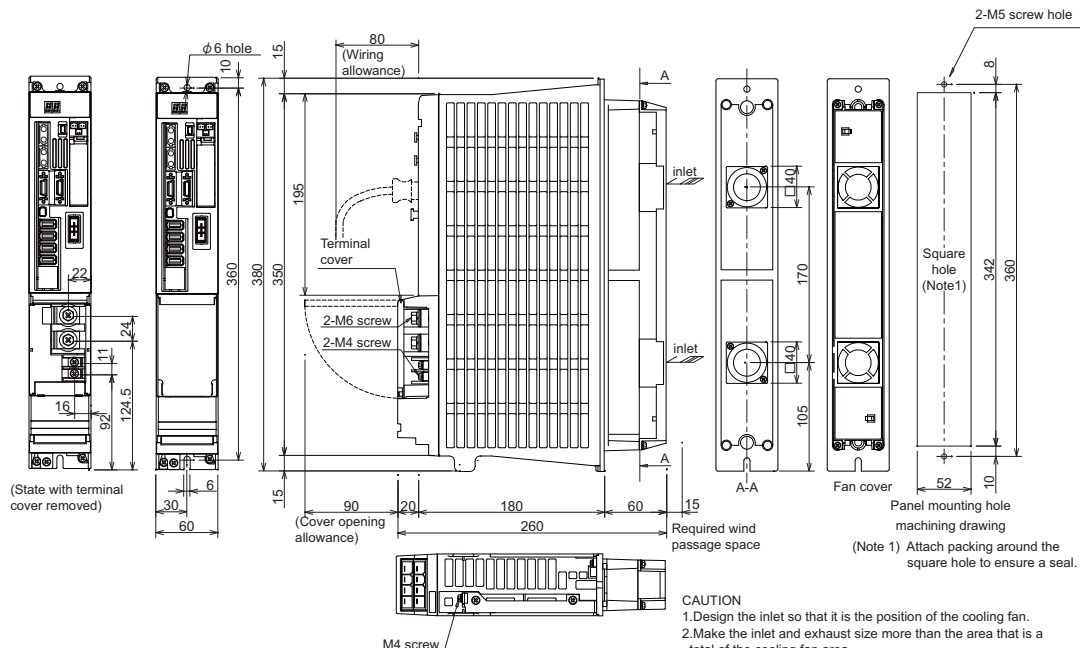
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

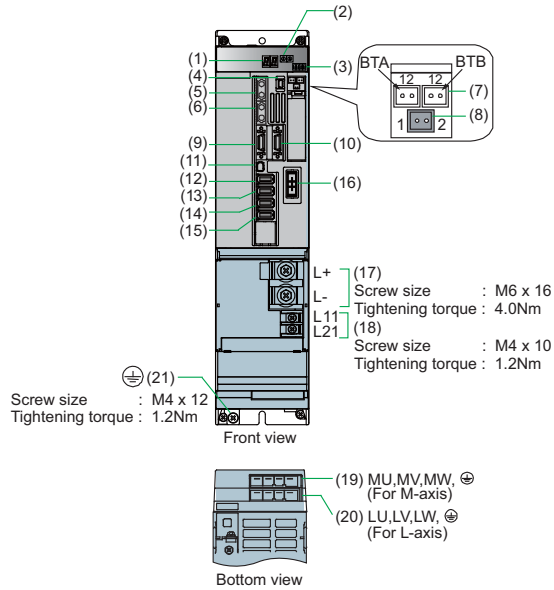
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	3.5 (3.5)	12 (12)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5 (3.5)	12 (12)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)	1.25 to 2		16 to 14	

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-D2-V2-16080



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9 (Unused)	
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)		Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding .

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	160	80
Output	Rated voltage[V]	155AC
	Rated current[A]	29.6 / 16
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	44
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
Heating value	Dynamic brakes	Built-in
	Inside panel[W]	51
Outside panel[W]	219	
Cooling method	Forced air cooling	
Mass[kg]	5.2	

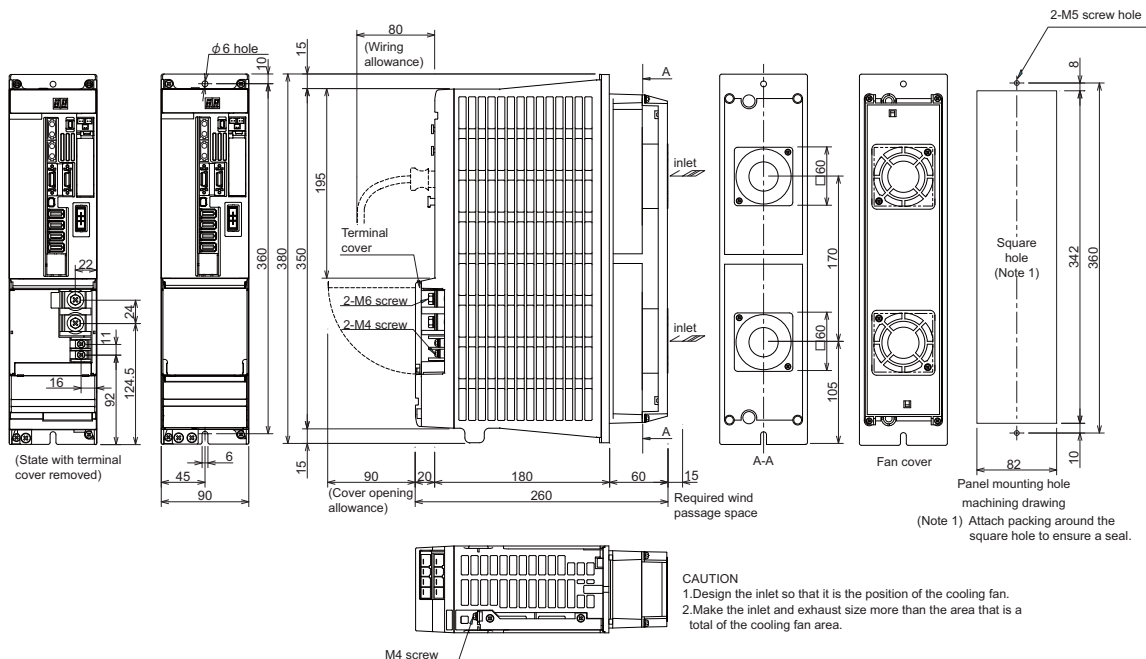
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5 (3.5)	10 (12)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	5.5 (3.5)	10 (12)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5 (2)	12 (14)	1.25 to 2		16 to 14	

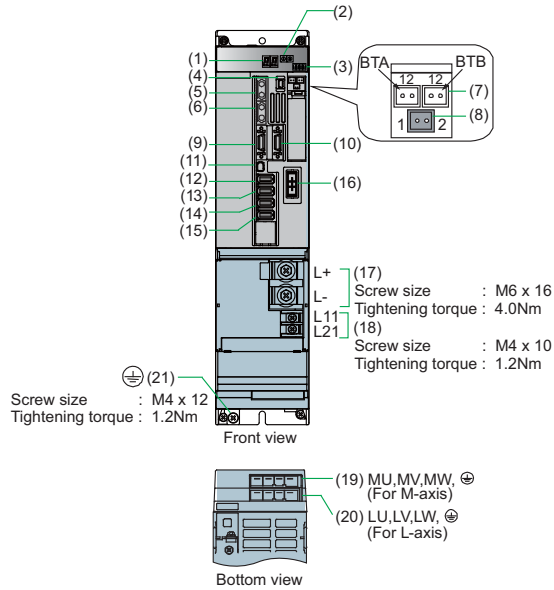
Outline dimension drawings [Unit : mm]



CAUTION
 1. Design the inlet so that it is the position of the cooling fan.
 2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-D2-V2-160160



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9 (Unused)	
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)		Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding .

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	160	160
Output	155AC	
	Rated voltage[V]	
Input	Rated current[A]	29.6 29.6
	Rated voltage[V]	270 to 311DC
Control power	Rated current[A]	60
	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
Max. earth leakage current[mA]		2 2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Dynamic brakes	
	Inside panel[W]	62
Cooling method	Outside panel[W]	296
	Mass[kg]	Forced air cooling
		5.2

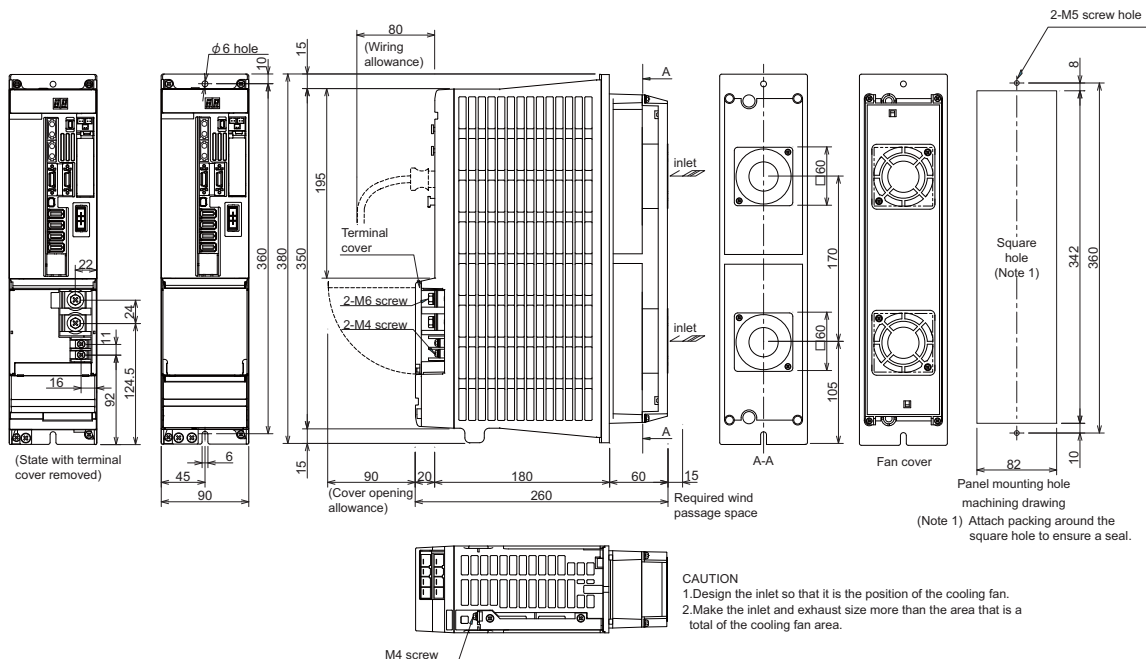
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5 (5.5)	10 (10)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	5.5 (5.5)	10 (10)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5 (3.5)	12 (12)	1.25 to 2		16 to 14	

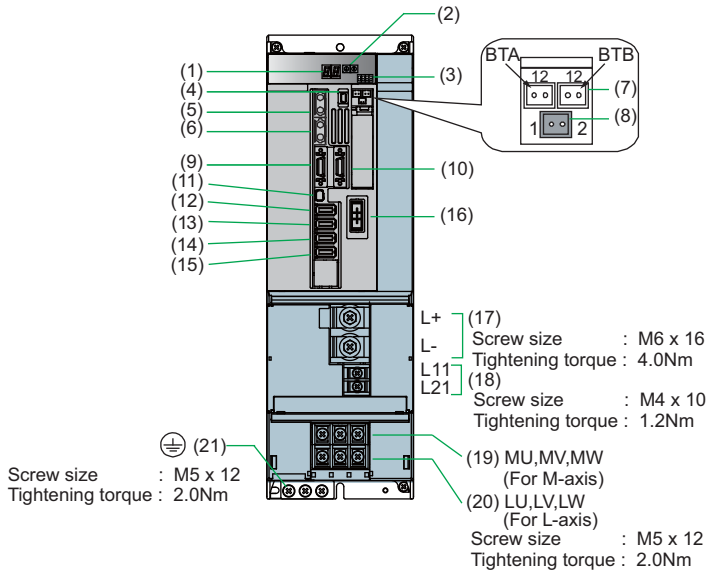
Outline dimension drawings [Unit : mm]



CAUTION
 1. Design the inlet so that it is the position of the cooling fan.
 2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-D2-V2-160160W



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output terminal (M-axis, 3-phase AC output)
(20)		Motor power supply output terminal (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding .

Specifications

Item	Specifications		
	L	M	
Nominal maximum current(peak)[A]	160	160	
Output	155AC		
	Rated voltage[V]	40.2	40.2
Input	270 to 311DC		
	Rated current[A]	70	
Control power	Frequency[Hz]	50 / 60	
	Tolerable frequency fluctuation[%]	±3% max	
	Voltage(50Hz)[V]	200AC	
	Voltage(60Hz)[V]	200 to 230AC	
	Tolerable voltage fluctuation[%]	+10%, -15%	
	Max. current[A]	0.2	
	Max. rush current[A]	30	
	Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	2	2	
Braking	Regenerative braking and dynamic brakes		
	Built-in		
Heating value	Dynamic brakes	77	
	Inside panel[W]	403	
Cooling method	Forced air cooling		
	Mass[kg]	6.3	

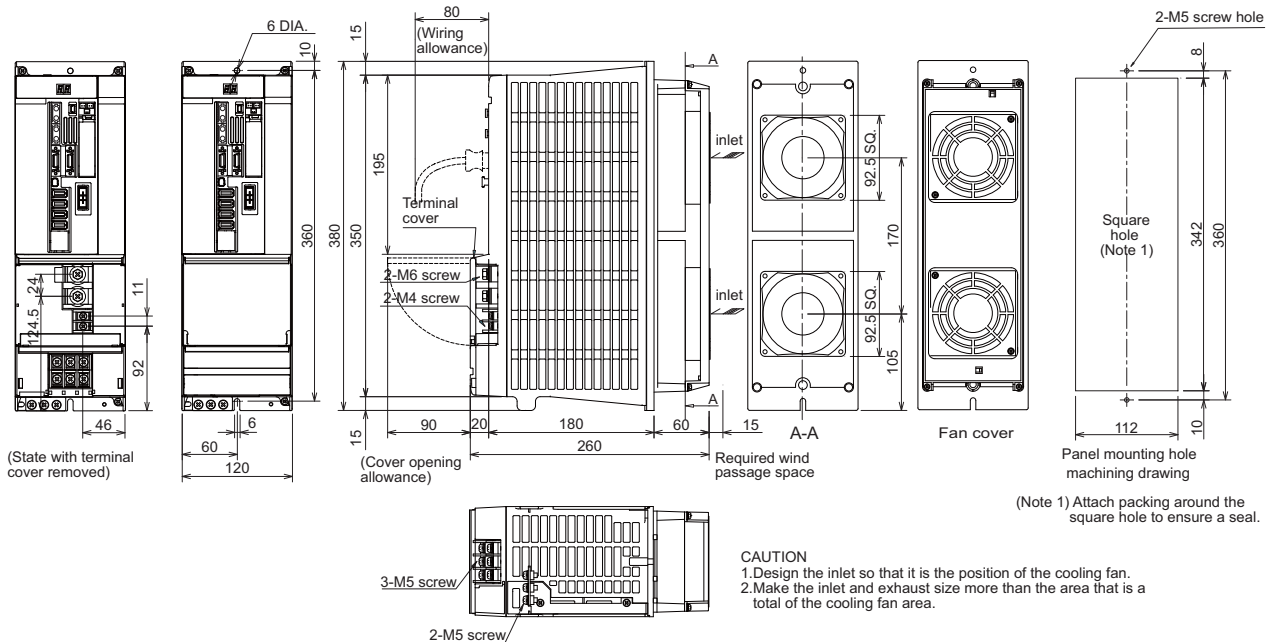
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	14 (14)	6 (6)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	8 (8)	8 (8)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	5.5 (5.5)	10 (10)			1.25 to 2	16 to 14

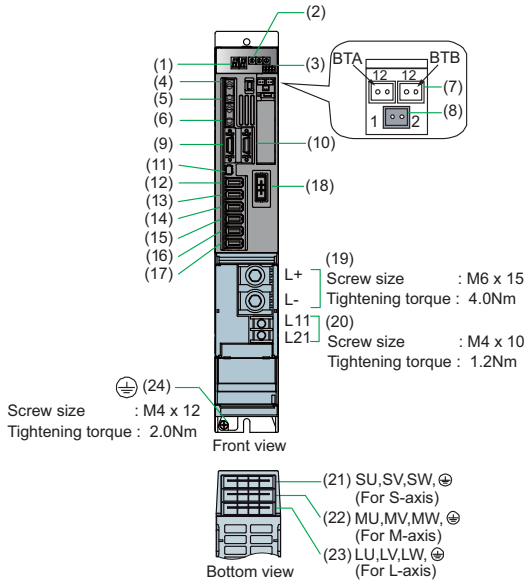
Outline dimension drawings [Unit : mm]



CAUTION
 1. Design the inlet so that it is the position of the cooling fan.
 2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-D2-V3-202020



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM SWS	Axis No. setting switch (L,M,S-axis)
(3)	SW1	Unused axis setting switch (L,M,S-axis)
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN2S	Motor side encoder connection connector (S-axis) 5V power supply capacity: 0.35A
(17)	CN3S	Machine side encoder connection connector (S-axis) 5V power supply capacity: 0.35A
(18)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(19)	TE2	Main circuit power supply input terminal (DC input)
(20)	TE3	Control power input terminal (single-phase AC input)
(21)	TE1	Motor power supply output connector (S-axis, 3-phase AC output)
(22)		Motor power supply output connector (M-axis, 3-phase AC output)
(23)		Motor power supply output connector (L-axis, 3-phase AC output)
(24)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	20/20/20	
Output	Rated voltage[V]	155AC
	Rated current[A]	6.4/6.4/6.4
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	21
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
	Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	6	
Braking	Regenerative braking and dynamic brakes	
	Dynamic brakes	Built-in
Heating value	Inside panel[W]	89
	Outside panel[W]	0
Cooling method	Forced air cooling	
Mass[kg]	3.8	

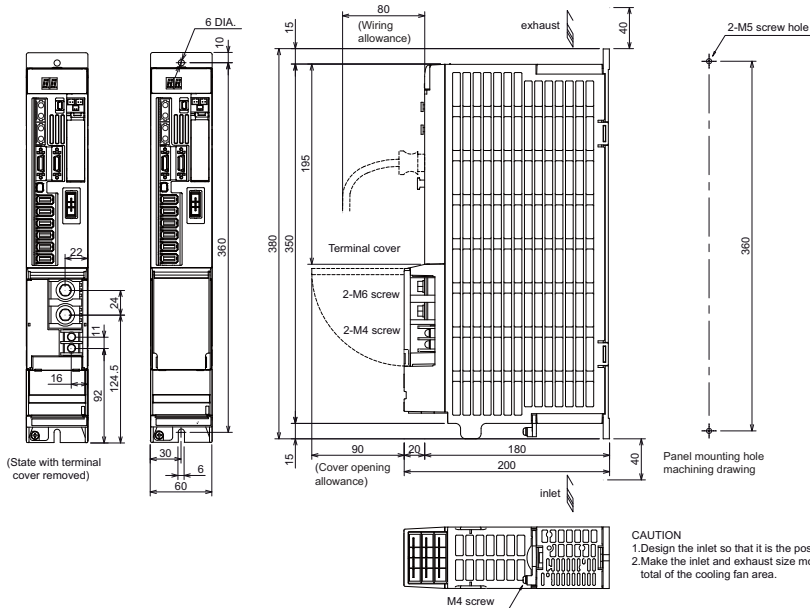
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

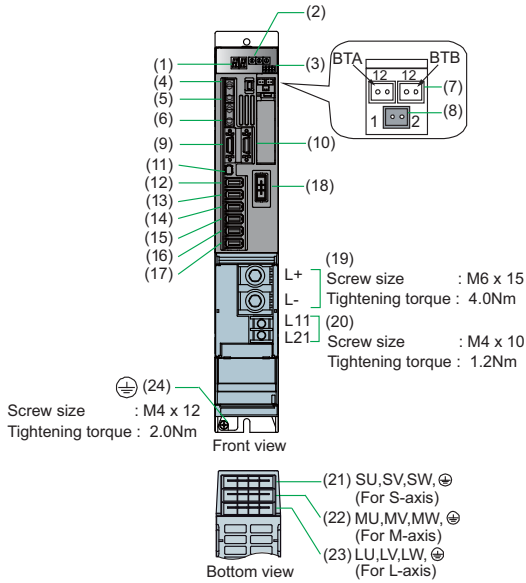
Outline dimension drawings [Unit : mm]



CAUTION
1. Design the inlet so that it is the position of the cooling fan.
2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-D2-V3-404040



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM SWS	Axis No. setting switch (L,M,S-axis)
(3)	SW1	Unused axis setting switch (L,M,S-axis)
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN2S	Motor side encoder connection connector (S-axis) 5V power supply capacity: 0.35A
(17)	CN3S	Machine side encoder connection connector (S-axis) 5V power supply capacity: 0.35A
(18)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(19)	TE2	Main circuit power supply input terminal (DC input)
(20)	TE3	Control power input terminal (single-phase AC input)
(21)	TE1	Motor power supply output connector (S-axis, 3-phase AC output)
(22)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(23)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(24)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	40/40/40	
Output	Rated voltage[V]	155AC
	Rated current[A]	11/11/11
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	21
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
	Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	6	
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Inside panel[W]	159
	Outside panel[W]	0
Cooling method	Forced air cooling	
Mass[kg]	3.8	

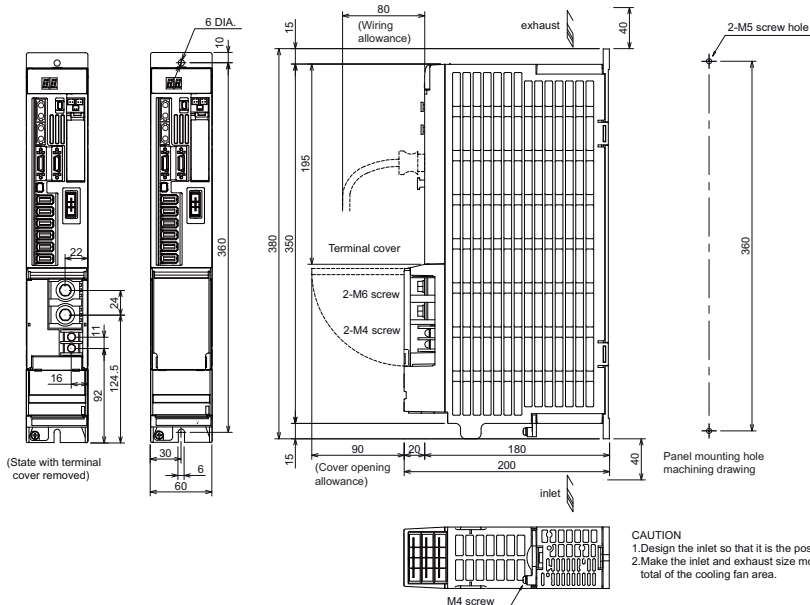
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

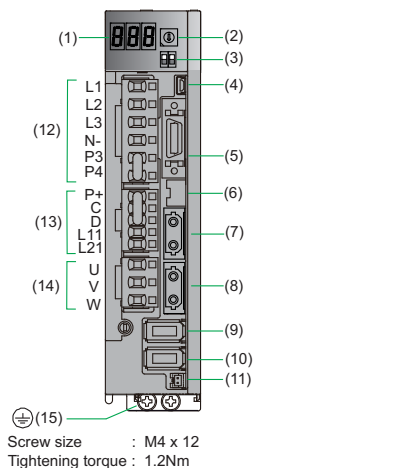
Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit
MDS-DJ-V1-10

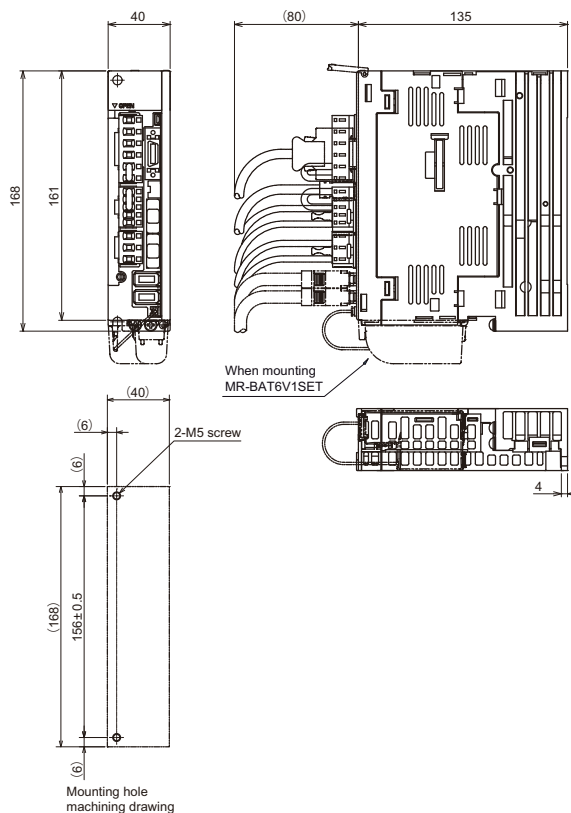


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	BAT	Battery connection connector
(12)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.) P3,P4: not used (short-circuit between the P3 and P4.)
(13)	CNP2	Regenerative resistor connection terminal Control power input terminal (single-phase AC input)
(14)	CNP3	Motor power output terminal (3-phase AC output)
(15)	PE	Grounding terminal

Specifications

Item	Specifications	
Nominal maximum current (peak)[A]	10	
Rated output[kW]	0.3	
Power facility capacity[kVA]	0.5	
Output	Rated voltage[V]	155AC
	Rated current[A]	1.5
Input	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±5% max
	Rated voltage(50Hz) [V]	200AC
	Rated voltage(60Hz) [V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	1.5
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±5% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. Current[A]	0.2
Max. Rush current[A]	30	
Max. Rush conductivity time[ms]	6	
Maximum earth leakage current[mA]	2	
Braking	Regenerative braking and dynamic brakes	
	Dynamic brakes	Built-in
Main circuit method	Converter with resistor regeneration circuit	
Heating value	Inside panel[W]	25
	Cooling method	Natural-cooling
Mass[kg]	0.8	
Selection example of contactor (option part)	S-T12-AC200V	
	Free-air thermal current[A]	20
	Selection current (for 200V input)[A]	2.5
	Rated output[kW]	0.3
Selection example of circuit protector (option part)	NF30-SW3P-5A	
	Rated current[A]	5
	Selection current (for 200V input)[A]	2.5
	Rated output[kW]	0.3
Regenerative option	Refer to "Regenerative option".	

Outline dimension drawings [Unit : mm]



Environmental conditions

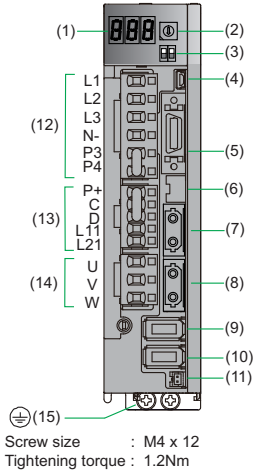
Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P,C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	2	14	2	14	1.25	16

Servo drive unit

MDS-DJ-V1-15

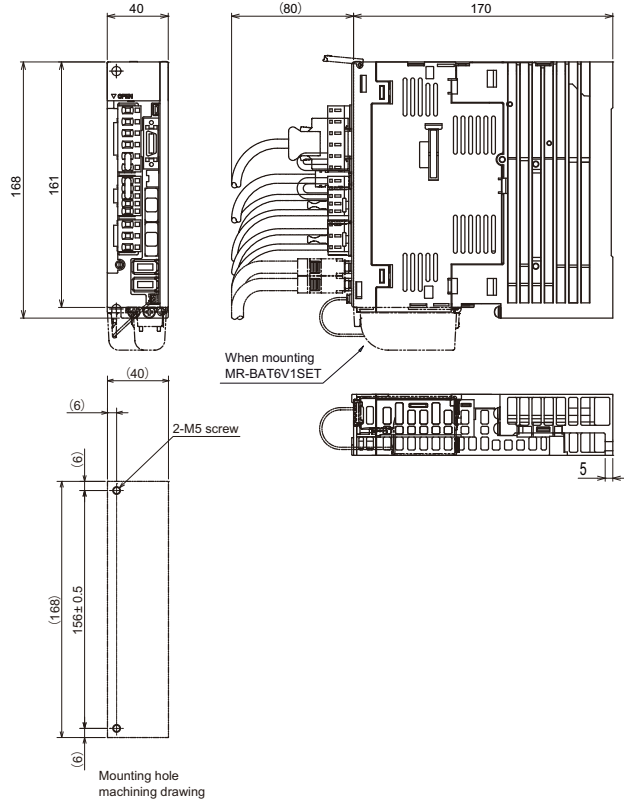


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	BAT	Battery connection connector
(12)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.) P3,P4: not used (short-circuit between the P3 and P4.)
(13)	CNP2	Regenerative resistor connection terminal Control power input terminal (single-phase AC input)
(14)	CNP3	Motor power output terminal (3-phase AC output)
(15)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	15
Rated output[kW]	0.4
Power facility capacity[kVA]	1.0
Output	Rated voltage[V] 155AC Rated current[A] 3.2
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 2.9
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 30 Max.Rush conductivity time[ms] 6
Maximum earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes Built-in
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 35
Cooling method	Natural-cooling
Mass[kg]	1.0
Selection example of contactor (option part)	S-T12-AC200V
Free-air thermal current[A]	20
Selection current (for 200V input)[A]	5
Rated output[kW]	0.4
Selection example of circuit protector (option part)	NF30-SW3P-10A
Rated current[A]	10
Selection current (for 200V input)[A]	5
Rated output[kW]	0.4
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



Environmental conditions

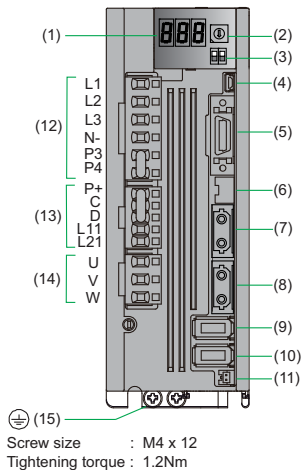
Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight);no corrosive gas, inflammable gas, oil mist, or dust
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P, C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	2	14	2	14	1.25	16

Servo drive unit

MDS-DJ-V1-30

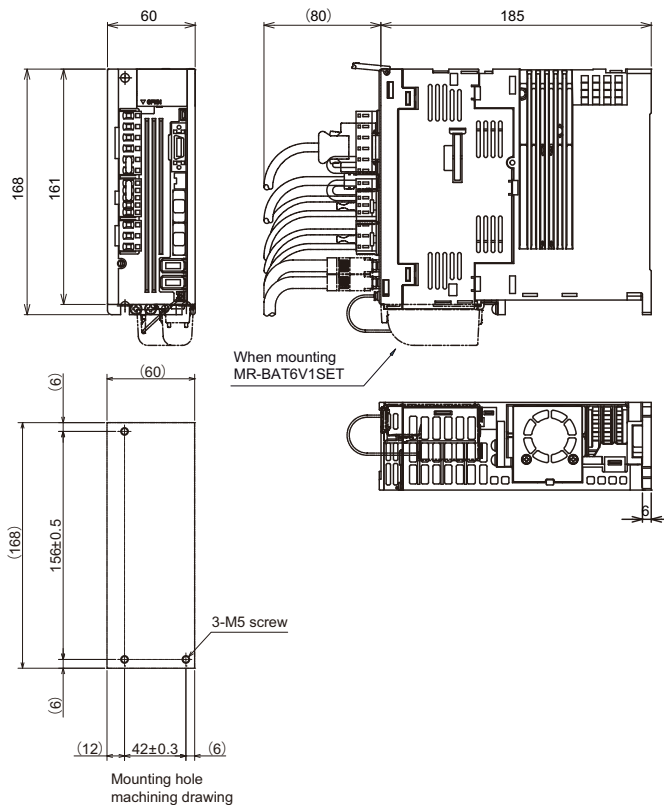


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	BAT	Battery connection connector
(12)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.) P3,P4: not used (short-circuit between the P3 and P4.)
(13)	CNP2	Regenerative resistor connection terminal Control power input terminal (single-phase AC input)
(14)	CNP3	Motor power output terminal (3-phase AC output)
(15)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	30
Rated output[kW]	0.7
Power facility capacity[kVA]	1.3
Output	Rated voltage[V] 155AC Rated current[A] 5.8
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 3.8
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 30 Max.Rush conductivity time[ms] 6
Maximum earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 50
Cooling method	Forced air cooling
Mass[kg]	1.4
Selection example of contactor (option part)	S-T12-AC200V
Free-air thermal current[A]	20
Selection current (for 200V input)[A]	7
Rated output[kW]	0.75
Selection example of circuit protector (option part)	NF30-SW3P-15A
Rated current[A]	15
Selection current (for 200V input)[A]	7
Rated output[kW]	0.75
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



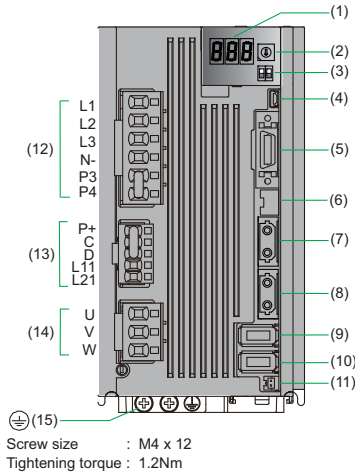
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P,C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	2	14	2	14	1.25	16

Servo drive unit
MDS-DJ-V1-40

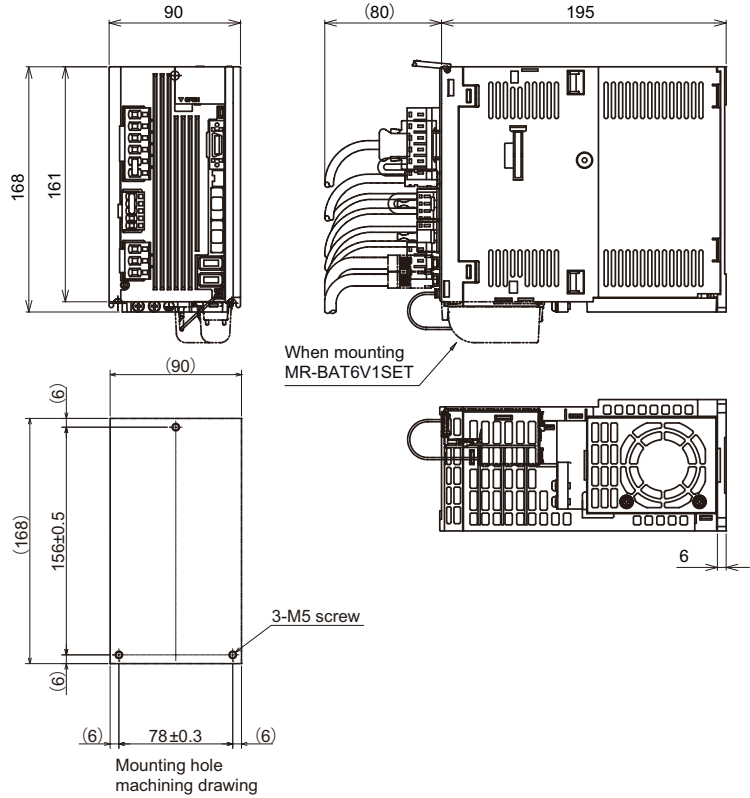


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	BAT	Battery connection connector
(12)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.) P3,P4: not used (short-circuit between the P3 and P4.)
(13)	CNP2	Regenerative resistor connection terminal Control power input terminal (single-phase AC input)
(14)	CNP3	Motor power output terminal (3-phase AC output)
(15)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	40
Rated output[kW]	1.0
Power facility capacity[kVA]	1.7
Output	Rated voltage[V] 155AC Rated current[A] 11
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 8.0
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 30 Max. Rush conductivity time[ms] 6
Maximum earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 90
Cooling method	Forced air cooling
Mass[kg]	2.1
Selection example of contactor (option part)	S-T12-AC200V
Free-air thermal current[A]	20
Selection current (for 200V input)[A]	8
Rated output[kW]	1.0
Selection example of circuit protector (option part)	NF30-SW3P-15A
Rated current[A]	15
Selection current (for 200V input)[A]	8
Rated output[kW]	1.0
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



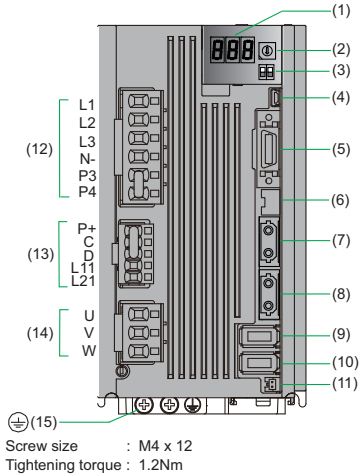
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P,C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	2	14	2	14	1.25	16

Servo drive unit
MDS-DJ-V1-80

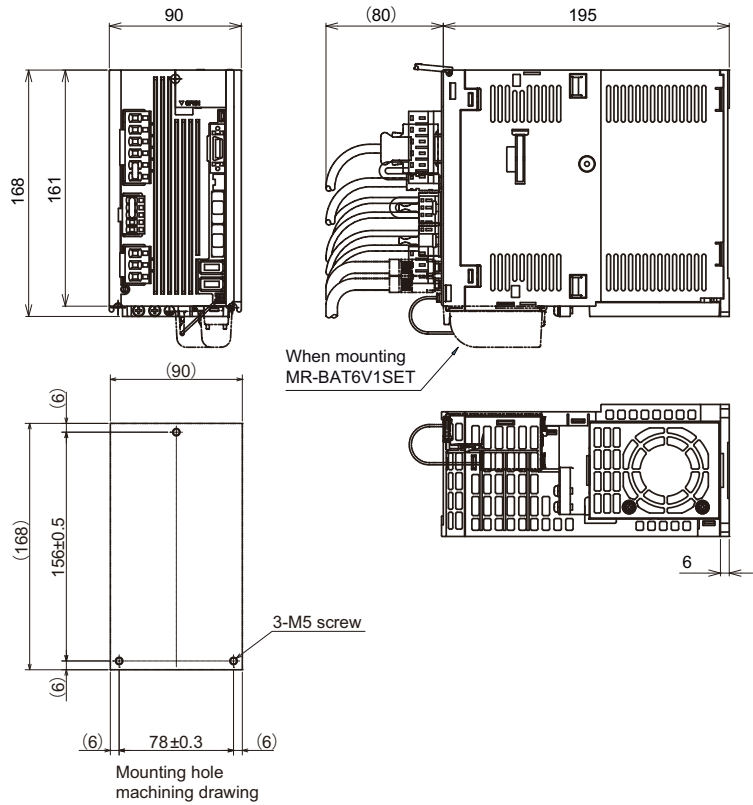


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	BAT	Battery connection connector
(12)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.) P3,P4: not used (short-circuit between the P3 and P4.)
(13)	CNP2	Regenerative resistor connection terminal Control power input terminal (single-phase AC input)
(14)	CNP3	Motor power output terminal (3-phase AC output)
(15)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	80
Rated output[kW]	2.0
Power facility capacity[kVA]	3.5
Output	Rated voltage[V] 155AC Rated current[A] 16
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 10.5
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 30 Max.Rush conductivity time[ms] 6
Maximum earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 130
Cooling method	Forced air cooling
Mass[kg]	2.1
Selection example of contactor (option part)	S-T20-AC200V
Free-air thermal current[A]	25
Selection current (for 200V input)[A]	10
Rated output[kW]	2.0
Selection example of circuit protector (option part)	NF30-SW3P-20A
Rated current[A]	20
Selection current (for 200V input)[A]	10
Rated output[kW]	2.0
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



Environmental conditions

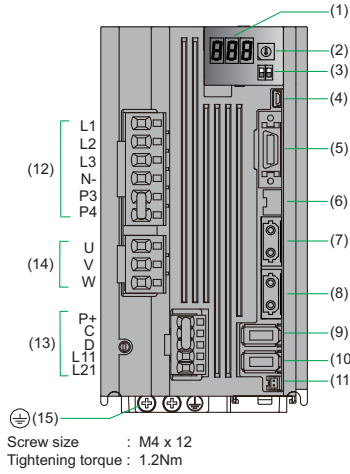
Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P, C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	3.5	12	2	14	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	3.5	12	2	14	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	2	14	2	14	1.25	16

Servo drive unit

MDS-DJ-V1-100

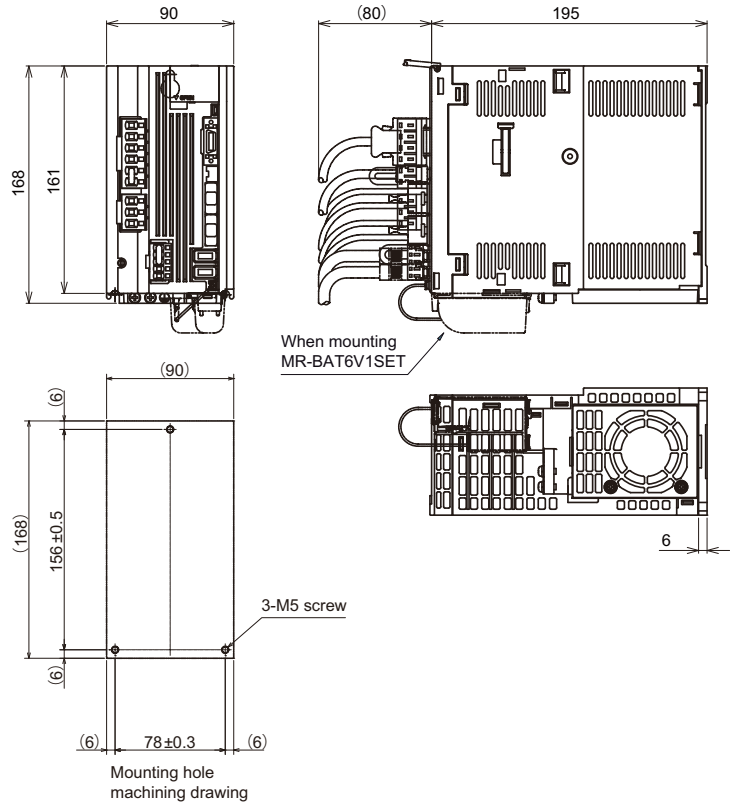


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	BAT	Battery connection connector
(12)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.) P3,P4: not used (short-circuit between the P3 and P4.)
(13)	CNP2	Regenerative resistor connection terminal Control power input terminal (single-phase AC input)
(14)	CNP3	Motor power output terminal (3-phase AC output)
(15)	PE	Grounding terminal

Specifications

Item	Specifications	
Nominal maximum current (peak)[A]	100	
Rated output[kW]	3.5	
Power facility capacity[kVA]	5.5	
Output	Rated voltage[V]	155AC
	Rated current[A]	22
Input	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±5% max
	Rated voltage(50Hz) [V]	200AC
	Rated voltage(60Hz) [V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	16
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±5% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. Current[A]	0.2
Max. Rush current[A]	30	
Max. Rush conductivity time[ms]	6	
Maximum earth leakage current[mA]	2	
Braking	Regenerative braking and dynamic brakes	
	Dynamic brakes	Built-in
Main circuit method	Converter with resistor regeneration circuit	
Heating value	Inside panel[W]	195
	Cooling method	Forced air cooling
Mass[kg]	2.3	
Selection example of contactor (option part)	S-T21-AC200V	
	Free-air thermal current[A]	32
	Selection current (for 200V input)[A]	15
	Rated output[kW]	3.5
Selection example of circuit protector (option part)	NF30-SW3P-30A	
	Rated current[A]	30
	Selection current (for 200V input)[A]	15
	Rated output[kW]	3.5
Regenerative option	Refer to "Regenerative option".	

Outline dimension drawings [Unit : mm]



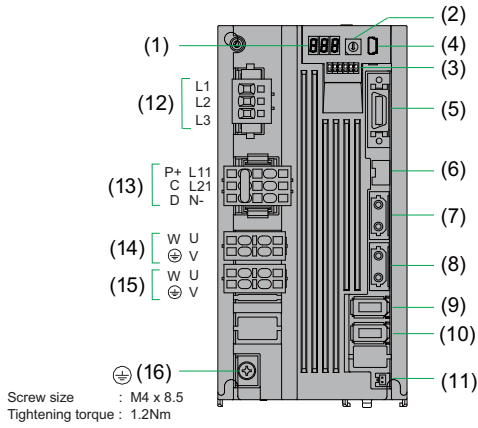
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P, C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12	2	14	5.5	10	2	14	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12	2	14	5.5	10	2	14	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	3.5	12	2	14	1.25	16

Servo drive unit
MDS-DJ-V2-3030

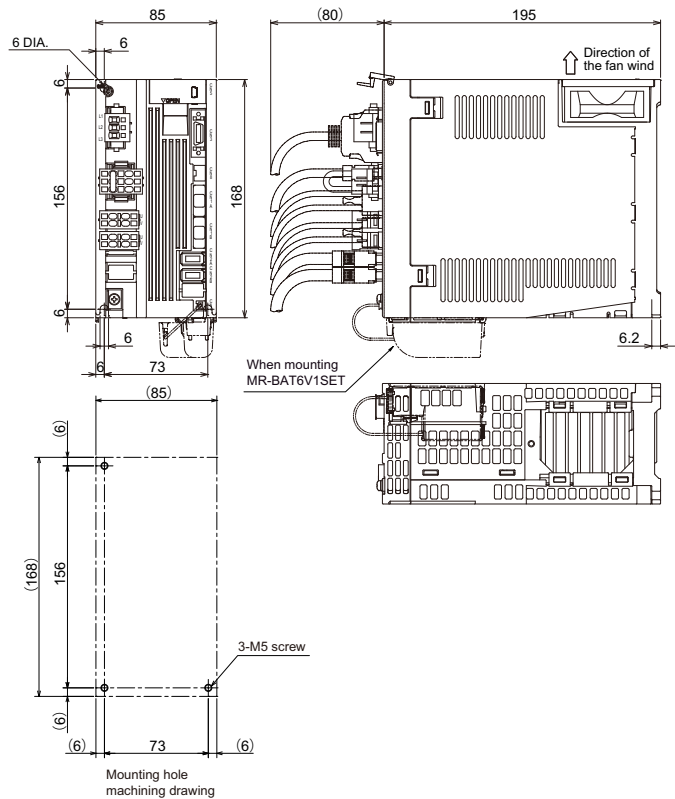


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch (L,M-axis)
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom) (L,M-axis)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(10)	CN2M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(11)	BAT	Battery connection connector
(12)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input)
(13)	CNP2	P+,C,D: Regenerative resistor connection terminal L11,L12: Control power input terminal (single-phase AC input) N-: Test terminal for the manufacturer (Do not connect.)
(14)	CNP3L	Motor power output terminal (3-phase AC output) (L-axis)
(15)	CNP3M	Motor power output terminal (3-phase AC output) (M-axis)
(16)	PE	Grounding terminal

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	30	30
Rated output[kW]	0.75	0.75
Power facility capacity[kVA]	2.6	
Output	Rated voltage[V]	155AC
	Rated current[A]	5.8x2
Input	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±5% max
	Rated voltage(50Hz) [V]	200AC
	Rated voltage(60Hz) [V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
Control power	Rated current[A]	7.5
	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±5% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. Current[A]	0.4
Max. Rush current[A]	30	
Max.Rush conductivity time[ms]	6	
Maximum earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Main circuit method	Converter with resistor regeneration circuit	
Heating value	Inside panel[W]	60
	Mass[kg]	1.9
Selection example of contactor (option part)	S-T12-AC200V	
	Free-air thermal current[A]	20
	Selection current (for 200V input)[A]	9
	Rated output[kW]	0.75 0.75
Selection example of circuit protector (option part)	NF30-SW3P-20A	
	Rated current[A]	20
	Selection current (for 200V input)[A]	9
	Rated output[kW]	0.75 0.75
Regenerative option	Refer to "Regenerative option".	

Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight);no corrosive gas, inflammable gas, oil mist, or dust
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

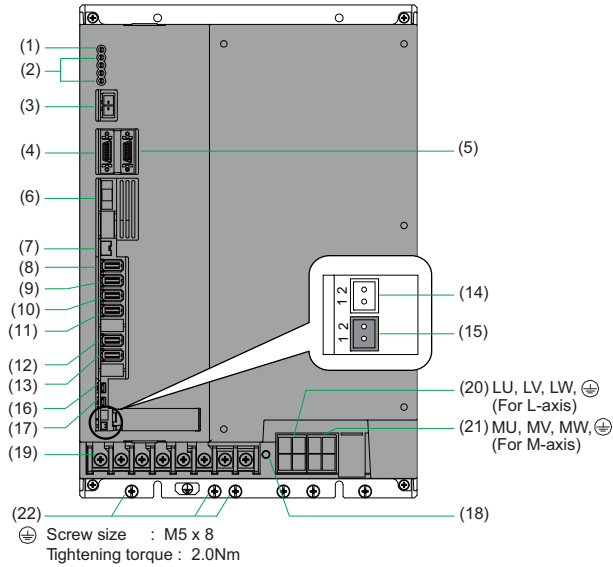
Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P,C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	2	14	2	14	2	14

Multi Axis Unit

Multi axis unit

MDS-DM2-SPV2-10080



No.	Name	Description
(1)	POWER	24V power supply status indication LED
(2)	SP1,SP2 SV1,SV2	Unit status indication LED
(3)	CN22	Control power input connector (24VDC input)
(4)	CN9A	Connector for DIO/analog output (spindle)
(5)	CN9B	Connector for DIO/analog output (servo)
(6)	OPT1A	NC optical communication connector
(7)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(8)	CN2SP	Spindle motor side encoder connection connector 5V power supply capacity: 0.35A
(9)	CN3SP	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN2L	Servo motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(11)	CN2M	Servo motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(12)	CN3L	Machine side encoder connection connector (L-axis)
(13)	CN3M	Machine side encoder connection connector (M-axis)
(14)	BTA	For connecting converged battery unit
(15)	BT1	For connecting battery built-in drive unit ER6V-C119B
(16)	CN5A	USB maintenance connector (spindle) usually not used
(17)	CN5B	USB maintenance connector (servo) usually not used
(18)	CHARGE LAMP	Converter voltage output charge-discharge status indication LED
(19)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC output) U,V,W: Motor power output terminal (spindle, 3-phase AC output) P+,N-: DC output for unit stopped caused by power failure *Do not wiring during unused state.
(20)	CN31L	Motor power supply output connector (L-axis, 3-phase AC output)
(21)	CN31M	Motor power supply output connector (M-axis, 3-phase AC output)
(22)	PE	Grounding terminal (also including grounding of the spindle motor)

Specifications

Item	Specifications	
Nominal maximum current (at peak of spindle)[A]	100	
Nominal maximum current (at peak of servo)[A]	80x2	
Output	Rated voltage[V]	155AC
	Rated current [servo][A]	15.8x2
	Rated current [spindle][A]	26
Input	Rated voltage (50Hz)[V]	200AC
	Rated voltage (60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	33
Control power	Voltage[V]	24DC
	Tolerable voltage fluctuation[%]	+10%, -10%
	Max. current[A]	4
	Max. rush current[A]	10
Max. rush conductivity time[ms]	100	
Max. earth leakage current[mA]	21	
Braking [servo]	Dynamic brakes	Regenerative braking and dynamic brakes
	Built-in	Regenerative braking
Braking [spindle]	Dynamic brakes	Regenerative braking
	Built-in	Regenerative braking
Heating value	Inside panel[W]	120
	Outside panel[W]	510
Cooling method	Forced air cooling	
Mass[kg]	14.5	

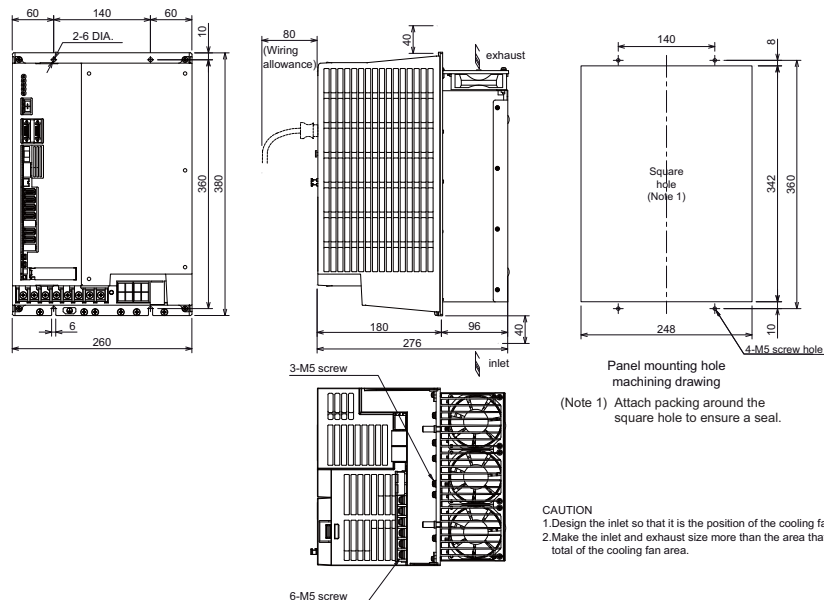
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

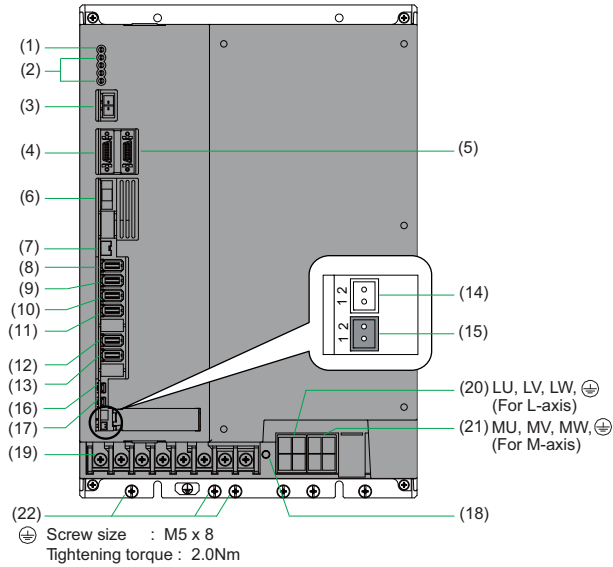
Types	Terminal name							
	TE1 (L1, L2, L3)		TE1 (U, V, W)		CN31 L/M/S (U,V,W,PE)		CN22 (VDD, SG)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	30	3	5.5	10	3.5	12	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	5.5	10	3.5	12	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	3.5	12	2	14	1.25	16

Outline dimension drawings [Unit : mm]



Multi axis unit

MDS-DM2-SPV2-16080



No.	Name	Description
(1)	POWER	24V power supply status indication LED
(2)	SP1,SP2 SV1,SV2	Unit status indication LED
(3)	CN22	Control power input connector (24VDC input)
(4)	CN9A	Connector for DIO/analog output (spindle)
(5)	CN9B	Connector for DIO/analog output (servo)
(6)	OPT1A	NC optical communication connector
(7)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(8)	CN2SP	Spindle motor side encoder connection connector 5V power supply capacity: 0.35A
(9)	CN3SP	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN2L	Servo motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(11)	CN2M	Servo motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(12)	CN3L	Machine side encoder connection connector (L-axis)
(13)	CN3M	Machine side encoder connection connector (M-axis)
(14)	BT A	For connecting converged battery unit
(15)	BT 1	For connecting battery built-in drive unit ER6V-C119B
(16)	CN5A	USB maintenance connector (spindle) usually not used
(17)	CN5B	USB maintenance connector (servo) usually not used
(18)	CHARGE LAMP	Converter voltage output charge-discharge status indication LED
(19)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC output) U,V,W: Motor power output terminal (spindle, 3-phase AC output) P+,N-: DC output for unit stopped caused by power failure *Do not wiring during unused state.
(20)	CN31L	Motor power supply output connector (L-axis, 3-phase AC output)
(21)	CN31M	Motor power supply output connector (M-axis, 3-phase AC output)
(22)	PE	Grounding terminal (also including grounding of the spindle motor)

Specifications

Item	Specifications	
Nominal maximum current (at peak of spindle)[A]	160	
Nominal maximum current (at peak of servo)[A]	80x2	
Output	Rated voltage[V]	155AC
	Rated current [servo][A]	15.8x2
	Rated current [spindle][A]	37
Input	Rated voltage (50Hz)[V]	200AC
	Rated voltage (60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	43
Control power	Voltage[V]	24DC
	Tolerable voltage fluctuation[%]	+10%, -10%
	Max. current[A]	4
	Max. rush current[A]	10
Max. rush conductivity time[ms]	100	
Max. earth leakage current[mA]	21	
Braking [servo]	Dynamic brakes	Regenerative braking and dynamic brakes
	Built-in	Regenerative braking
Braking [spindle]	Dynamic brakes	Regenerative braking
	Built-in	Regenerative braking
Heating value	Inside panel[W]	130
	Outside panel[W]	570
Cooling method	Forced air cooling	
Mass[kg]	14.5	

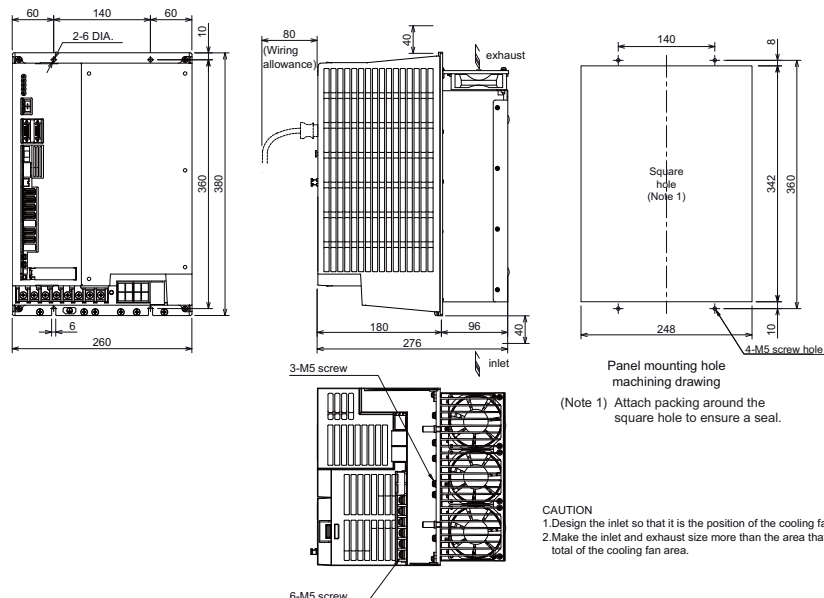
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

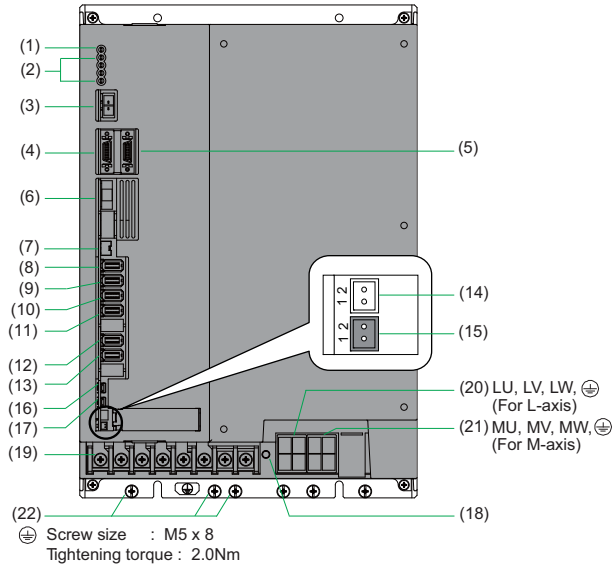
Types	Terminal name							
	TE1 (L1, L2, L3)		TE1 (U, V, W)		CN31 L/M/S (U,V,W,PE)		CN22 (VDD, SG)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	30	3	14	6	3.5	12	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	8	8	3.5	12	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	5.5	10	2	14	1.25	16

Outline dimension drawings [Unit : mm]



Multi axis unit

MDS-DM2-SPV2-20080



No.	Name	Description
(1)	POWER	24V power supply status indication LED
(2)	SP1,SP2 SV1,SV2	Unit status indication LED
(3)	CN22	Control power input connector (24VDC input)
(4)	CN9A	Connector for DIO/analog output (spindle)
(5)	CN9B	Connector for DIO/analog output (servo)
(6)	OPT1A	NC optical communication connector
(7)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(8)	CN2SP	Spindle motor side encoder connection connector 5V power supply capacity: 0.35A
(9)	CN3SP	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN2L	Servo motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(11)	CN2M	Servo motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(12)	CN3L	Machine side encoder connection connector (L-axis)
(13)	CN3M	Machine side encoder connection connector (M-axis)
(14)	BTA	For connecting converged battery unit
(15)	BT1	For connecting battery built-in drive unit ER6V-C119B
(16)	CN5A	USB maintenance connector (spindle) usually not used
(17)	CN5B	USB maintenance connector (servo) usually not used
(18)	CHARGE LAMP	Converter voltage output charge-discharge status indication LED
(19)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC output) U,V,W: Motor power output terminal (spindle, 3-phase AC output) P+,N-: DC output for unit stopped caused by power failure *Do not wiring during unused state.
(20)	CN31L	Motor power supply output connector (L-axis, 3-phase AC output)
(21)	CN31M	Motor power supply output connector (M-axis, 3-phase AC output)
(22)	PE	Grounding terminal (also including grounding of the spindle motor)

Specifications

Item	Specifications	
Nominal maximum current (at peak of spindle)[A]	200	
Nominal maximum current (at peak of servo)[A]	80x2	
Output	Rated voltage[V]	155AC
	Rated current [servo][A]	15.8x2
	Rated current [spindle][A]	67
Input	Rated voltage (50Hz)[V]	200AC
	Rated voltage (60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	55
Control power	Voltage[V]	24DC
	Tolerable voltage fluctuation[%]	+10%, -10%
	Max. current[A]	4
	Max. rush current[A]	10
Max. rush conductivity time[ms]	100	
Max. earth leakage current[mA]	21	
Braking [servo]	Dynamic brakes	Regenerative braking and dynamic brakes
	Built-in	Regenerative braking
Braking [spindle]	Dynamic brakes	Regenerative braking
	Built-in	Regenerative braking
Heating value	Inside panel[W]	155
	Outside panel[W]	740
Cooling method	Forced air cooling	
Mass[kg]	14.5	

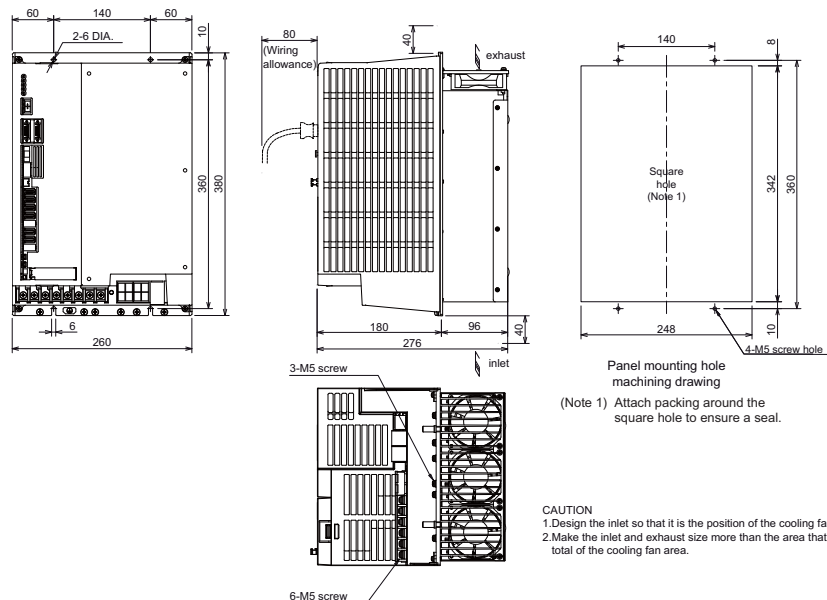
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

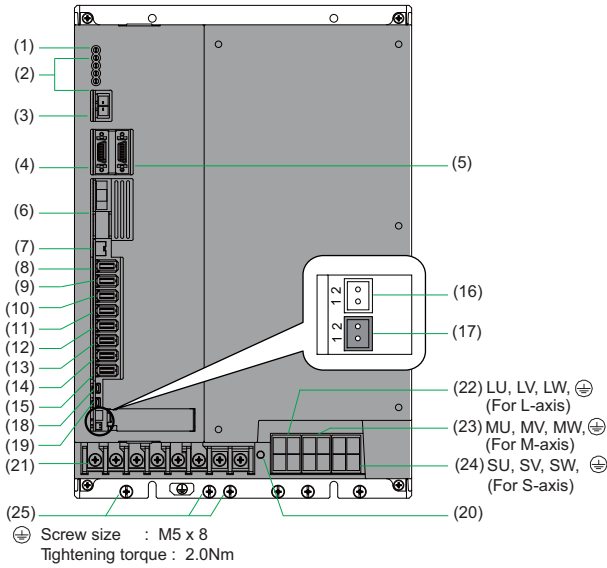
Types	Terminal name							
	TE1 (L1, L2, L3)		TE1 (U, V, W)		CN31 L/M/S (U,V,W,PE)		CN22 (VDD, SG)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	30	3	22	4	3.5	12	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	22	4	3.5	12	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	14	6	2	14	1.25	16

Outline dimension drawings [Unit : mm]



Multi axis unit

MDS-DM2-SPV3-10080



No.	Name	Description
(1)	POWER	24V power supply status indication LED
(2)	SP1,SP2 SV1,SV2	Unit status indication LED
(3)	CN22	Control power input connector (24VDC input)
(4)	CN9A	Connector for DIO/analog output (spindle)
(5)	CN9B	Connector for DIO/analog output (servo)
(6)	OPT1A	NC optical communication connector
(7)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(8)	CN2SP	Spindle motor side encoder connection connector 5V power supply capacity: 0.35A
(9)	CN3SP	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN2L	Servo motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(11)	CN2M	Servo motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(12)	CN2S	Servo motor side encoder connection connector (S-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis)
(14)	CN3M	Machine side encoder connection connector (M-axis)
(15)	CN3S	Machine side encoder connection connector (S-axis)
(16)	BTA	For connecting converged battery unit
(17)	BT1	For connecting battery built-in drive unit ER6V-C119B
(18)	CN5A	USB maintenance connector (spindle) usually not used
(19)	CN5B	USB maintenance connector (servo) usually not used
(20)	CHARGE LAMP	Converter voltage output charge-discharge status indication LED
(21)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC output) U,V,W: Motor power output terminal (spindle, 3-phase AC output) P+,N-: DC output for unit stopped caused by power failure *Do not wiring during unused state.
(22)	CN31L	Motor power supply output connector (L-axis, 3-phase AC output)
(23)	CN31M	Motor power supply output connector (M-axis, 3-phase AC output)
(24)	CN31S	Motor power supply output connector (S-axis, 3-phase AC output)
(25)	PE	Grounding terminal (also including grounding of the spindle motor)

Specifications

Item	Specifications	
Nominal maximum current (at peak of spindle)[A]	100	
Nominal maximum current (at peak of servo)[A]	80x3	
Output	Rated voltage[V]	155AC
	Rated current [servo][A]	15.8x3
	Rated current [spindle][A]	26
Input	Rated voltage (50Hz)[V]	200AC
	Rated voltage (60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	38
Control power	Voltage[V]	24DC
	Tolerable voltage fluctuation[%]	+10%, -10%
	Max. current[A]	4
	Max. rush current[A]	10
Max. rush conductivity time[ms]	100	
Max. earth leakage current[mA]	21	
Braking [servo]	Dynamic brakes	Regenerative braking and dynamic brakes
	Built-in	Built-in
Braking [spindle]	Regenerative braking	
Heating value	Inside panel[W]	140
	Outside panel[W]	590
Cooling method	Forced air cooling	
Mass[kg]	15	

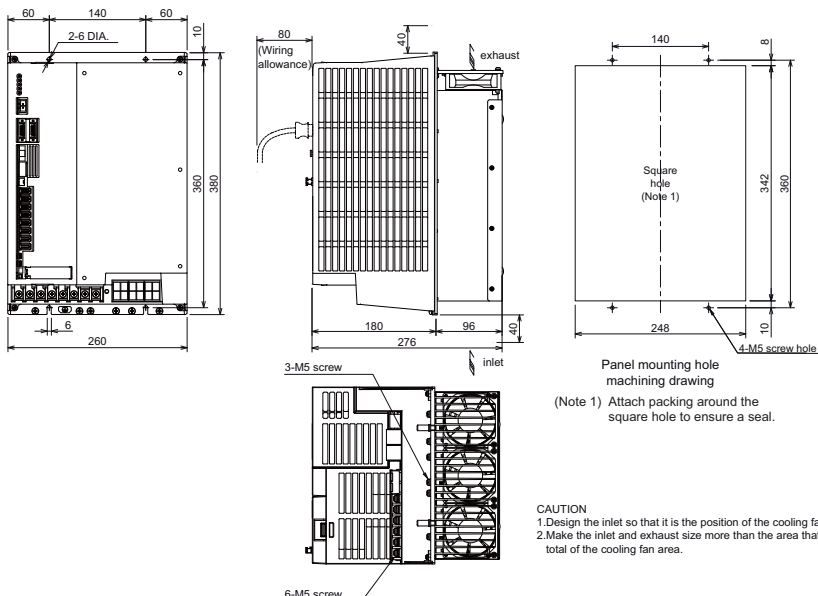
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

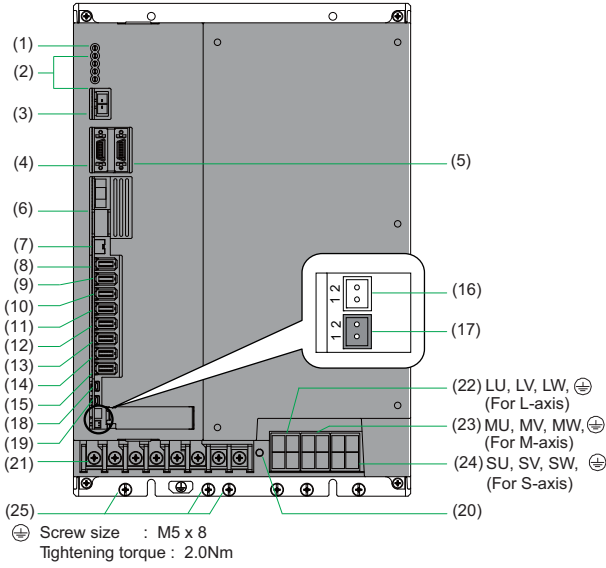
	Terminal name							
	TE1 (L1, L2, L3)		TE1 (U, V, W)		CN31 L/M/S (U,V,W,PE)		CN22 (VDD, SG)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	30	3	5.5	10	3.5	12	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	5.5	10	3.5	12	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	3.5	12	2	14	1.25	16

Outline dimension drawings [Unit : mm]



Multi axis unit

MDS-DM2-SPV3-16080



No.	Name	Description
(1)	POWER	24V power supply status indication LED
(2)	SP1,SP2 SV1,SV2	Unit status indication LED
(3)	CN22	Control power input connector (24VDC input)
(4)	CN9A	Connector for DIO/analog output (spindle)
(5)	CN9B	Connector for DIO/analog output (servo)
(6)	OPT1A	NC optical communication connector
(7)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(8)	CN2SP	Spindle motor side encoder connection connector 5V power supply capacity: 0.35A
(9)	CN3SP	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN2L	Servo motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(11)	CN2M	Servo motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(12)	CN2S	Servo motor side encoder connection connector (S-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis)
(14)	CN3M	Machine side encoder connection connector (M-axis)
(15)	CN3S	Machine side encoder connection connector (S-axis)
(16)	BT A	For connecting converged battery unit
(17)	BT 1	For connecting battery built-in drive unit ER6V-C119B
(18)	CN5A	USB maintenance connector (spindle) usually not used
(19)	CN5B	USB maintenance connector (servo) usually not used
(20)	CHARGE LAMP	Converter voltage output charge-discharge status indication LED
(21)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC output) U,V,W: Motor power output terminal (spindle, 3-phase AC output) P+,N-: DC output for unit stopped caused by power failure *Do not wiring during unused state.
(22)	CN31L	Motor power supply output connector (L-axis, 3-phase AC output)
(23)	CN31M	Motor power supply output connector (M-axis, 3-phase AC output)
(24)	CN31S	Motor power supply output connector (S-axis, 3-phase AC output)
(25)	PE	Grounding terminal (also including grounding of the spindle motor)

Specifications

Item	Specifications	
Nominal maximum current (at peak of spindle)[A]	160	
Nominal maximum current (at peak of servo)[A]	80x3	
Output	Rated voltage[V]	155AC
	Rated current [servo][A]	15.8x3
	Rated current [spindle][A]	37
Input	Rated voltage (50Hz)[V]	200AC
	Rated voltage (60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	48
Control power	Voltage[V]	24DC
	Tolerable voltage fluctuation[%]	+10%, -10%
	Max. current[A]	4
	Max. rush current[A]	10
Max. rush conductivity time[ms]	100	
Max. earth leakage current[mA]	21	
Braking [servo]	Dynamic brakes	Regenerative braking and dynamic brakes
	Built-in	Built-in
Braking [spindle]	Regenerative braking	
Heating value	Inside panel[W]	150
	Outside panel[W]	650
Cooling method	Forced air cooling	
Mass[kg]	15	

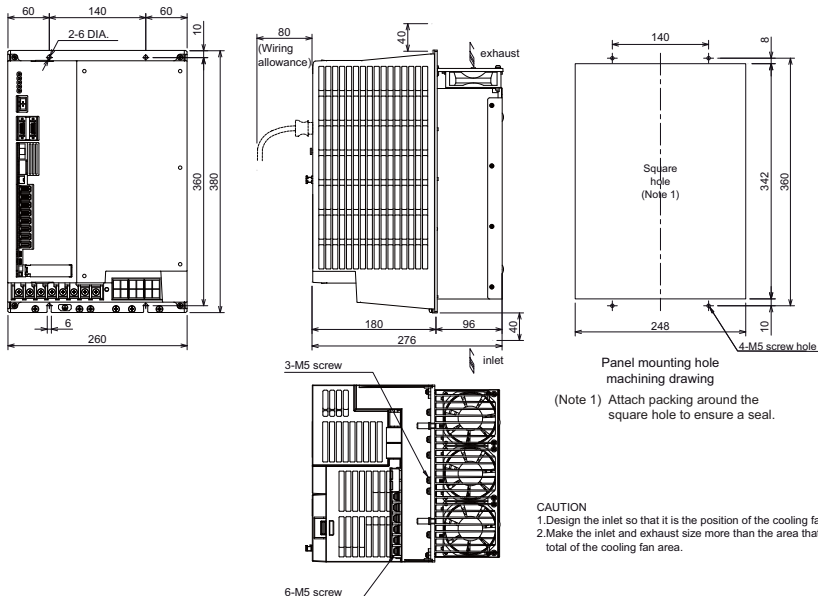
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

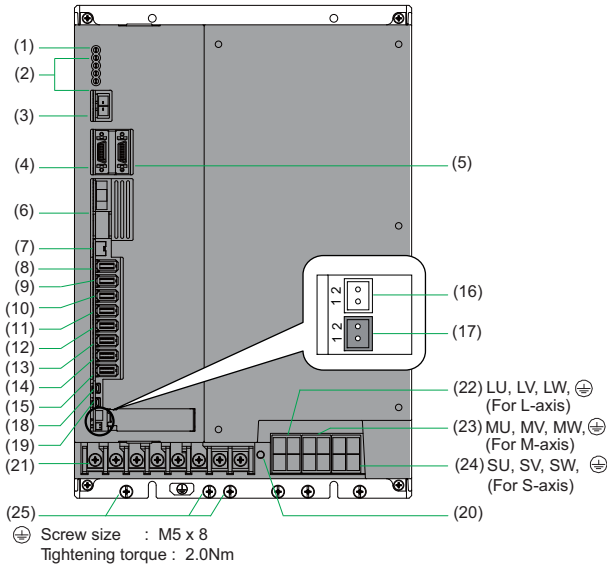
Types	Terminal name							
	TE1 (L1, L2, L3)		TE1 (U, V, W)		CN31 L/M/S (U,V,W,PE)		CN22 (VDD, SG)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	30	3	14	6	3.5	12	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	8	8	3.5	12	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	5.5	10	2	14	1.25	16

Outline dimension drawings [Unit : mm]



Multi axis unit

MDS-DM2-SPV3-20080



No.	Name	Description
(1)	POWER	24V power supply status indication LED
(2)	SP1,SP2 SV1,SV2	Unit status indication LED
(3)	CN22	Control power input connector (24VDC input)
(4)	CN9A	Connector for DIO/analog output (spindle)
(5)	CN9B	Connector for DIO/analog output (servo)
(6)	OPT1A	NC optical communication connector
(7)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(8)	CN2SP	Spindle motor side encoder connection connector 5V power supply capacity: 0.35A
(9)	CN3SP	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN2L	Servo motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(11)	CN2M	Servo motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(12)	CN2S	Servo motor side encoder connection connector (S-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis)
(14)	CN3M	Machine side encoder connection connector (M-axis)
(15)	CN3S	Machine side encoder connection connector (S-axis)
(16)	BTA	For connecting converged battery unit
(17)	BT1	For connecting battery built-in drive unit ER6V-C119B
(18)	CN5A	USB maintenance connector (spindle) usually not used
(19)	CN5B	USB maintenance connector (servo) usually not used
(20)	CHARGE LAMP	Converter voltage output charge-discharge status indication LED
(21)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC output) U,V,W: Motor power output terminal (spindle, 3-phase AC output) P+,N-: DC output for unit stopped caused by power failure *Do not wiring during unused state.
(22)	CN31L	Motor power supply output connector (L-axis, 3-phase AC output)
(23)	CN31M	Motor power supply output connector (M-axis, 3-phase AC output)
(24)	CN31S	Motor power supply output connector (S-axis, 3-phase AC output)
(25)	PE	Grounding terminal (also including grounding of the spindle motor)

Specifications

Item	Specifications	
Nominal maximum current (at peak of spindle)[A]	200	
Nominal maximum current (at peak of servo)[A]	80x3	
Output	Rated voltage[V]	155AC
	Rated current [servo][A]	15.8x3
	Rated current [spindle][A]	67
Input	Rated voltage (50Hz)[V]	200AC
	Rated voltage (60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	60
Control power	Voltage[V]	24DC
	Tolerable voltage fluctuation[%]	+10%, -10%
	Max. current[A]	4
	Max. rush current[A]	10
Max. rush conductivity time[ms]	100	
Max. earth leakage current[mA]	21	
Braking [servo]	Dynamic brakes	Regenerative braking and dynamic brakes
	Built-in	Regenerative braking
Braking [spindle]	Dynamic brakes	Regenerative braking
	Built-in	Regenerative braking
Heating value	Inside panel[W]	175
	Outside panel[W]	815
Cooling method	Forced air cooling	
Mass[kg]	15	

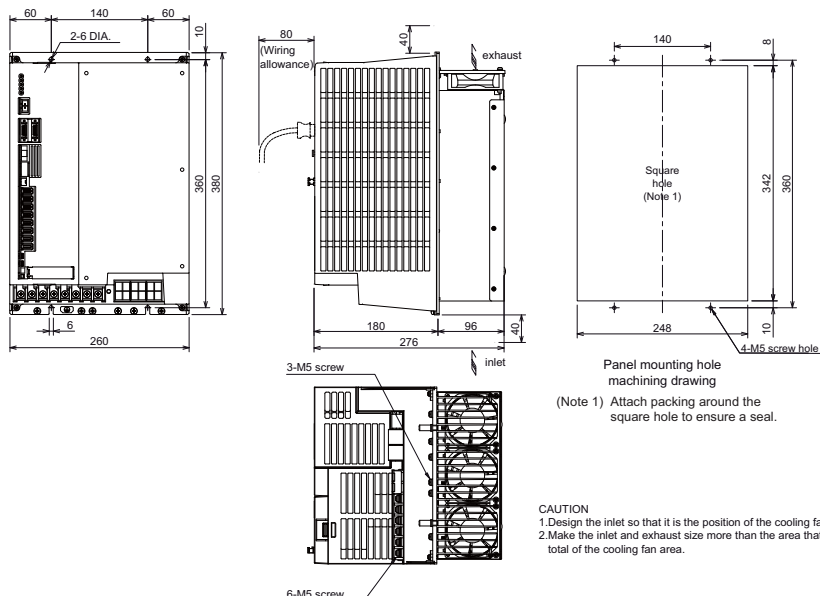
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

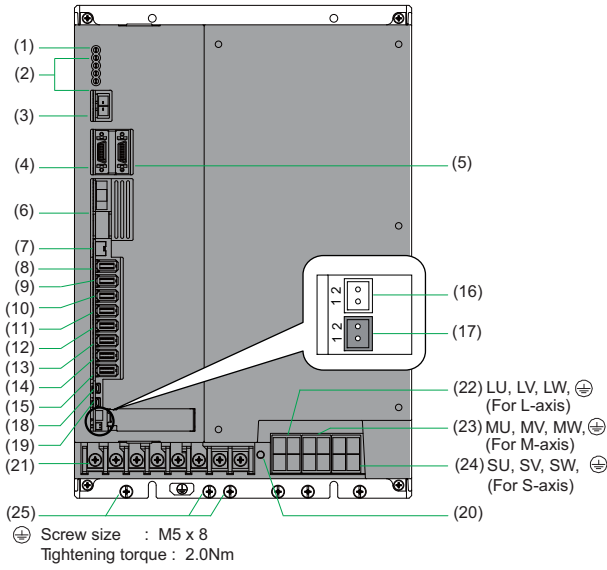
	Terminal name							
	TE1 (L1, L2, L3)		TE1 (U, V, W)		CN31 L/M/S (U,V,W,PE)		CN22 (VDD, SG)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	30	3	22	4	3.5	12	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	22	4	3.5	12	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	14	6	2	14	1.25	16

Outline dimension drawings [Unit : mm]



Multi axis unit

MDS-DM2-SPV3-200120



No.	Name	Description
(1)	POWER	24V power supply status indication LED
(2)	SP1,SP2 SV1,SV2	Unit status indication LED
(3)	CN22	Control power input connector (24VDC input)
(4)	CN9A	Connector for DIO/analog output (spindle)
(5)	CN9B	Connector for DIO/analog output (servo)
(6)	OPT1A	NC optical communication connector
(7)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(8)	CN2SP	Spindle motor side encoder connection connector 5V power supply capacity: 0.35A
(9)	CN3SP	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN2L	Servo motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(11)	CN2M	Servo motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(12)	CN2S	Servo motor side encoder connection connector (S-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis)
(14)	CN3M	Machine side encoder connection connector (M-axis)
(15)	CN3S	Machine side encoder connection connector (S-axis)
(16)	BTA	For connecting converged battery unit
(17)	BT1	For connecting battery built-in drive unit ER6V-C119B
(18)	CN5A	USB maintenance connector (spindle) usually not used
(19)	CN5B	USB maintenance connector (servo) usually not used
(20)	CHARGE LAMP	Converter voltage output charge-discharge status indication LED
(21)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC output) U,V,W: Motor power output terminal (spindle, 3-phase AC output) P+,N-: DC output for unit stopped caused by power failure *Do not wiring during unused state.
(22)	CN31L	Motor power supply output connector (L-axis, 3-phase AC output)
(23)	CN31M	Motor power supply output connector (M-axis, 3-phase AC output)
(24)	CN31S	Motor power supply output connector (S-axis, 3-phase AC output)
(25)	PE	Grounding terminal (also including grounding of the spindle motor)

Specifications

Item	Specifications	
Nominal maximum current (at peak of spindle)[A]	200	
Nominal maximum current (at peak of servo)[A]	120x3	
Output	Rated voltage[V]	155AC
	Rated current [servo][A]	28x3
	Rated current [spindle][A]	67
Input	Rated voltage (50Hz)[V]	200AC
	Rated voltage (60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	65
Control power	Voltage[V]	24DC
	Tolerable voltage fluctuation[%]	+10%, -10%
	Max. current[A]	4
	Max. rush current[A]	10
	Max. rush conductivity time[ms]	100
Max. earth leakage current[mA]	21	
Braking [servo]	Regenerative braking and dynamic brakes	
	Built-in	
Braking [spindle]	Regenerative braking	
Heating value	Inside panel[W]	235
	Outside panel[W]	1025
Cooling method	Forced air cooling	
Mass[kg]	15	

(*1) There is a limit to the specification (compatible motor, etc).

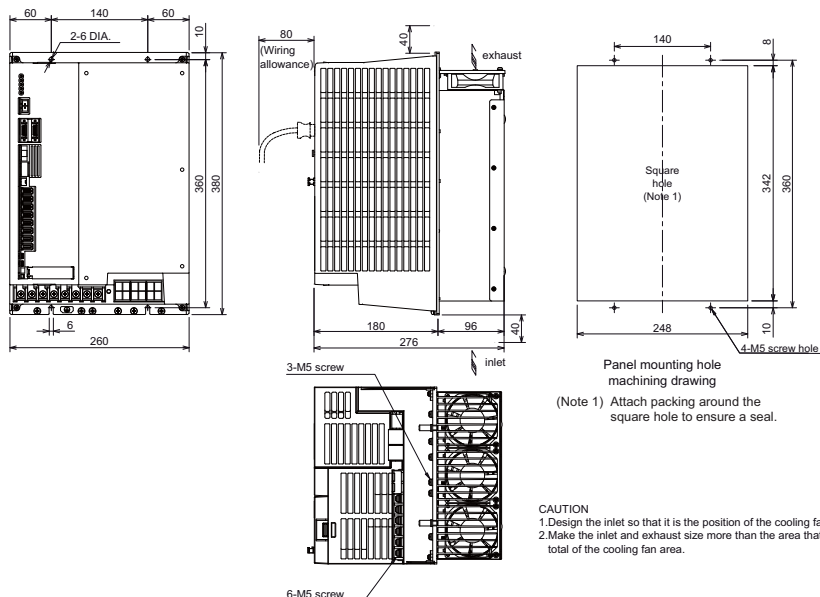
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

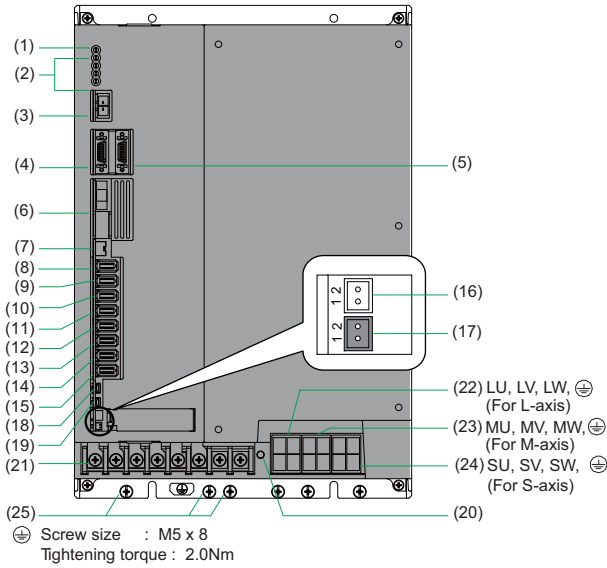
Types	Terminal name							
	TE1 (L1, L2, L3)		TE1 (U, V, W)		CN31 L/M/S (U,V,W,PE)		CN22 (VDD, SG)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	30	3	22	4	5.5	10	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	22	4	5.5	10	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	14	6	3.5	12	1.25	16

Outline dimension drawings [Unit : mm]



Multi axis unit

MDS-DM2-SPHV3-20080



No.	Name	Description
(1)	POWER	24V power supply status indication LED
(2)	SP1,SP2 SV1,SV2	Unit status indication LED
(3)	CN22	Control power input connector (24VDC input)
(4)	CN9A	Connector for DIO/analog output (spindle)
(5)	CN9B	Connector for DIO/analog output (servo)
(6)	OPT1A	NC optical communication connector
(7)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(8)	CN2SP	Spindle motor side encoder connection connector 5V power supply capacity: 0.35A
(9)	CN3SP	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN2L	Servo motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(11)	CN2M	Servo motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(12)	CN2S	Servo motor side encoder connection connector (S-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis)
(14)	CN3M	Machine side encoder connection connector (M-axis)
(15)	CN3S	Machine side encoder connection connector (S-axis)
(16)	BTA	For connecting converged battery unit
(17)	BT1	For connecting battery built-in drive unit ER6V-C119B
(18)	CN5A	USB maintenance connector (spindle) usually not used
(19)	CN5B	USB maintenance connector (servo) usually not used
(20)	CHARGE LAMP	Converter voltage output charge-discharge status indication LED
(21)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC output) U,V,W: Motor power output terminal (spindle, 3-phase AC output) P+,N-: DC output for unit stopped caused by power failure *Do not wiring during unused state.
(22)	CN31L	Motor power supply output connector (L-axis, 3-phase AC output)
(23)	CN31M	Motor power supply output connector (M-axis, 3-phase AC output)
(24)	CN31S	Motor power supply output connector (S-axis, 3-phase AC output)
(25)	PE	Grounding terminal (also including grounding of the spindle motor)

Specifications

Item	Specifications	
Nominal maximum current (at peak of spindle)[A]	200	
Nominal maximum current (at peak of servo)[A]	80x3	
Output	Rated voltage[V]	155AC
	Rated current [servo][A]	15.8x3
	Rated current [spindle][A]	63
Input	Rated voltage (50Hz)[V]	200AC
	Rated voltage (60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	60
Control power	Voltage[V]	24DC
	Tolerable voltage fluctuation[%]	+10%, -10%
	Max. current[A]	4
	Max. rush current[A]	10
Max. rush conductivity time[ms]	100	
Max. earth leakage current[mA]	21	
Braking [servo]	Dynamic brakes	Regenerative braking and dynamic brakes
	Built-in	Built-in
Braking [spindle]	Regenerative braking	
Heating value	Inside panel[W]	175
	Outside panel[W]	815
Cooling method	Forced air cooling	
Mass[kg]	15	

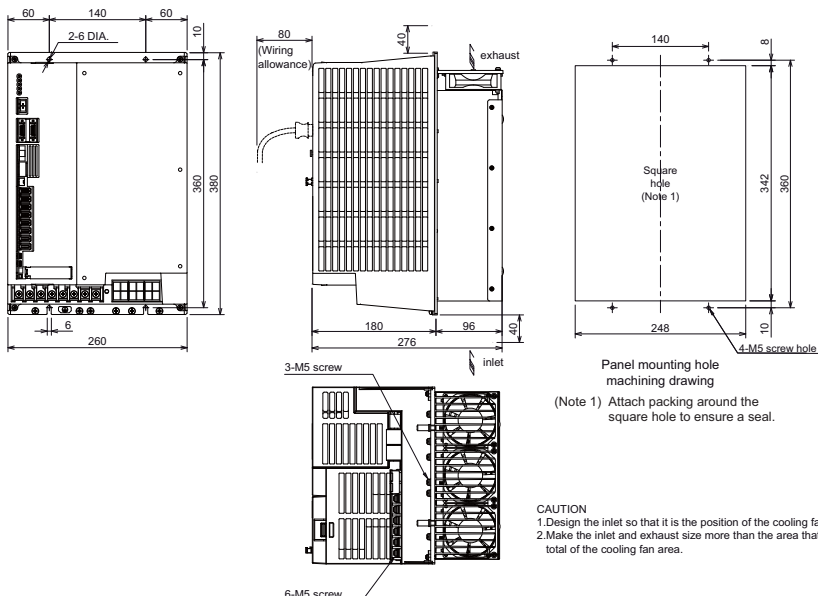
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

	Terminal name							
	TE1 (L1, L2, L3)		TE1 (U, V, W)		CN31 L/M/S (U,V,W,PE)		CN22 (VDD, SG)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	30	3	22	4	3.5	12	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	14	6	3.5	12	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	14	6	2	14	1.25	16

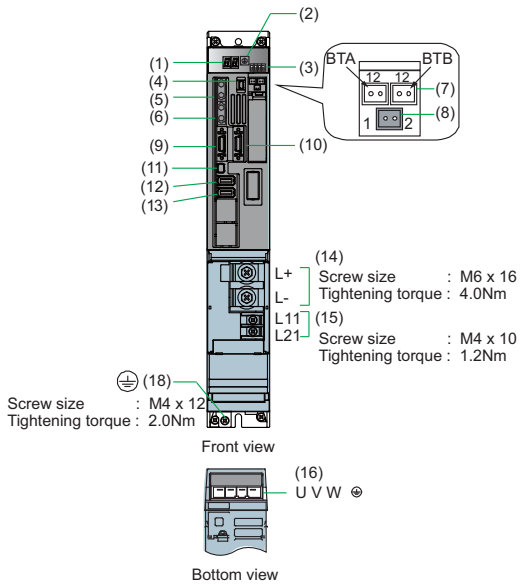
Outline dimension drawings [Unit : mm]



Spindle Drive Unit

Spindle drive unit

MDS-D2-SP-20



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(16)	TE1	Motor power supply output connector (3-phase AC output)
(18)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	20	
Output	Rated voltage[V]	155AC
	Rated current[A]	4.5
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	7.0
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
	Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	15	
Braking	Regenerative braking	
Heating value	Inside panel[W]	24
	Outside panel[W]	31
Cooling method	Forced air cooling	
Mass[kg]	3.8	

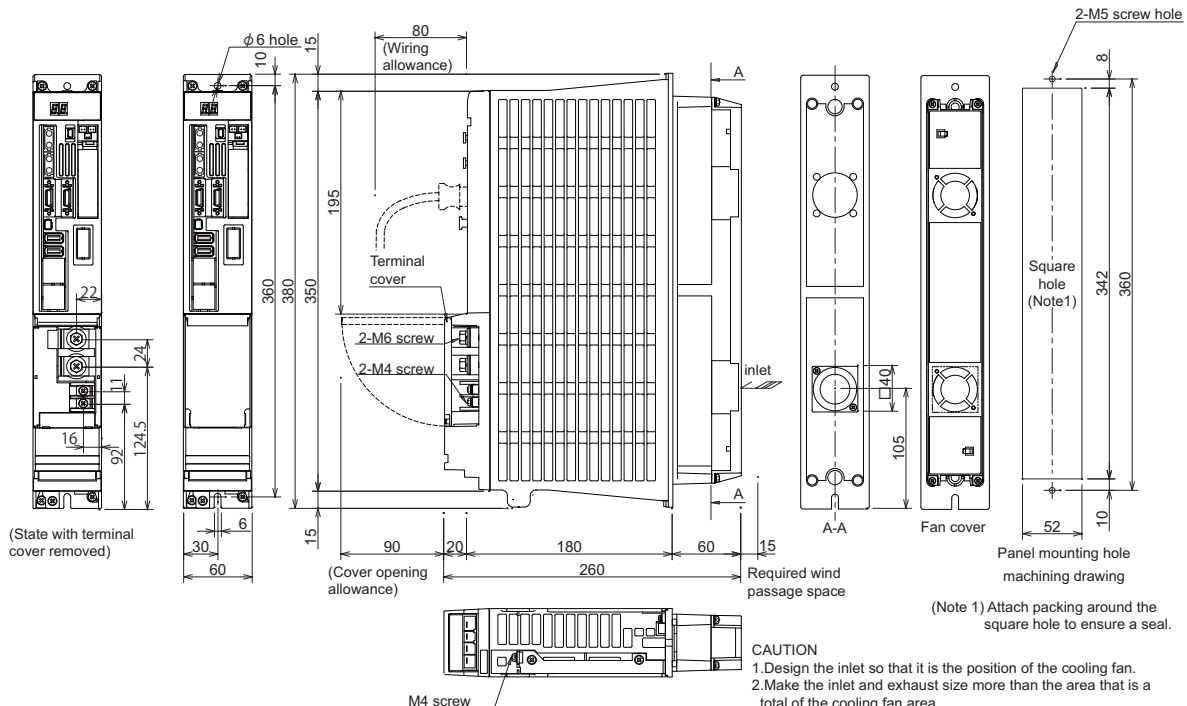
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

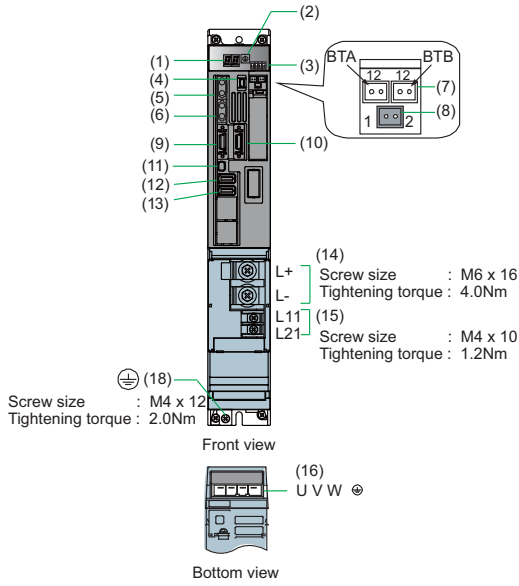
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP-40



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(16)	TE1	Motor power supply output connector (3-phase AC output)
(18)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	40
Output	155AC
Rated current[A]	10
Input	270 to 311DC
Rated voltage[V]	270 to 311DC
Rated current[A]	13
Control power	50 / 60
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	15
Braking	Regenerative braking
Heating value	29
Inside panel[W]	65
Outside panel[W]	
Cooling method	Forced air cooling
Mass[kg]	3.8

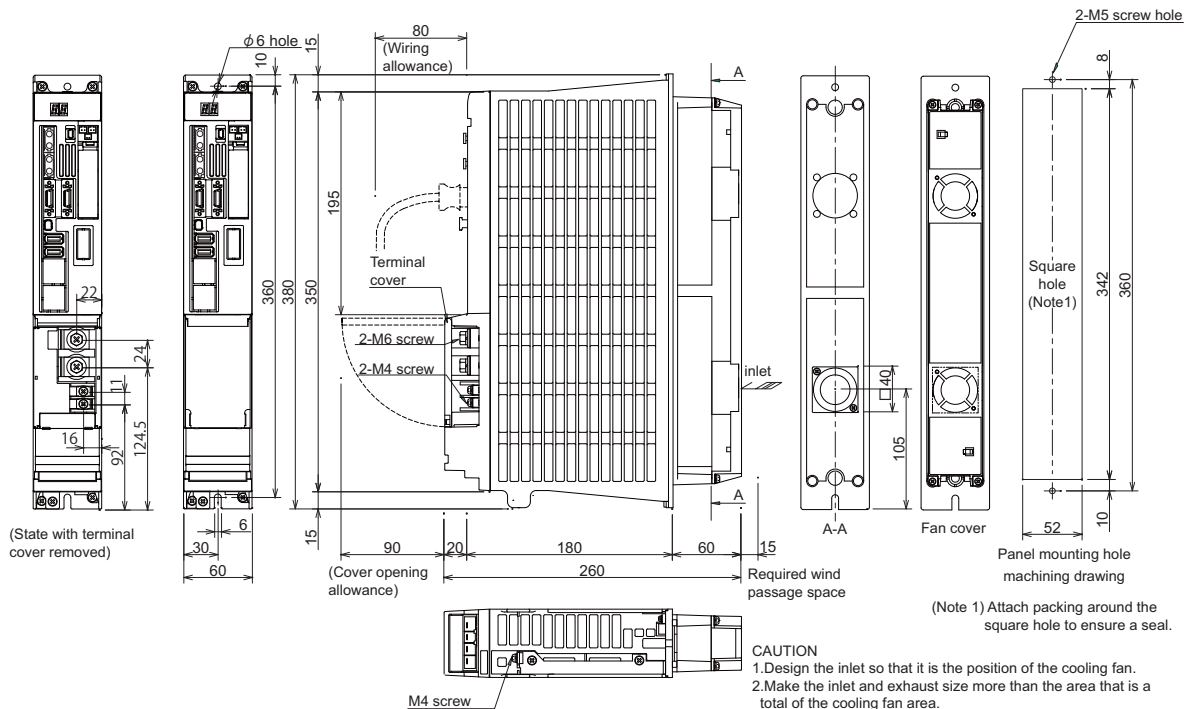
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

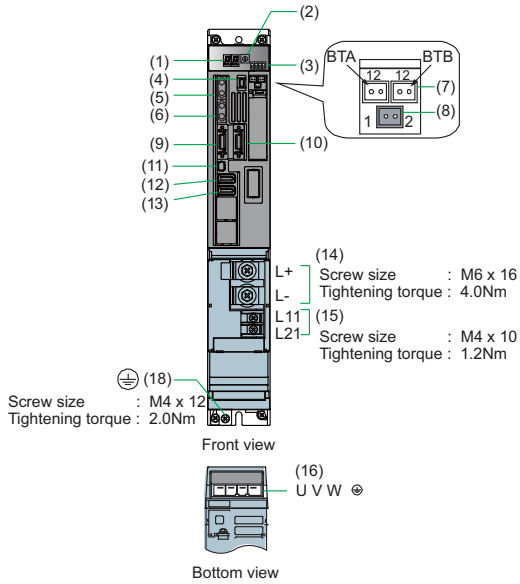
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	12			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP-80



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(16)	TE1	Motor power supply output connector (3-phase AC output)
(18)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	80	
Output	Rated voltage[V]	155AC
	Rated current[A]	18
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	20
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
	Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	15	
Braking	Regenerative braking	
Heating value	Inside panel[W]	37
	Outside panel[W]	121
Cooling method	Forced air cooling	
Mass[kg]	3.8	

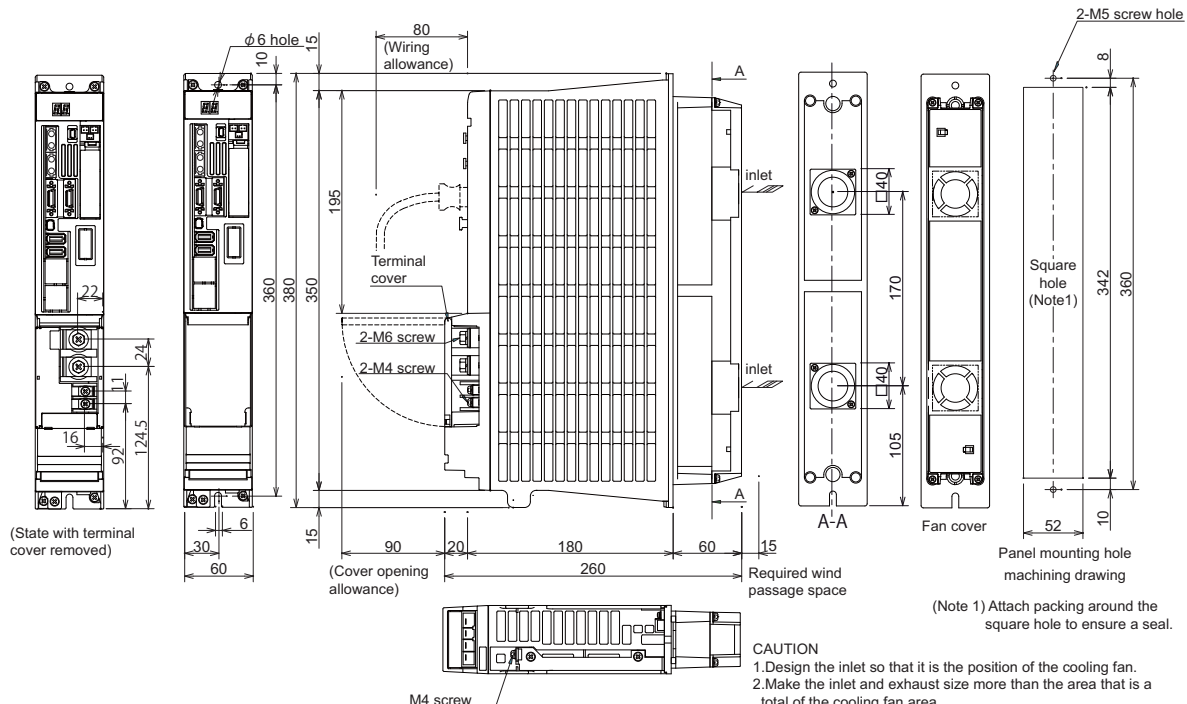
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

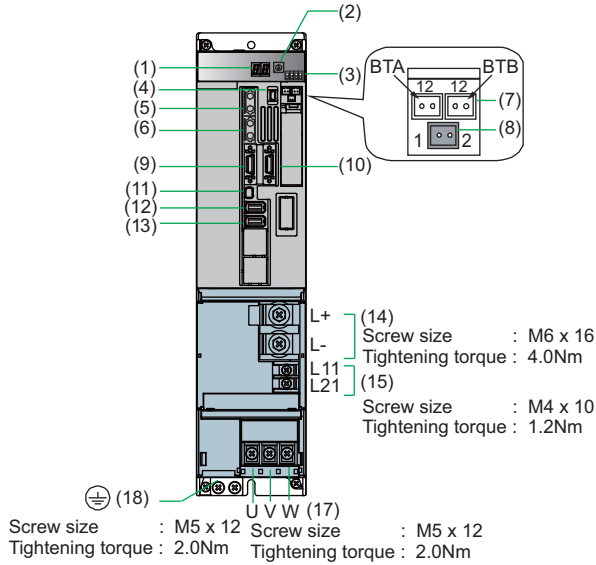
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5	12			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP-160



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	160
Output	Rated voltage[V] : 155AC Rated current[A] : 54
Input	Rated voltage[V] : 270 to 311DC Rated current[A] : 41
Control power	Frequency[Hz] : 50 / 60 Tolerable frequency fluctuation[%] : ±3% max Voltage(50Hz)[V] : 200AC Voltage(60Hz)[V] : 200 to 230AC Tolerable voltage fluctuation[%] : +10%, -15% Max. current[A] : 0.2 Max. rush current[A] : 30 Max. rush conductivity time[ms] : 6
Max. earth leakage current[mA]	15
Braking	Regenerative braking
Heating value	Inside panel[W] : 54 Outside panel[W] : 236
Cooling method	Forced air cooling
Mass[kg]	4.5

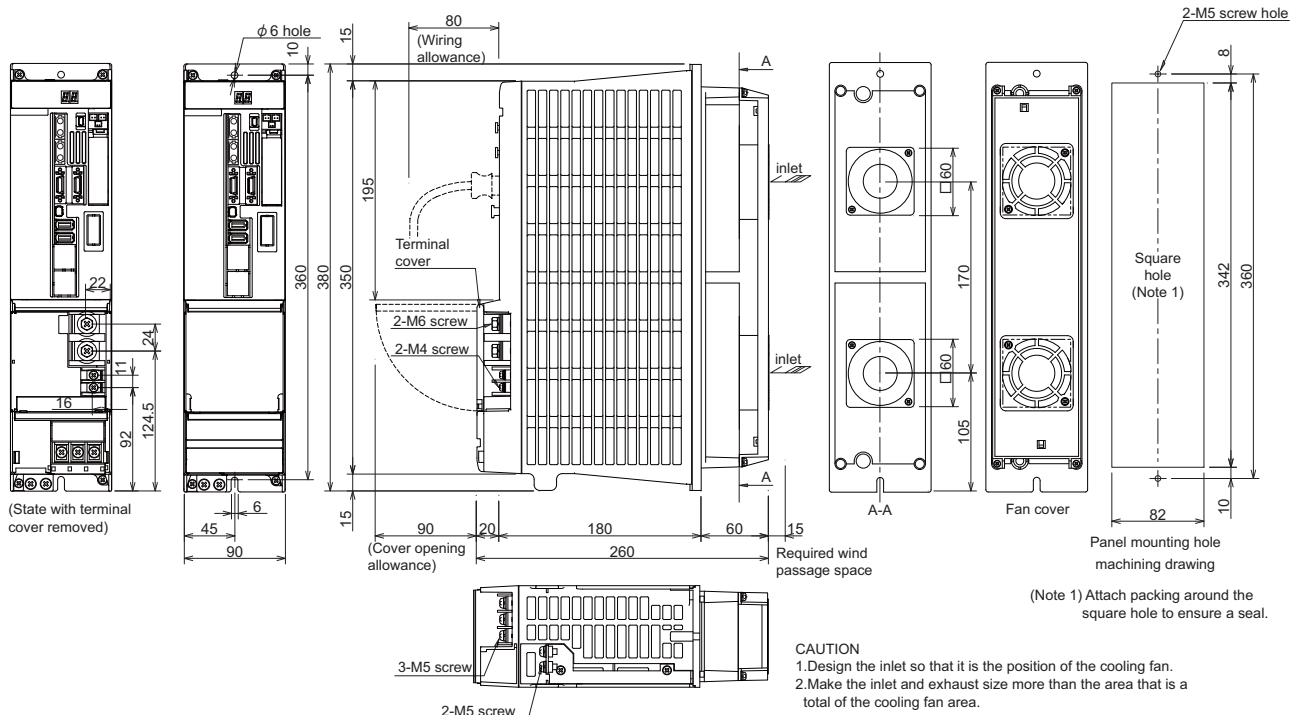
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

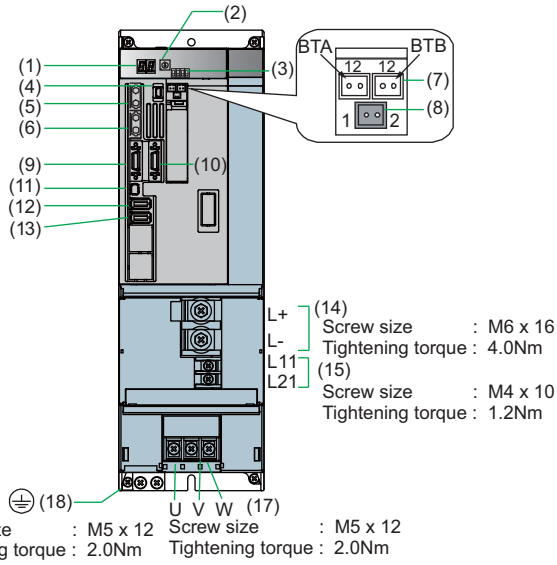
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	22	4	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	14	6			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	8	8			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP-200



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	200	
Output	Rated voltage[V]	155AC
	Rated current[A]	85
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	76
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	15	
Braking	Regenerative braking	
Heating value	Inside panel[W]	78
	Outside panel[W]	404
Cooling method	Forced air cooling	
Mass[kg]	5.8	

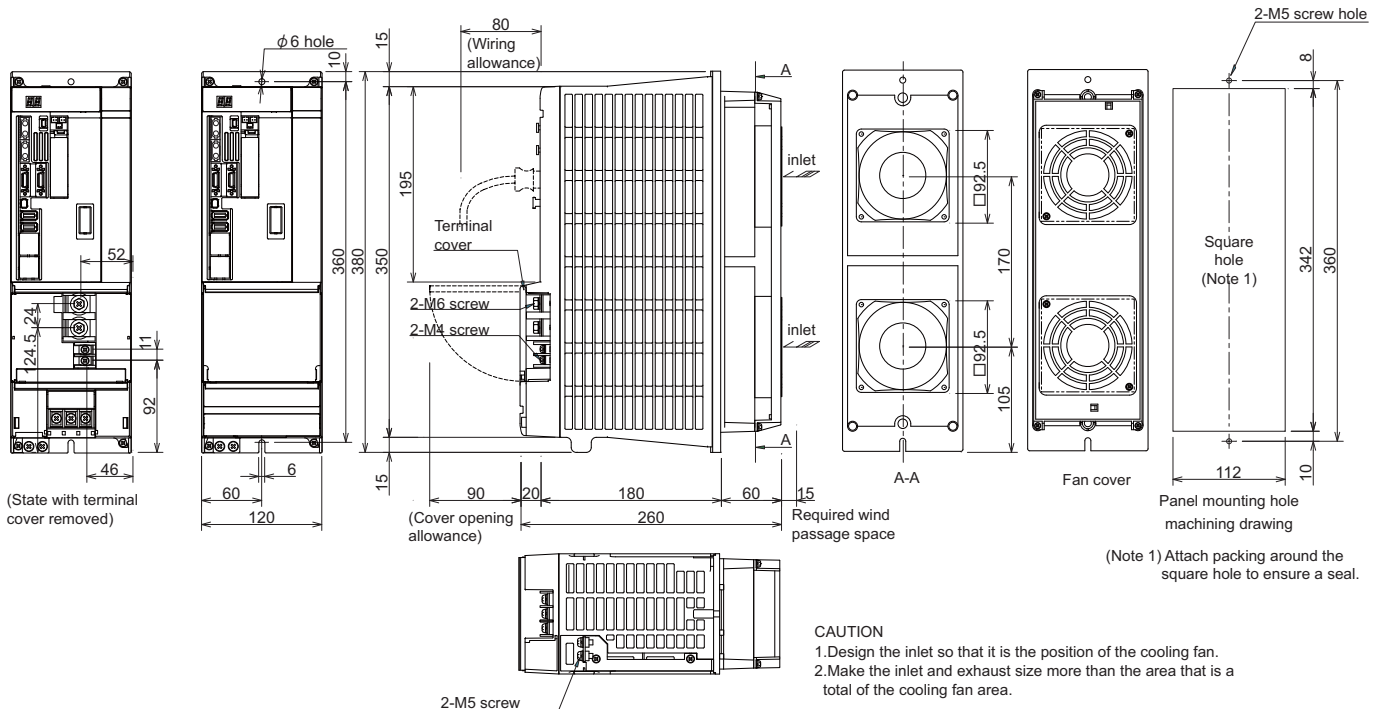
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

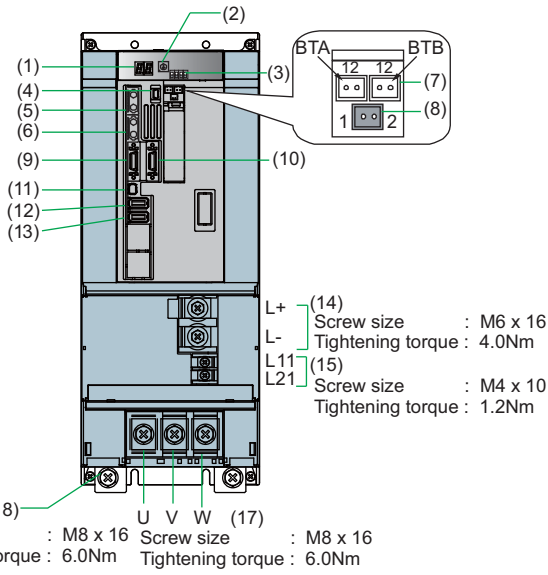
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	38	2	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	22	4			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP-240



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	240	
Output	Rated voltage[V]	155AC
	Rated current[A]	94
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	95
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	15	
Braking	Regenerative braking	
Heating value	Inside panel[W]	100
	Outside panel[W]	520
Cooling method	Forced air cooling	
Mass[kg]	6.5	

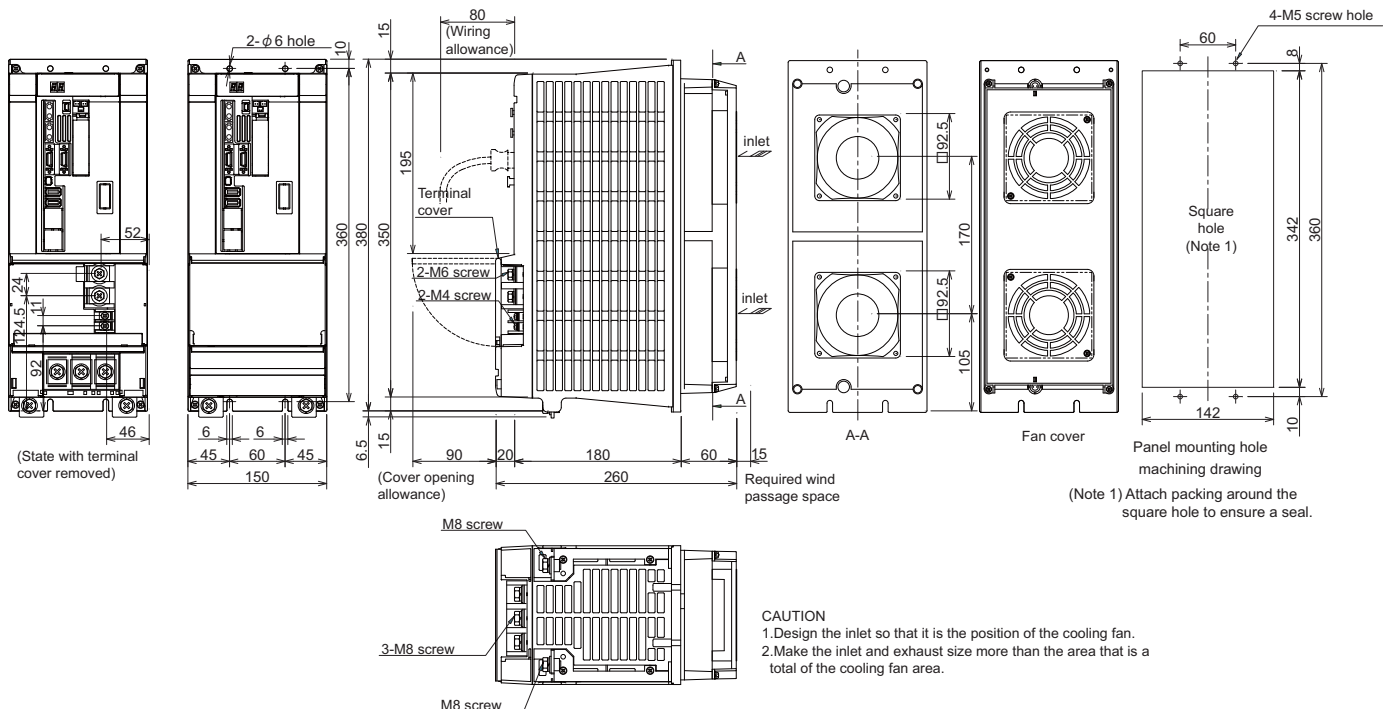
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

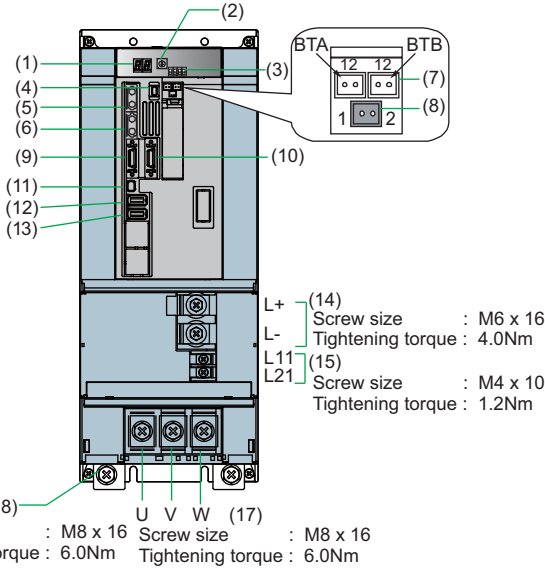
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	60	1/0	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	38	2			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	22	4			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP-320



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	320	
Output	Rated voltage[V]	155AC
	Rated current[A]	130
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	140
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	15	
Braking	Regenerative braking	
Heating value	Inside panel[W]	118
	Outside panel[W]	688
Cooling method	Forced air cooling	
Mass[kg]	7.5	

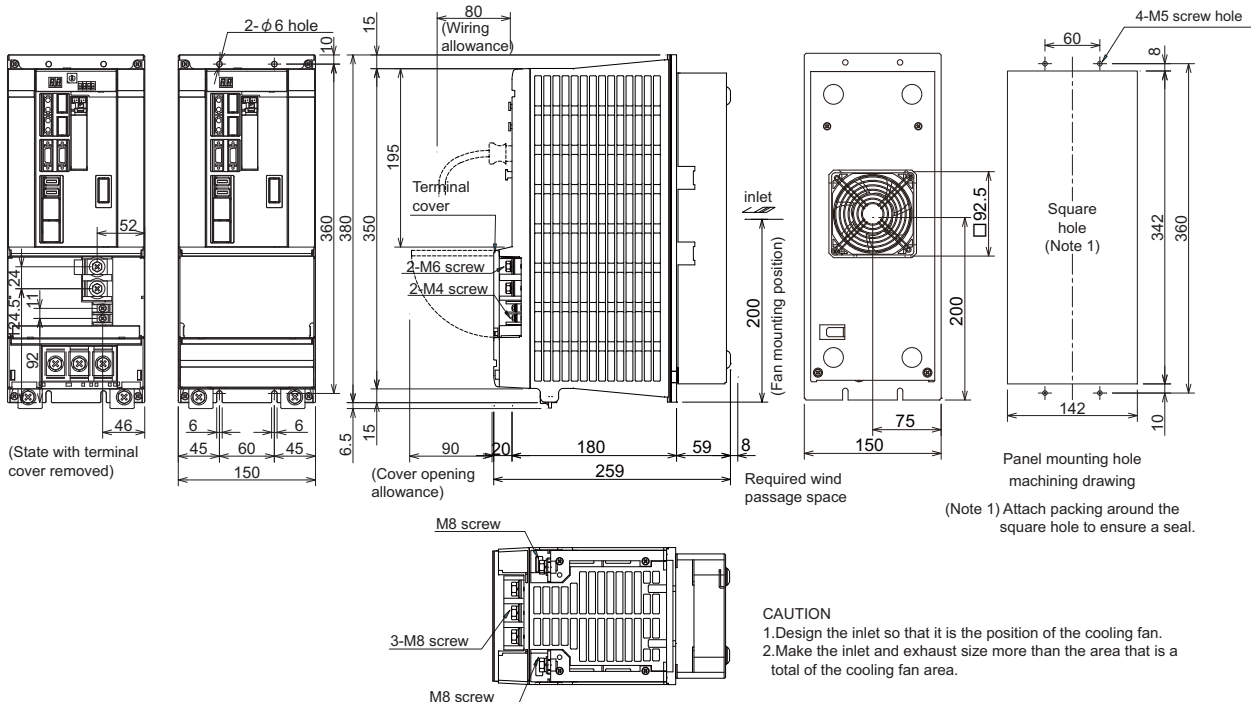
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

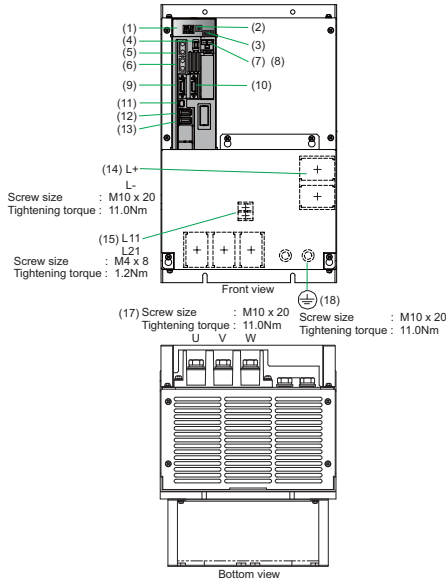
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	60	1/0	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	38	2			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP-400



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	400	
Output	Rated voltage[V]	155AC
	Rated current[A]	174
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	150
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
	Max. rush conductivity time[ms]	9
Max. earth leakage current[mA]	15	
Braking	Regenerative braking	
Heating value	Inside panel[W]	148
	Outside panel[W]	897
Cooling method	Forced air cooling	
Mass[kg]	16.5	

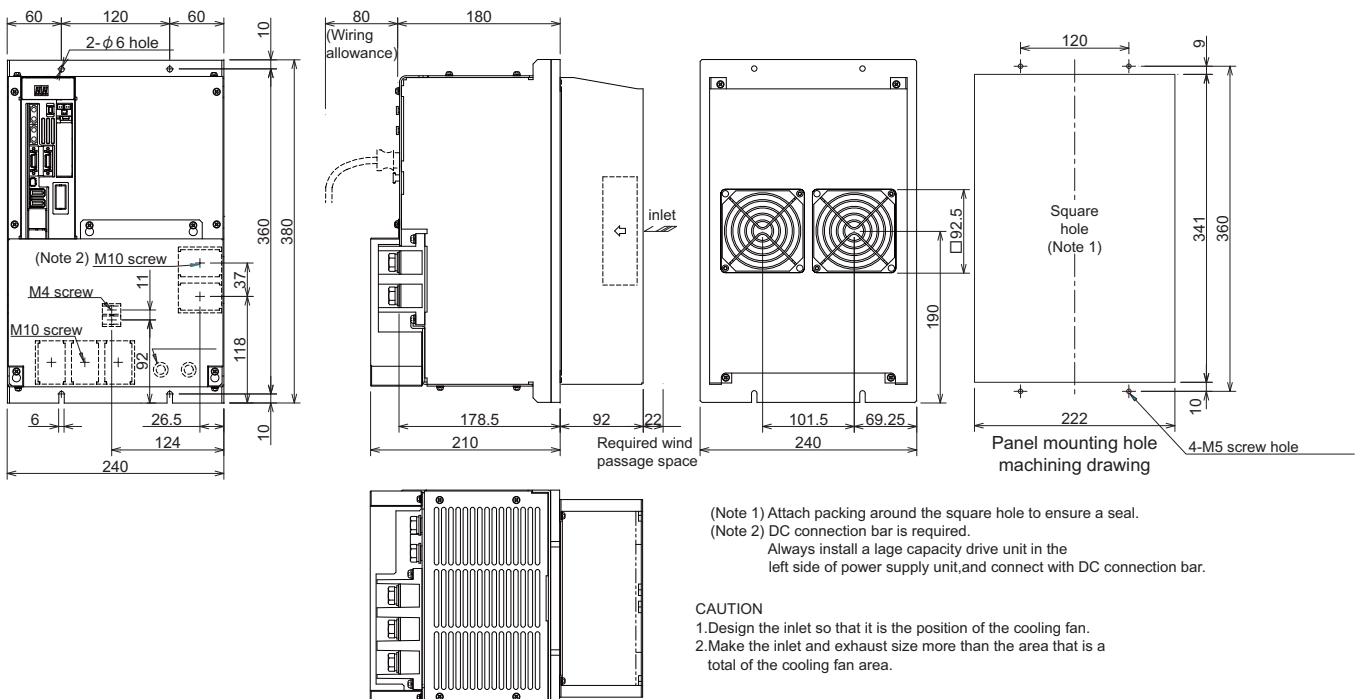
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

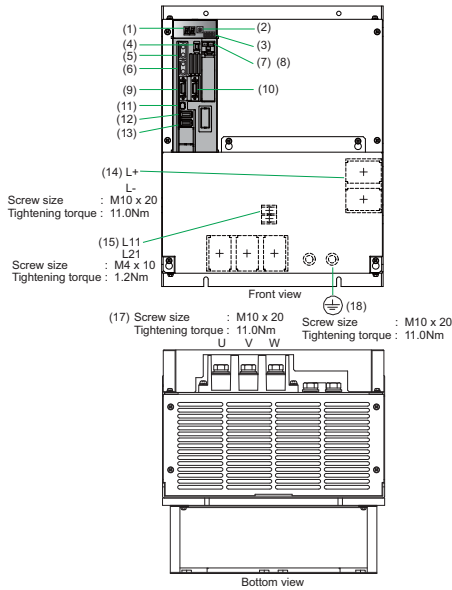
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	Bar enclosed		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	80	3/0			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	60	1/0			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP-640



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications	
Nominal maximum current(peak)[A]	640	
Output	Rated voltage[V]	155AC
	Rated current[A]	200
Input	Rated voltage[V]	270 to 311DC
	Rated current[A]	210
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
	Max. rush conductivity time[ms]	9
Max. earth leakage current[mA]	15	
Braking	Regenerative braking	
Heating value	Inside panel[W]	196
	Outside panel[W]	1231
Cooling method	Forced air cooling	
Mass[kg]	16.5	

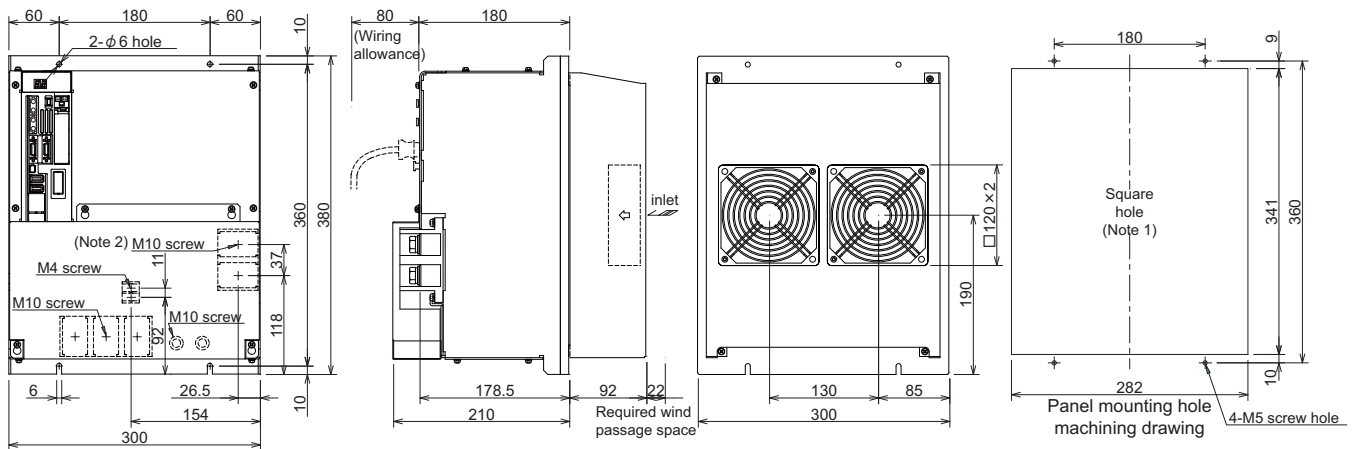
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	Bar enclosed		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	80	3/0			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	80	3/0			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]

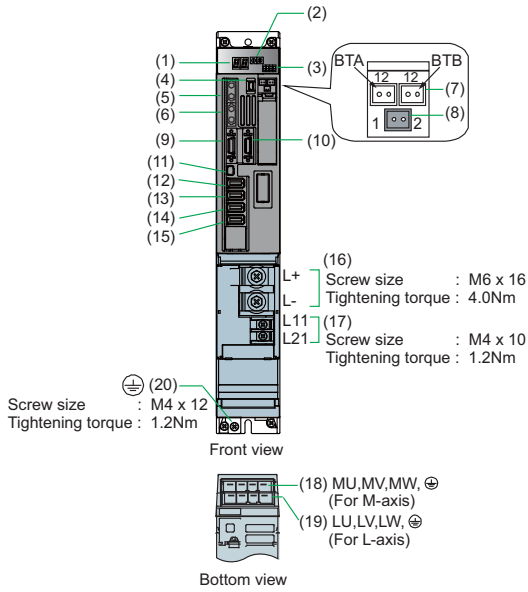


(Note 1) Attach packing around the square hole to ensure a seal.
 (Note 2) DC connection bar is required.
 Always install a large capacity drive unit in the left side of power supply unit, and connect with DC connection bar.

CAUTION
 1. Design the inlet so that it is the position of the cooling fan.
 2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Spindle drive unit

MDS-D2-SP2-2020



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector (usually not used)
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	(Unused)	
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Spindle side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	TE2	Main circuit power supply input terminal (DC input)
(17)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(19)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(20)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	20	20
Output	155AC	
	Rated voltage[V]	
Input	Rated current[A]	4.5 4.5
	Rated voltage[V]	270 to 311DC
Control power	Rated current[A]	14
	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
Max. rush current[A]	30	
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	15	15
Braking	Regenerative braking	
Heating value	Inside panel[W]	28
	Outside panel[W]	62
Cooling method	Forced air cooling	
Mass[kg]	4.5	

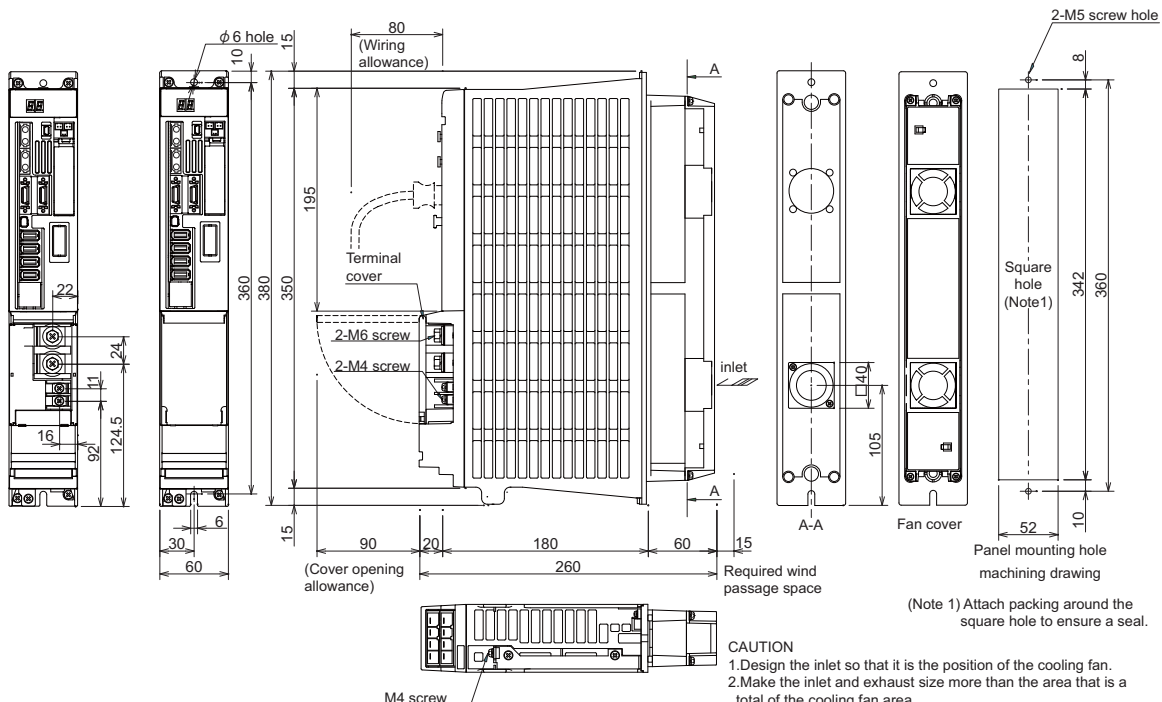
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

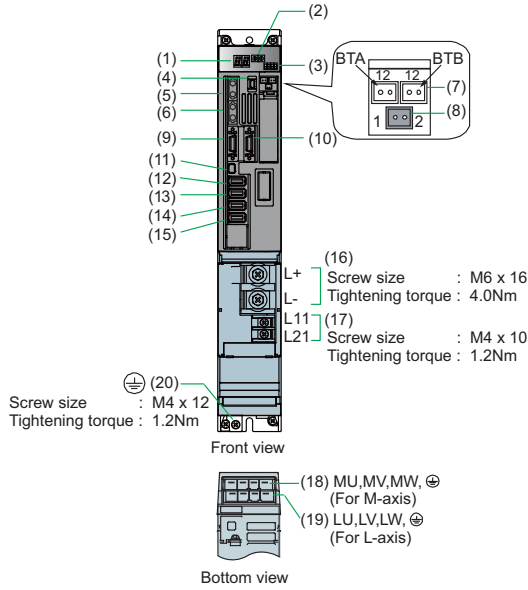
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3(L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP2-4020



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector (usually not used)
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	(Unused)	
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Spindle side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	TE2	Main circuit power supply input terminal (DC input)
(17)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(19)		Motor power supply output connector (L-axis, 3-phase AC output)
(20)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	40	20
Output	155AC	
	Rated voltage[V]	
Input	Rated current[A]	10 / 4.5
	Rated voltage[V]	270 to 311DC
Control power	Rated current[A]	20
	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
Max. earth leakage current[mA]	15	15
Braking	Regenerative braking	
Heating value	Inside panel[W]	33
	Outside panel[W]	96
Cooling method	Forced air cooling	
Mass[kg]	4.5	

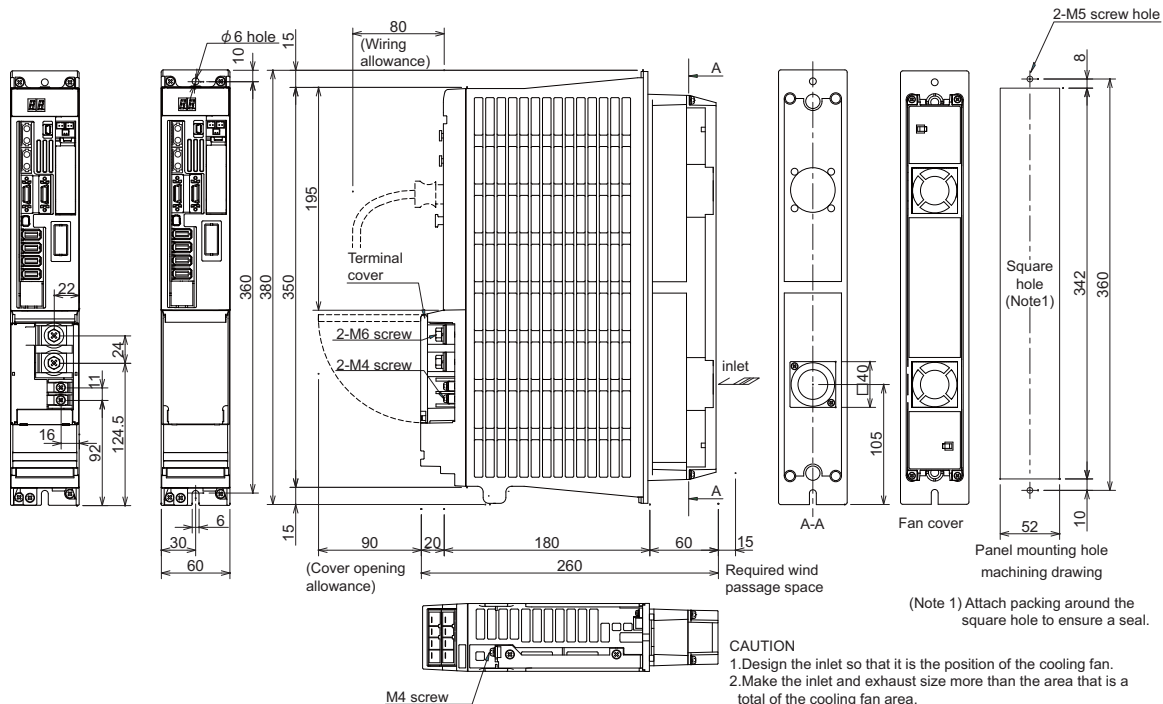
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

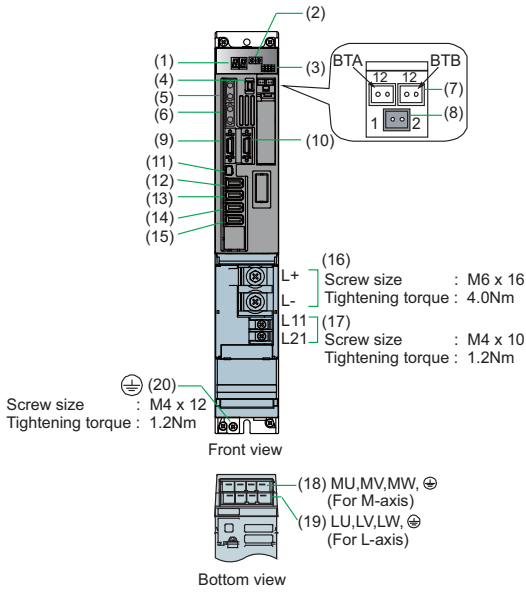
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3(L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP2-4040S



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector (usually not used)
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Spindle side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	TE2	Main circuit power supply input terminal (DC input)
(17)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(19)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(20)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications		
	L	M	
Nominal maximum current(peak)[A]	40	40	
Output	155AC		
	Rated voltage[V]	10	10
Input	Rated voltage[V]	270 to 311DC	
	Rated current[A]	26	
Control power	Frequency[Hz]	50 / 60	
	Tolerable frequency fluctuation[%]	±3% max	
	Voltage(50Hz)[V]	200AC	
	Voltage(60Hz)[V]	200 to 230AC	
	Tolerable voltage fluctuation[%]	+10%, -15%	
	Max. current[A]	0.2	
	Max. rush current[A]	30	
	Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	15	15	
Braking	Regenerative braking		
Heating value	Inside panel[W]	38	
	Outside panel[W]	130	
Cooling method	Forced air cooling		
Mass[kg]	4.5		

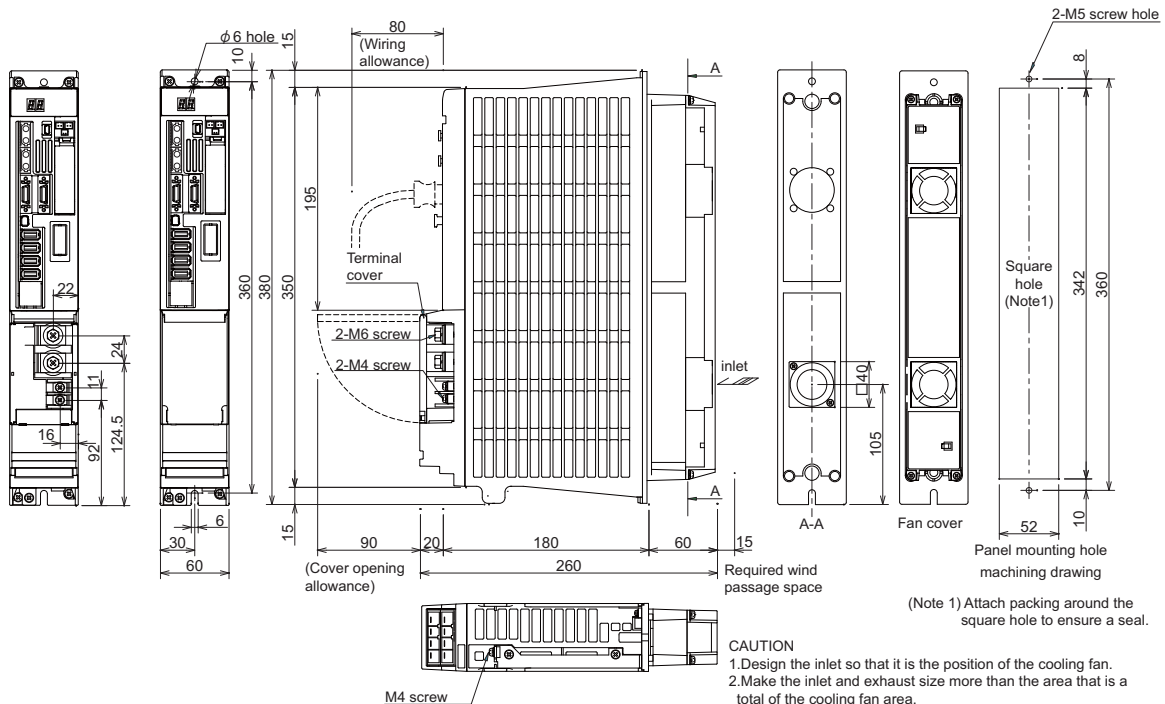
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

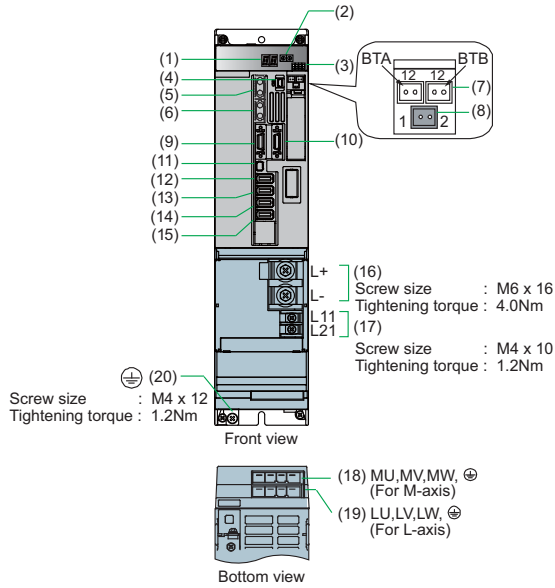
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3(L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP2-4040



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector (usually not used)
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	(Unused)	
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Spindle side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	TE2	Main circuit power supply input terminal (DC input)
(17)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(19)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(20)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications		
	L	M	
Nominal maximum current(peak)[A]	40	40	
Output	155AC		
	Rated voltage[V]	10	10
Input	Rated voltage[V]	270 to 311DC	
	Rated current[A]	26	
Control power	Frequency[Hz]	50 / 60	
	Tolerable frequency fluctuation[%]	±3% max	
	Voltage(50Hz)[V]	200AC	
	Voltage(60Hz)[V]	200 to 230AC	
	Tolerable voltage fluctuation[%]	+10%, -15%	
	Max. current[A]	0.2	
	Max. rush current[A]	30	
	Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	15	15	
Braking	Regenerative braking		
Heating value	Inside panel[W]	38	
	Outside panel[W]	130	
Cooling method	Forced air cooling		
Mass[kg]	5.2		

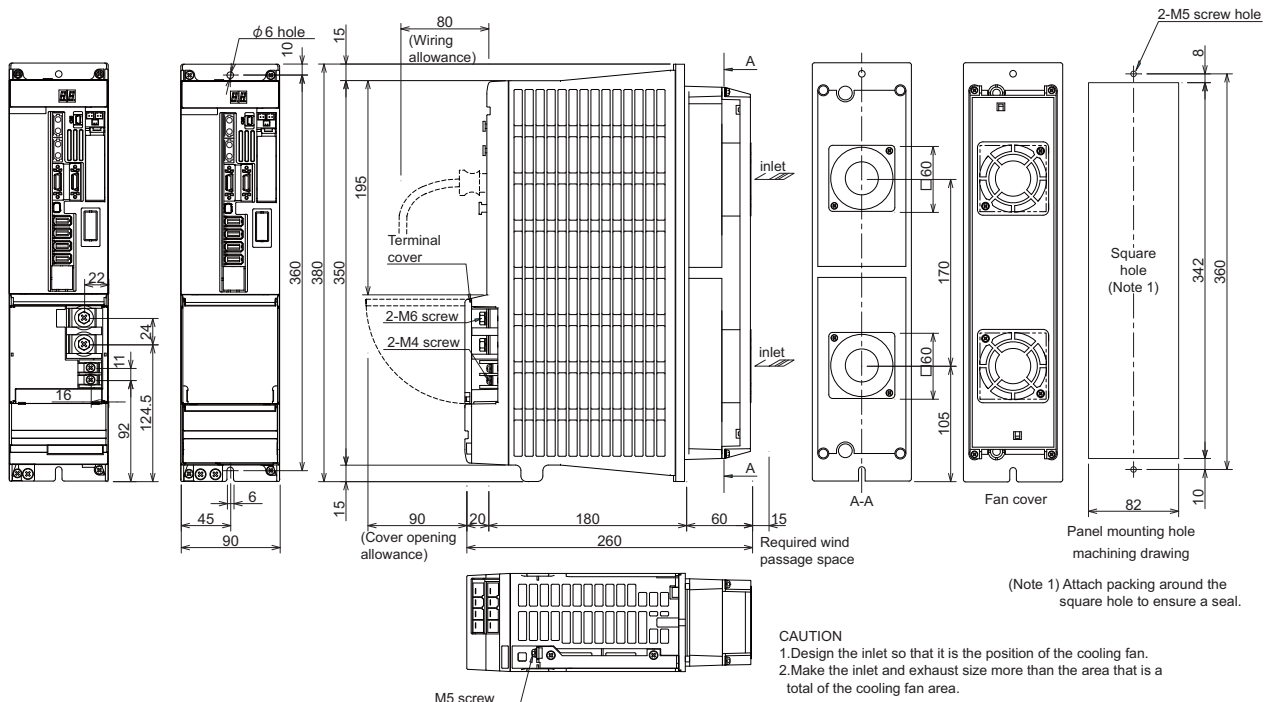
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

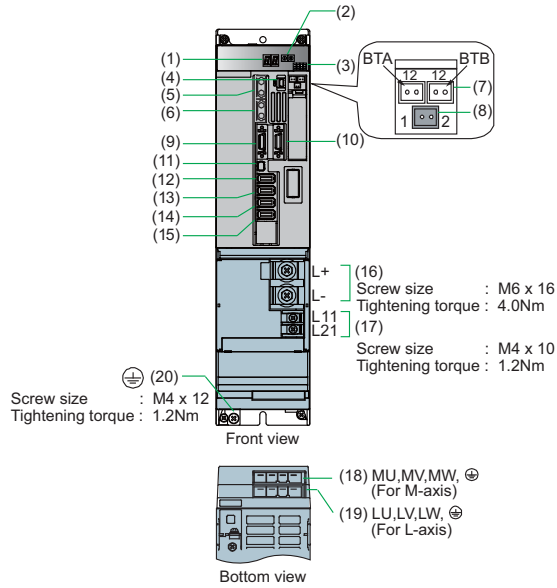
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M size		TE2 (L+, L-)		TE3(L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP2-8040



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector (usually not used)
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Spindle side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	TE2	Main circuit power supply input terminal (DC input)
(17)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(19)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(20)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	80	40
Output	155AC	
Rated voltage[V]	18	10
Rated current[A]	270 to 311DC	
Input	33	
Control power	50 / 60	
Frequency[Hz]	50 / 60	
Tolerable frequency fluctuation[%]	±3% max	
Voltage(50Hz)[V]	200AC	
Voltage(60Hz)[V]	200 to 230AC	
Tolerable voltage fluctuation[%]	+10%, -15%	
Max. current[A]	0.2	
Max. rush current[A]	30	
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	15	15
Braking	Regenerative braking	
Heating value	Inside panel[W]	46
	Outside panel[W]	186
Cooling method	Forced air cooling	
Mass[kg]	5.2	

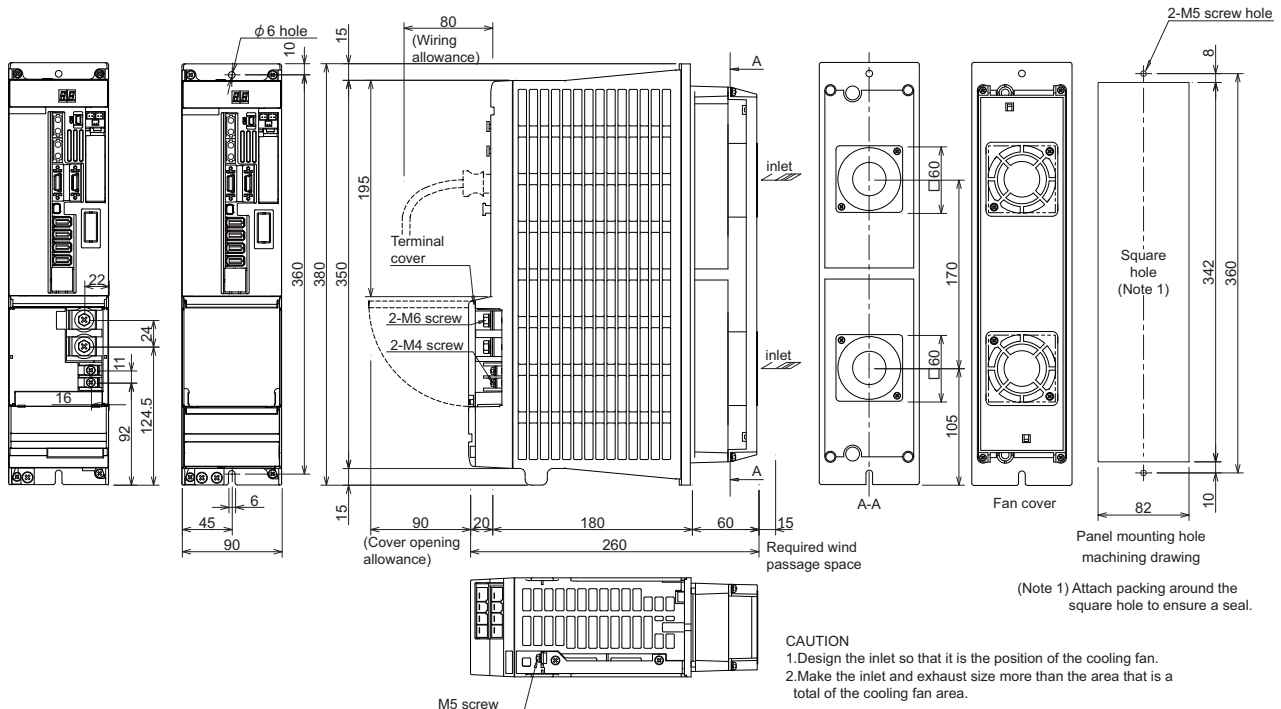
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3(L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5 (2)	10 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5 (2)	12 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5 (2)	12 (14)			1.25 to 2	16 to 14

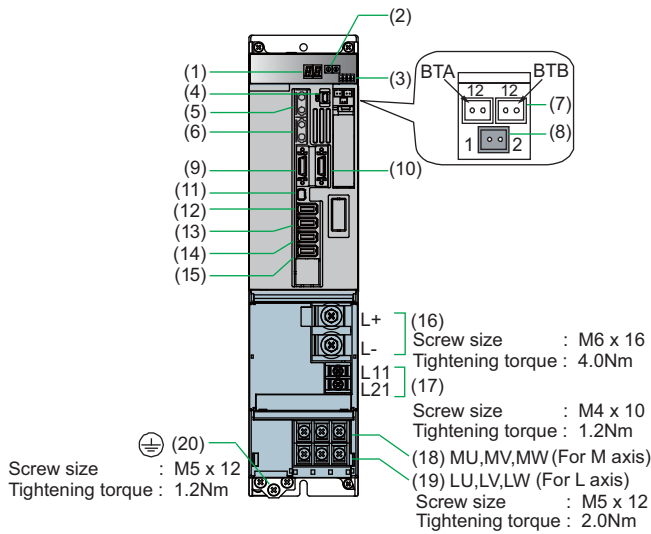
Outline dimension drawings [Unit : mm]



CAUTION
1. Design the inlet so that it is the position of the cooling fan.
2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Spindle drive unit

MDS-D2-SP2-16080S



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector (usually not used)
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	(Unused)	
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Spindle side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	TE2	Main circuit power supply input terminal (DC input)
(17)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output terminal (M-axis, 3-phase AC output)
(19)	TE1	Motor power supply output terminal (L-axis, 3-phase AC output)
(20)	PE	Grounding terminal

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	160	80
Output	155AC	
Rated voltage[V]	155AC	
	Rated current[A]	54 / 18
Input	270 to 311DC	
	Rated current[A]	61
Control power	50 / 60	
	Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max	
Voltage(50Hz)[V]	200AC	
Voltage(60Hz)[V]	200 to 230AC	
Tolerable voltage fluctuation[%]	+10%, -15%	
Max. current[A]	0.2	
Max. rush current[A]	30	
Max. rush conductivity time[ms]	6	
Max. earth leakage current[mA]	15	15
Braking	Regenerative braking	
Heating value	Inside panel[W]	70
	Outside panel[W]	358
Cooling method	Forced air cooling	
Mass[kg]	5.2	

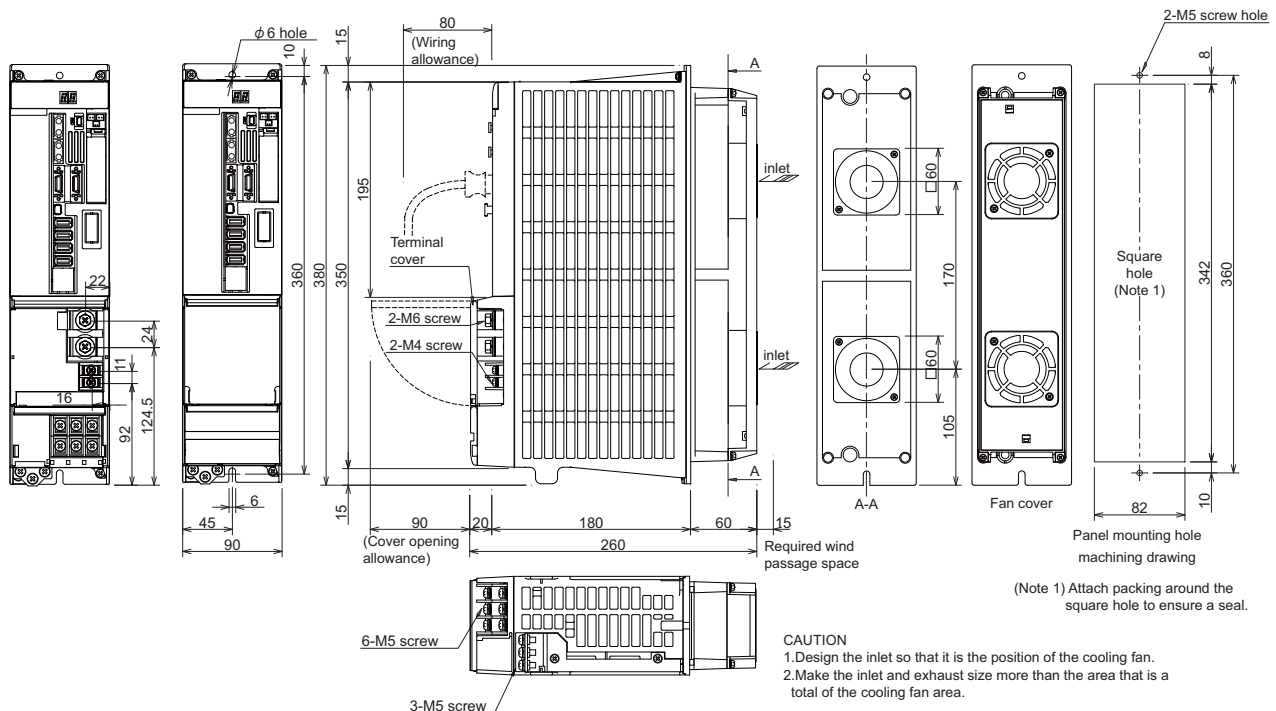
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

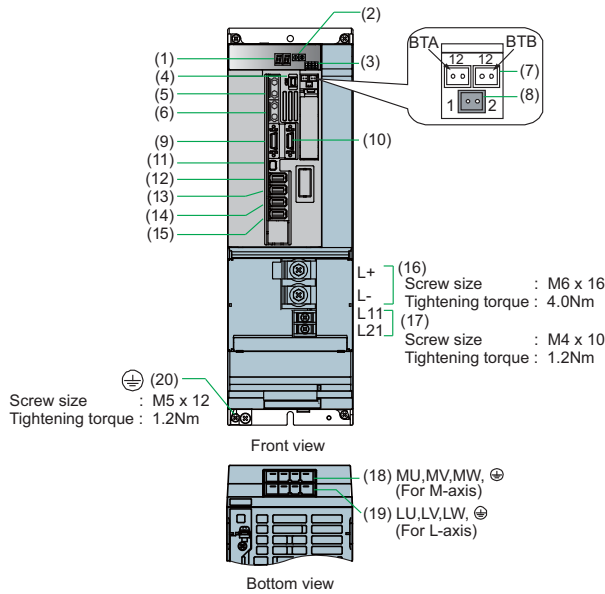
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3(L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	22 (5.5)	4 (10)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	14 (3.5)	6 (12)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	8 (3.5)	8 (12)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP2-8080



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector (usually not used)
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	(Unused)	
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Spindle side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	TE2	Main circuit power supply input terminal (DC input)
(17)	TE3	Control power input terminal (single-phase AC input)
(18)	(19)	Motor power supply output connector (M-axis, 3-phase AC output)
(19)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(20)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	80	80
Output	155AC	
Rated voltage[V]	18	
	18	
Rated current[A]	270 to 311DC	
	40	
Control power	50 / 60	
	Tolerable frequency fluctuation[%]	
		±3% max
Voltage(50Hz)[V]		200AC
Voltage(60Hz)[V]		200 to 230AC
Tolerable voltage fluctuation[%]		+10%, -15%
Max. current[A]		0.2
Max. rush current[A]		30
Max. rush conductivity time[ms]		6
Max. earth leakage current[mA]	15	15
Braking	Regenerative braking	
Heating value	Inside panel[W]	54
	Outside panel[W]	242
Cooling method	Forced air cooling	
Mass[kg]	6.5	

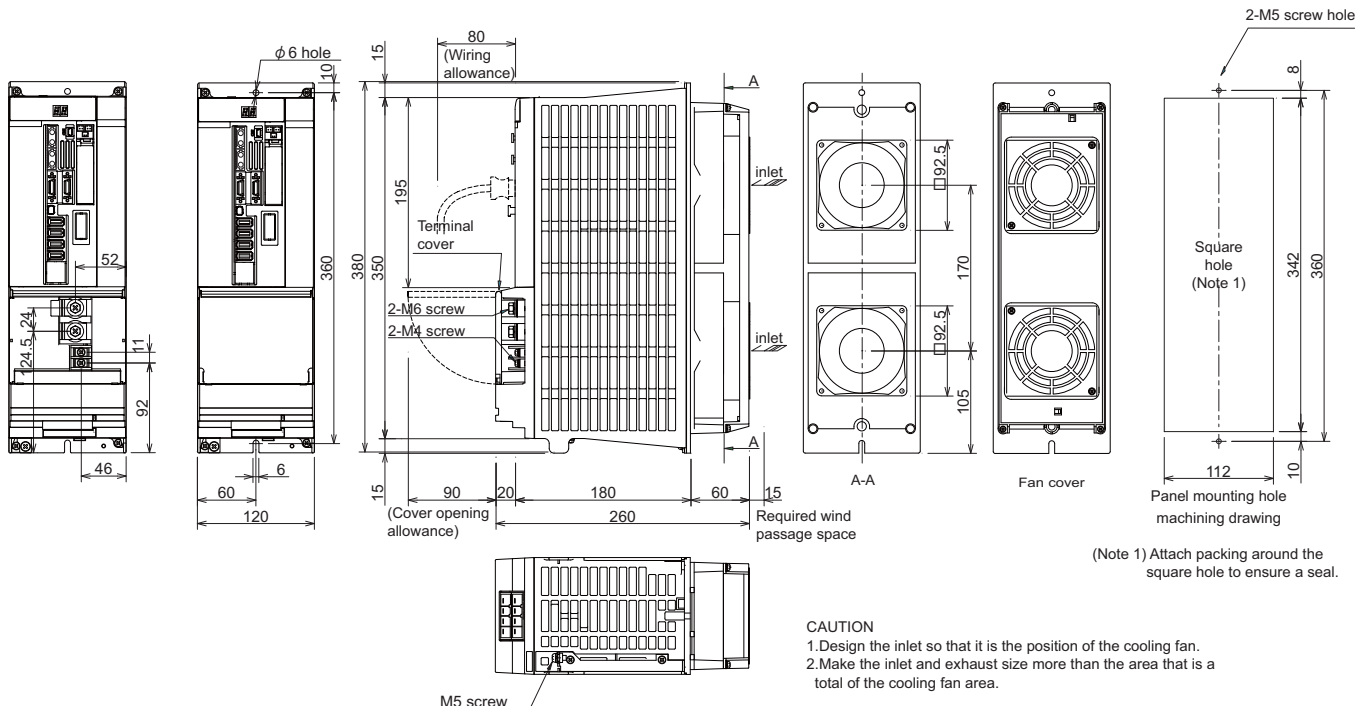
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

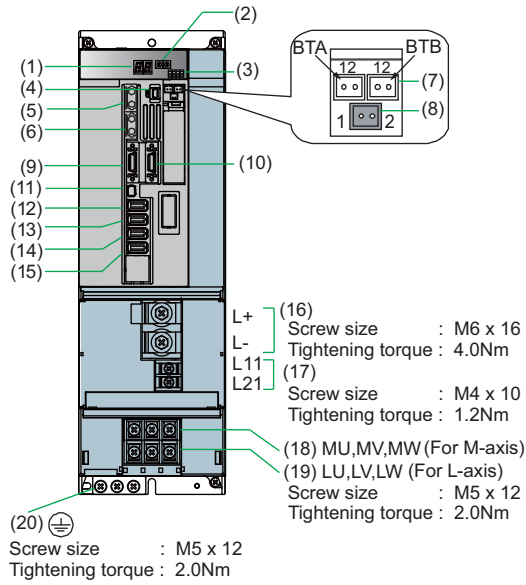
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3(L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5 (5.5)	10 (10)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5 (3.5)	12 (12)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5 (3.5)	12 (12)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-D2-SP2-16080



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector (usually not used)
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	(Unused)	
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Spindle side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	TE2	Main circuit power supply input terminal (DC input)
(17)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output terminal (M-axis, 3-phase AC output)
(19)	TE1	Motor power supply output terminal (L-axis, 3-phase AC output)
(20)	PE	Grounding terminal

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	160	80
Output	155AC	
Input	Rated voltage[V]	54
	Rated current[A]	18
Control power	Rated voltage[V]	270 to 311DC
	Rated current[A]	61
Tolerable frequency fluctuation[%]	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.2
	Max. rush current[A]	30
	Max. rush conductivity time[ms]	6
Max. earth leakage current[mA]	15	15
Braking	Regenerative braking	
Heating value	Inside panel[W]	70
	Outside panel[W]	358
Cooling method	Forced air cooling	
Mass[kg]	6.5	

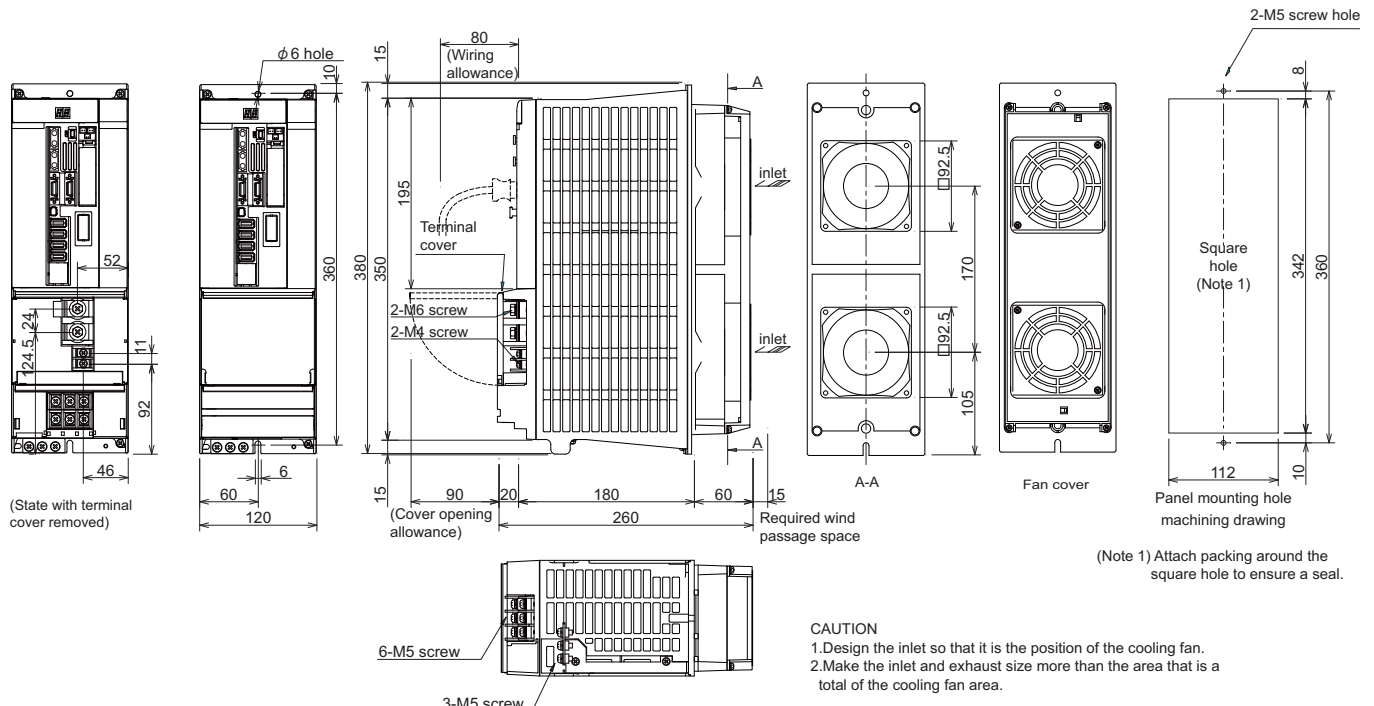
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

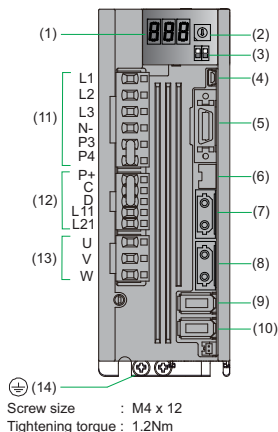
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3(L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	22 (5.5)	4 (10)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	14 (3.5)	6 (12)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	8 (3.5)	8 (12)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-DJ-SP-20

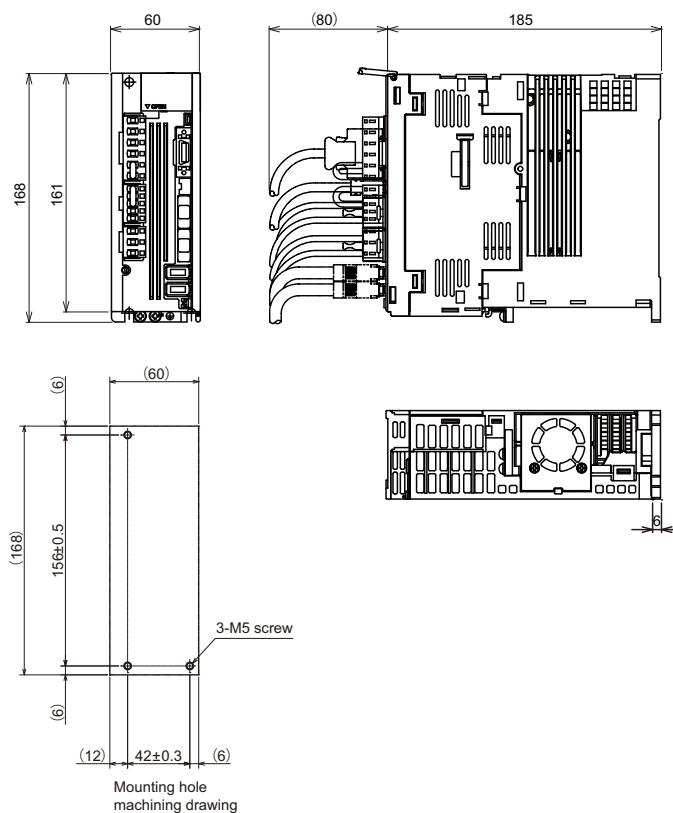


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.) P3,P4: not used (short-circuit between the P3 and P4.)
(12)	CNP2	Regenerative resistor connection terminal Control power input terminal (single-phase AC input)
(13)	CNP3	Motor power output terminal (3-phase AC output)
(14)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	20
Rated output[kW]	0.75
Power facility capacity[kVA]	2.0
Output	Rated voltage[V] 155AC Rated current[A] 4.5
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 2.6
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 30 Max.Rush conductivity time[ms] 6
Maximum earth leakage current[mA]	15
Braking	Regenerative braking
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 50
Cooling method	Forced air cooling
Mass[kg]	1.4
Selection example of contactor (option part)	S-T12-AC200V
Free-air thermal current[A]	20
Selection current (for 200V input)[A]	6
Rated output[kW]	0.75
Selection example of circuit protector (option part)	NF30-SW3P-15A
Rated current[A]	15
Selection current (for 200V input)[A]	6
Rated output[kW]	0.75
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



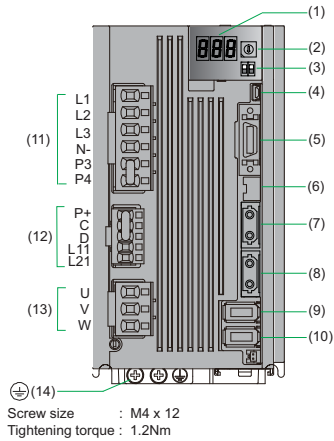
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P,C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	-	-
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	-	-
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	2	14	2	14	-	-

Spindle drive unit
MDS-DJ-SP-40

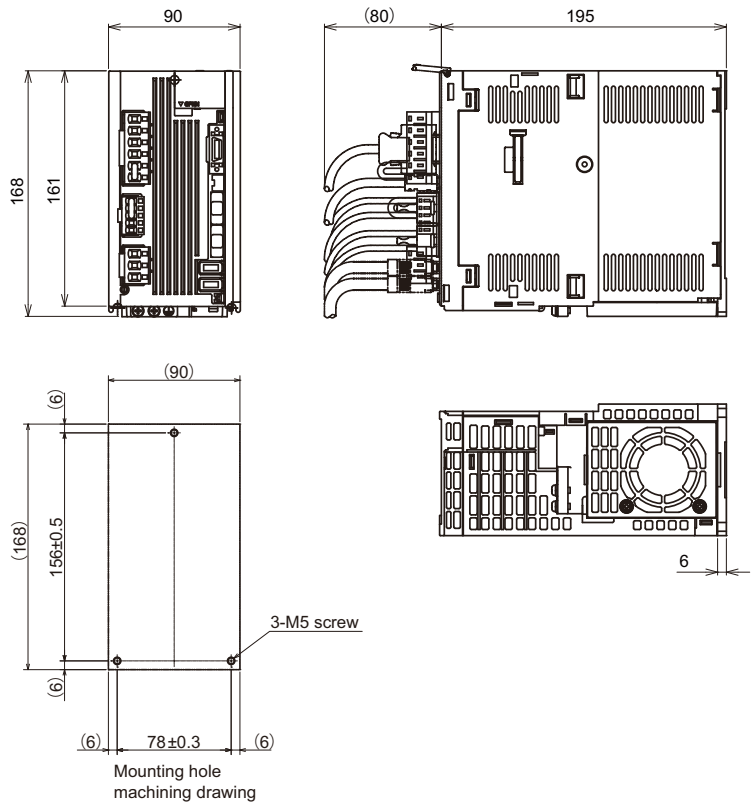


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.) P3,P4: not used (short-circuit between the P3 and P4.)
(12)	CNP2	Regenerative resistor connection terminal Control power input terminal (single-phase AC input)
(13)	CNP3	Motor power output terminal (3-phase AC output)
(14)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	40
Rated output[kW]	2.2
Power facility capacity[kVA]	4.0
Output	Rated voltage[V] 155AC Rated current[A] 10
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 9.0
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 30 Max. Rush conductivity time[ms] 6
Maximum earth leakage current[mA]	15
Braking	Regenerative braking
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 90
Cooling method	Forced air cooling
Mass[kg]	2.1
Selection example of contactor (option part)	S-T20-AC200V
	Free-air thermal current[A] 25
	Selection current (for 200V input)[A] 9
	Rated output[kW] 2.2
Selection example of circuit protector (option part)	NF30-SW3P-20A
	Rated current[A] 20
	Selection current (for 200V input)[A] 9
	Rated output[kW] 2.2
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



Environmental conditions

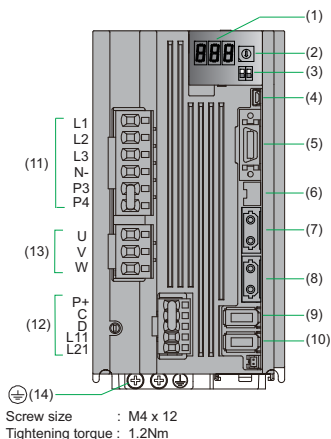
Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P, C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	-	-
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	-	-
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	2	14	2	14	-	-

Spindle drive unit

MDS-DJ-SP-80

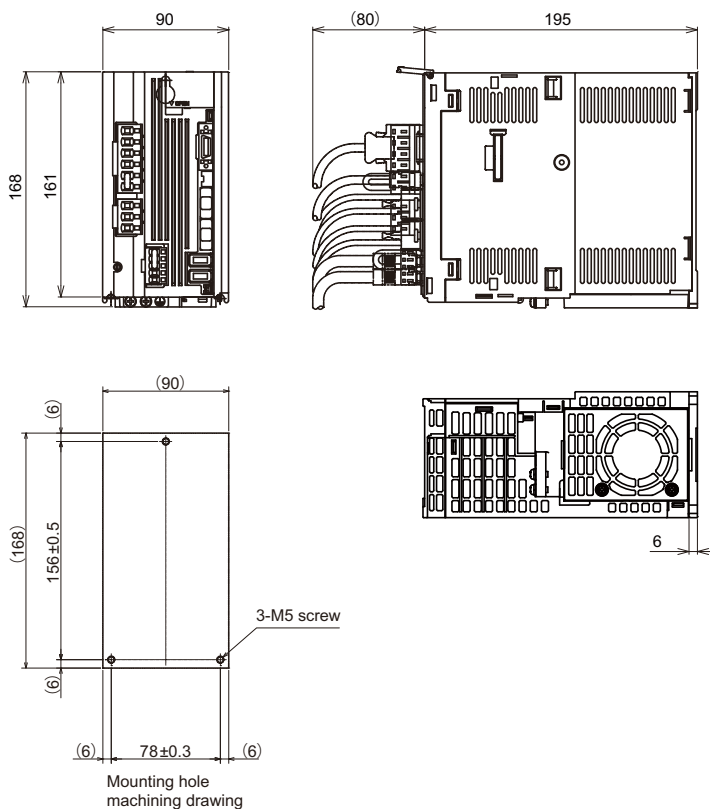


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	CNP1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.) P3,P4: not used (short-circuit between the P3 and P4.)
(12)	CNP2	Regenerative resistor connection terminal
(13)	CNP3	Control power input terminal (single-phase AC input)
(14)	PE	Motor power output terminal (3-phase AC output)

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	80
Rated output[kW]	3.7
Power facility capacity[kVA]	7.0
Output	Rated voltage[V] 155AC Rated current[A] 11
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 10.5
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 30 Max. Rush conductivity time[ms] 6
Maximum earth leakage current[mA]	15
Braking	Regenerative braking
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 130
Cooling method	Forced air cooling
Mass[kg]	2.3
Selection example of contactor (option part)	S-T21-AC200V
Free-air thermal current[A]	32
Selection current (for 200V input)[A]	15
Rated output[kW]	3.7
Selection example of circuit protector (option part)	NF30-SW3P-30A
Rated current[A]	30
Selection current (for 200V input)[A]	15
Rated output[kW]	3.7
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



Environmental conditions

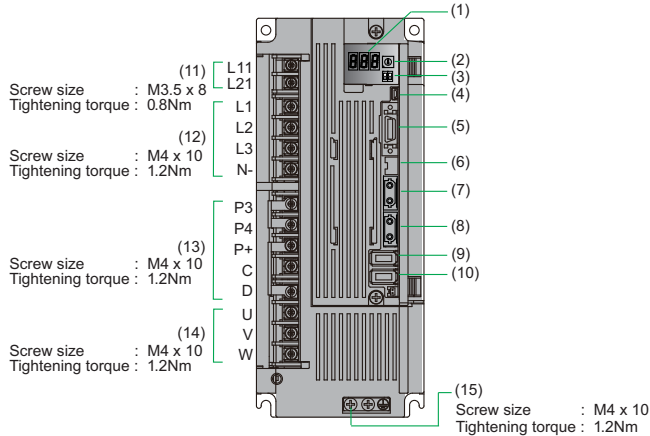
Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P,C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	-	-
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	-	-
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	2	14	2	14	-	-

Spindle drive unit

MDS-DJ-SP-100

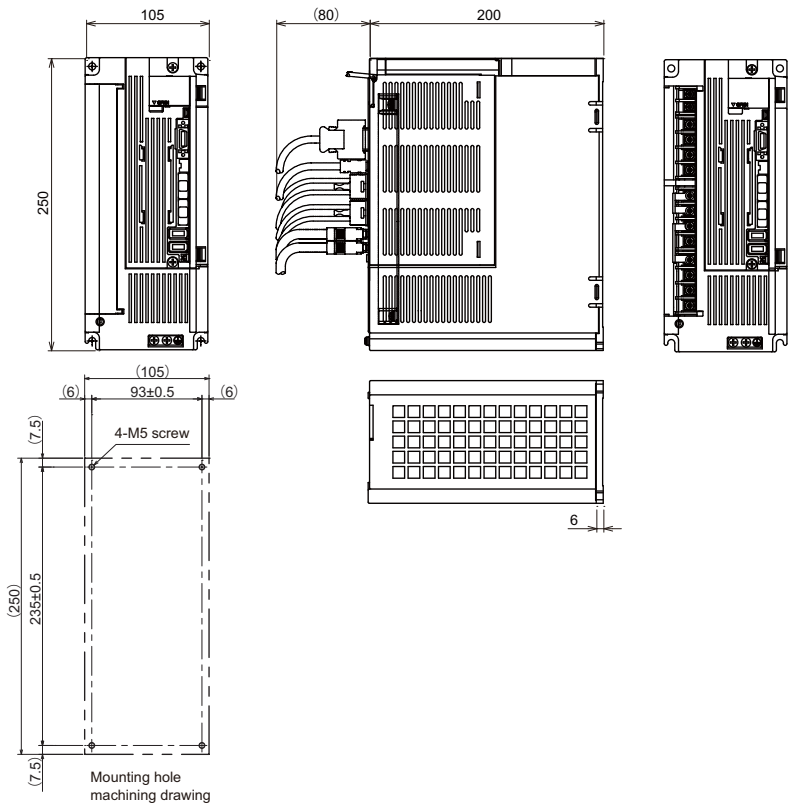


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIQ/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	TE2	L11,L12: Control power input terminal (single-phase AC input)
(12)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.)
(13)	TE3	P3,P4: Not used (Short between P3 and P4.) P+,C,D: Regenerative resistor connection terminal
(14)	TE4	U,V,W: Motor power output terminal (3-phase AC output)
(15)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	100
Rated output[kW]	5.5
Power facility capacity[kVA]	9.0
Output	Rated voltage[V] 155AC Rated current[A] 18
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 16
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 34 Max.Rush conductivity time[ms] 7
Maximum earth leakage current[mA]	15
Braking	Regenerative braking
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 150
Cooling method	Forced air cooling
Mass[kg]	4.0
Selection example of contactor (option part)	S-T35-AC200V
Free-air thermal current[A]	50
Selection current (for 200V input)[A]	23
Rated output[kW]	5.5
Selection example of circuit protector (option part)	NF50-SW3P-50A
Rated current[A]	50
Selection current (for 200V input)[A]	23
Rated output[kW]	5.5
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



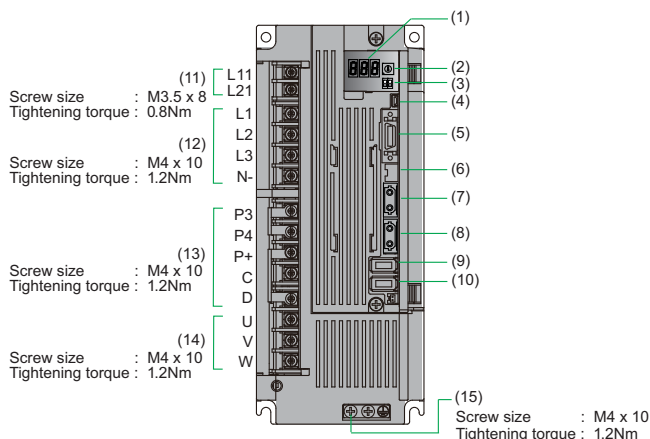
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P, C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12	2	14	3.5	12	2	14	-	-
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12	2	14	3.5	12	2	14	-	-
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	1.25	16	3.5	12	2	14	-	-

Spindle drive unit
MDS-DJ-SP-120

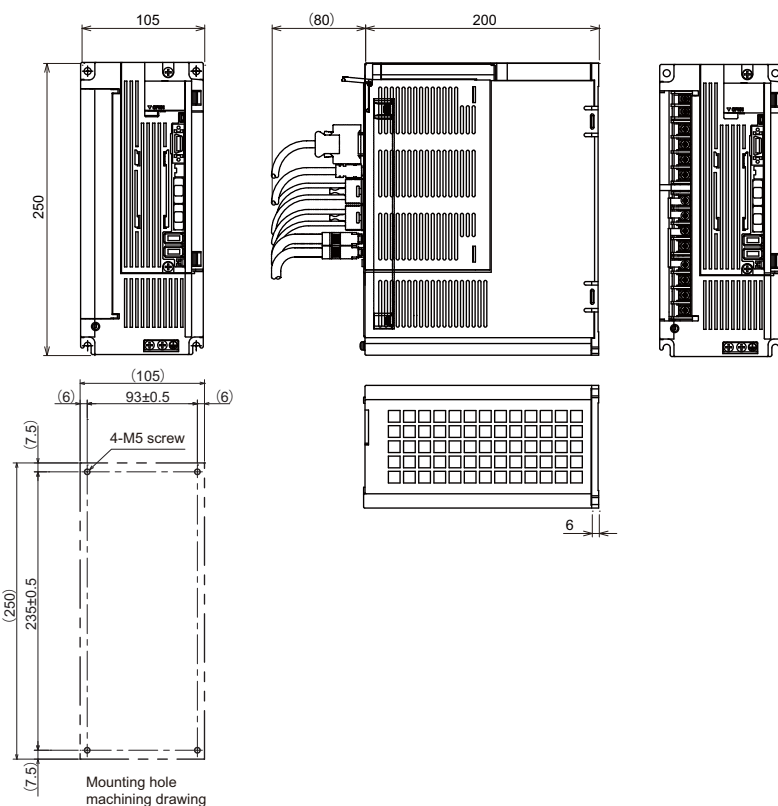


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	TE2	L11,L12: Control power input terminal (single-phase AC input)
(12)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC input) N-: Test terminal for the manufacturer (Do not connect.)
(13)	TE3	P3,P4: Not used (Short between P3 and P4.) P+,C,D: Regenerative resistor connection terminal
(14)	TE4	U,V,W: Motor power output terminal (3-phase AC output)
(15)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	120
Rated output[kW]	7.5
Power facility capacity[kVA]	12.0
Output	Rated voltage[V] 155AC Rated current[A] 26
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 26
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 30 Max. Rush conductivity time[ms] 6
Maximum earth leakage current[mA]	15
Braking	Regenerative braking
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 200
Cooling method	Forced air cooling
Mass[kg]	4.6
Selection example of contactor (option part)	S-T35-AC200V
Free-air thermal current[A]	50
Selection current (for 200V input)[A]	31
Rated output[kW]	7.5
Selection example of circuit protector (option part)	NF100-SW3P-60A
Rated current[A]	60
Selection current (for 200V input)[A]	31
Rated output[kW]	7.5
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



Environmental conditions

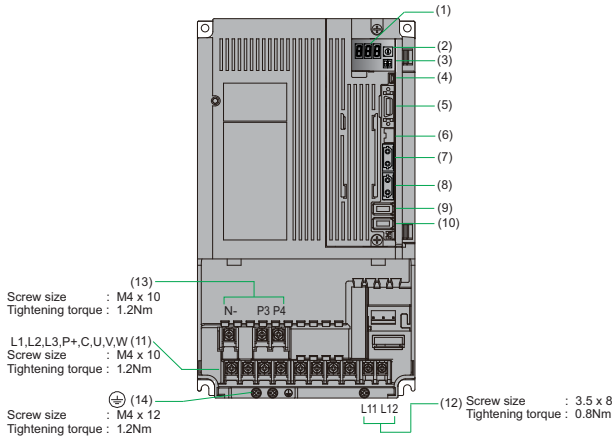
Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P,C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10	2	14	5.5	10	3.5	12	-	-
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10	2	14	5.5	10	3.5	12	-	-
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5	12	1.25	16	5.5	10	3.5	12	-	-

Spindle drive unit

MDS-DJ-SP-160

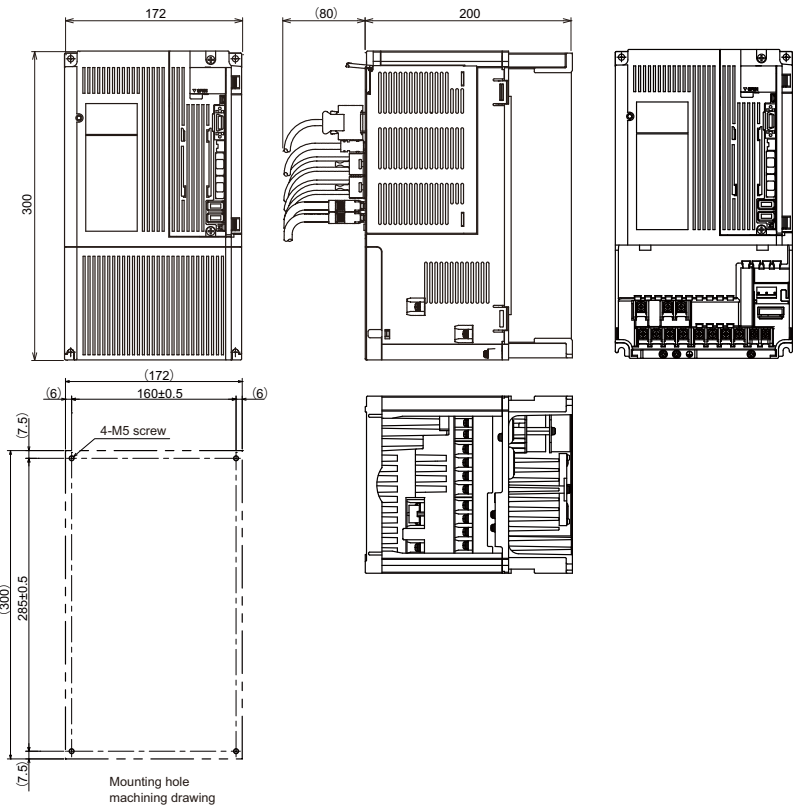


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2	Motor side encoder connection connector 5V power supply capacity: 0.35A
(10)	CN3	Machine side encoder connection connector 5V power supply capacity: 0.35A
(11)	TE1	L1,L2,L3: Power supply input terminal (3-phase AC input) P,C: Regenerative resistor connection terminal U,V,W: Motor power output terminal (3-phase AC output)
(12)	TE2	L11,L12: Control power input terminal (single-phase AC input)
(13)	TE3	N-: Test terminal for the manufacturer (Do not connect.) P3,P4: Not used (Short between P3 and P4.)
(14)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current (peak)[A]	160
Rated output[kW]	11.0
Power facility capacity[kVA]	17.0
Output	Rated voltage[V] 155AC Rated current[A] 36
Input	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Rated voltage(50Hz) [V] 200AC Rated voltage(60Hz) [V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Rated current[A] 35.4
Control power	Frequency[Hz] 50 / 60 Tolerable frequency fluctuation[%] ±5% max Voltage(50Hz)[V] 200AC Voltage(60Hz)[V] 200 to 230AC Tolerable voltage fluctuation[%] +10%, -15% Max. Current[A] 0.2 Max. Rush current[A] 34 Max. Rush conductivity time[ms] 7
Maximum earth leakage current[mA]	15
Braking	Regenerative braking
Main circuit method	Converter with resistor regeneration circuit
Heating value	Inside panel[W] 300
Cooling method	Forced air cooling
Mass[kg]	6.2
Selection example of contactor (option part)	S-T35-AC200V
	Free-air thermal current[A] 60
	Selection current (for 200V input)[A] 45
	Rated output[kW] 11
Selection example of circuit protector (option part)	NF100-SW3P-100A
	Rated current[A] 100
	Selection current (for 200V input)[A] 45
	Rated output[kW] 11
Regenerative option	Refer to "Regenerative option".

Outline dimension drawings [Unit : mm]



Environmental conditions

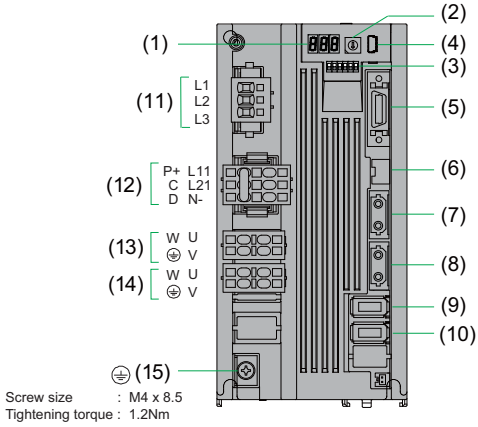
Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P, C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	14	6	2	14	14	6	3.5	12	-	-
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	8	8	2	14	8	8	3.5	12	-	-
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	5.5	10	1.25	16	5.5	10	3.5	12	-	-

Spindle drive unit

MDS-DJ-SP2-2020

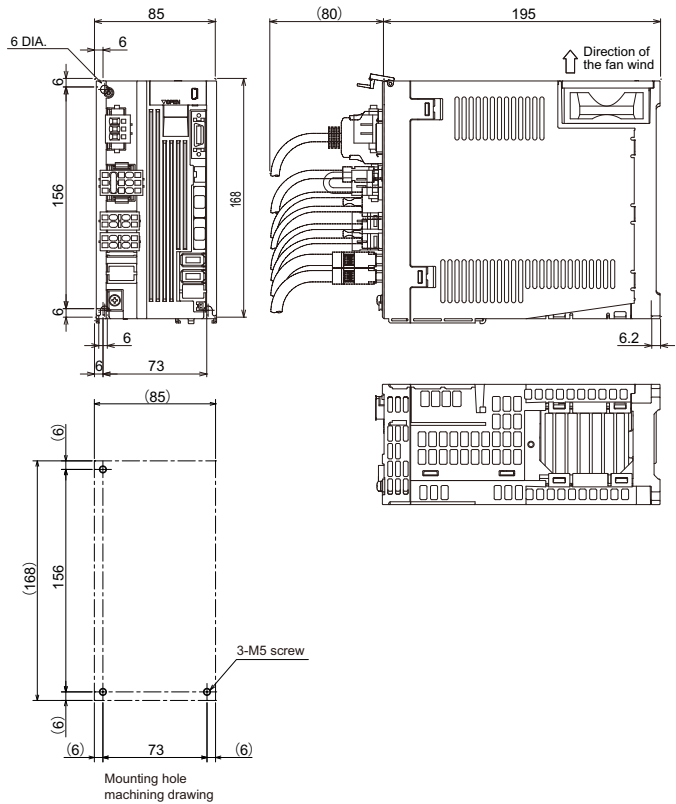


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Axis No. setting switch (L,M-axis)
(3)	SW2	For machine tool builder adjustment: Always OFF (facing bottom) (L,M-axis)
(4)	CN5	USB maintenance connector usually not used
(5)	CN9	Connector for DIO/analog output
(6)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(7)	CN1A	NC or master axis optical communication connector
(8)	CN1B	Slave axis optical communication connector
(9)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(10)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(11)	CNP1	L1, L2, L3: Power supply input terminal (3-phase AC input)
(12)	CNP2	P+, C, D: Regenerative resistor connection terminal L11, L12: Control power input terminal (single-phase AC input) N-: Test terminal for the manufacturer (Do not connect.)
(13)	CNP3L	Motor power output terminal (3-phase AC output) (L-axis)
(14)	CNP3M	Motor power output terminal (3-phase AC output) (M-axis)
(15)	PE	Grounding terminal

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	20	20
Rated output[kW]	0.75	0.75
Power facility capacity[kVA]	4.0	
Output	Rated voltage[V]	155AC
	Rated current[A]	4.5x2
Input	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±5% max
	Rated voltage(50Hz) [V]	200AC
	Rated voltage(60Hz) [V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Rated current[A]	5.2
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±5% max
	Voltage(50Hz)[V]	200AC
	Voltage(60Hz)[V]	200 to 230AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. Current[A]	0.4
Max. Rush current[A]	30	
Max. Rush conductivity time[ms]	6	
Maximum earth leakage current[mA]	15	15
Braking	Regenerative braking	
Main circuit method	Converter with resistor regeneration circuit	
Heating value	Inside panel[W]	60
	Mass[kg]	1.8
Cooling method	Forced air cooling	
Selection example of contactor (option part)	S-T12-AC200V	
Selection example of circuit protector (option part)	Free-air thermal current[A]	20
	Selection current (for 200V input)[A]	9
	Rated output[kW]	0.75
Regenerative option	Rated current[A]	20
	Selection current (for 200V input)[A]	9
	Rated output[kW]	0.75
Regenerative option	Refer to "Regenerative option".	

Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

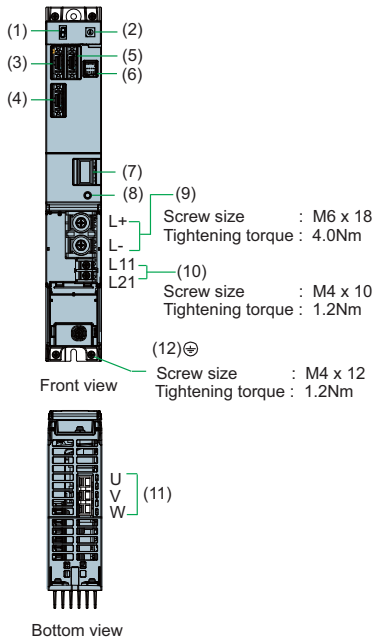
Types	Terminal name									
	CNP1 (L1, L2, L3, earth)		CNP2 (L11, L21)		CNP3 (U, V, W, earth)		CNP2 (P, C)		Magnetic brake	
	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	-	-
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14	2	14	-	-
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	2	14	2	14	2	14	-	-

Power Supply Unit

Power supply unit
MDS-D2-CV-37

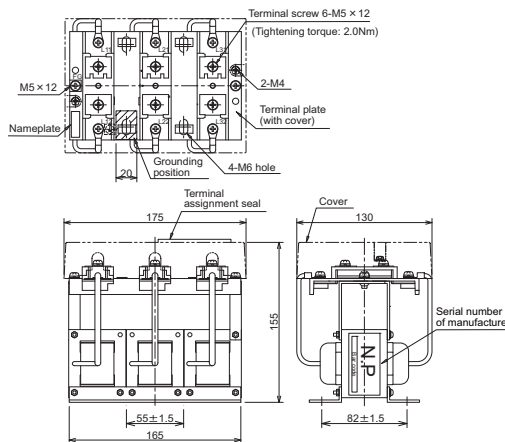
Specifications

Item	Specifications
30-minute rated output[kW]	3.7
Continuous rated output[kW]	2.2
Power facility capacity[kVA]	5.3
Output	
Rated voltage[V]	270 to 311DC
Rated current[A]	17
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz) [V]	200AC
Rated voltage(60Hz) [V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	15
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz) [V]	200AC
Voltage(60Hz) [V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	38
Max. rush conductivity time[ms]	3
Heating value	
Inside panel[W]	20
Outside panel[W]	34
Cooling method	Natural-cooling
Mass[kg]	4.0
AC reactor	D-AL-7.5K
Selection example of contactor (option part)	S-T12-AC200V
Free-air thermal current[A]	20
Selection current (for 200V input) [A]	15
Rated output[kW]	3.7
Selection example of circuit protector (option part)	NF63-CW3P-20A
Rated current[A]	20
Selection current (for 200V input) [A]	15
Rated output[kW]	3.7

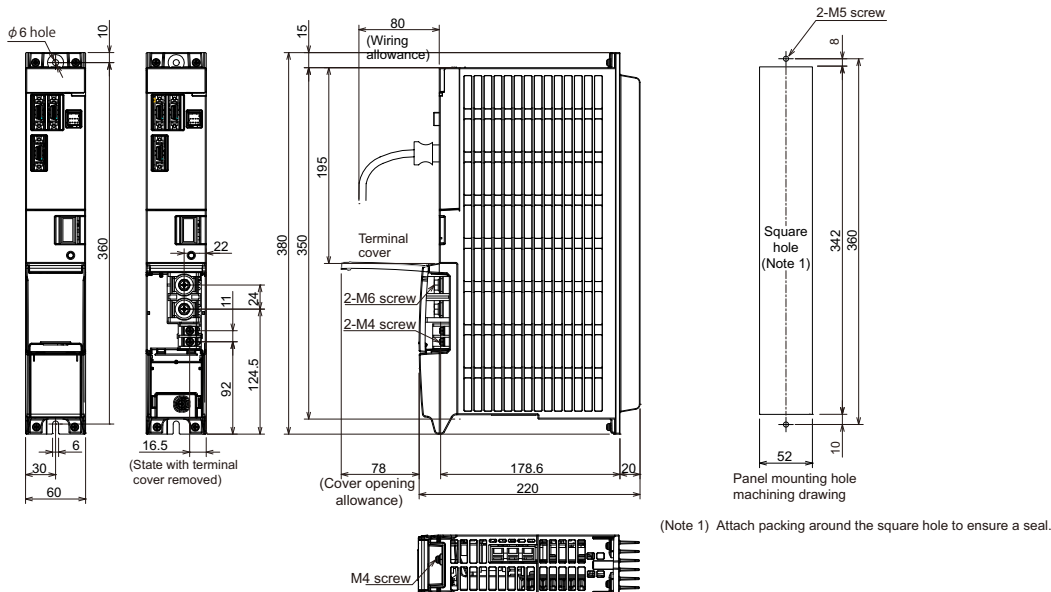


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

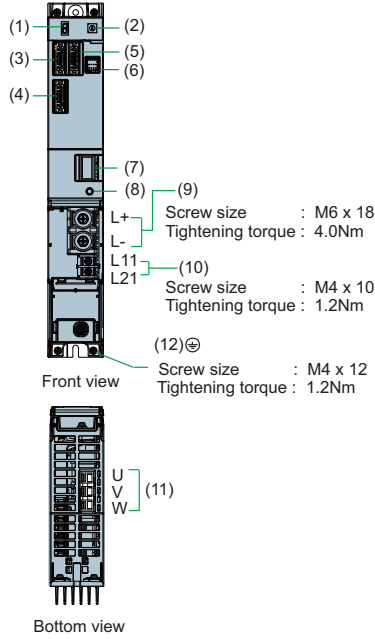
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	3.5	12	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	3.5	12	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	2	14	1.25 to 2	16 to 14

Power supply unit
MDS-D2-CV-75

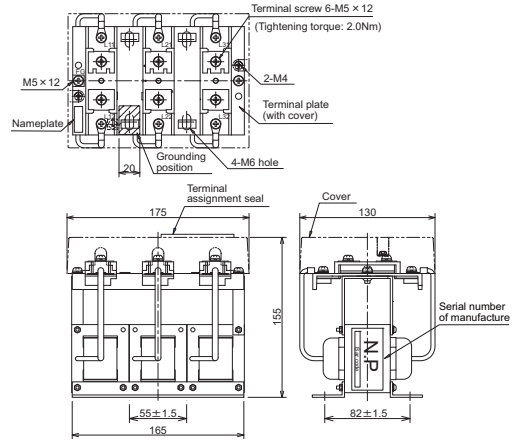
Specifications

Item	Specifications
30-minute rated output[kW]	7.5
Continuous rated output[kW]	5.5
Power facility capacity[kVA]	11.0
Output	
Rated voltage[V]	270 to 311DC
Rated current[A]	30
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz) [V]	200AC
Rated voltage(60Hz) [V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	26
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz) [V]	200AC
Voltage(60Hz) [V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	38
Max. rush conductivity time[ms]	3
Heating value	
Inside panel[W]	24
Outside panel[W]	55
Cooling method	Natural-cooling
Mass[kg]	4.0
AC reactor	D-AL-7.5K
Selection example of contactor (option part)	S-T35-AC200V
Free-air thermal current[A]	50
Selection current (for 200V input) [A]	31
Rated output[kW]	7.5
Selection example of circuit protector (option part)	NF63-CW3P-40A
Rated current[A]	40
Selection current (for 200V input) [A]	31
Rated output[kW]	7.5

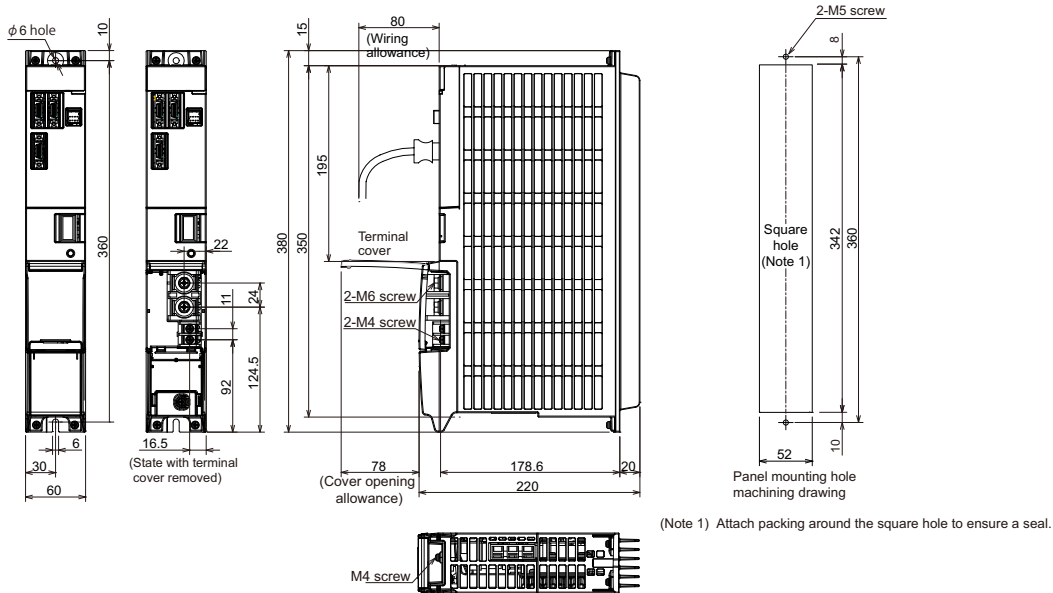


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

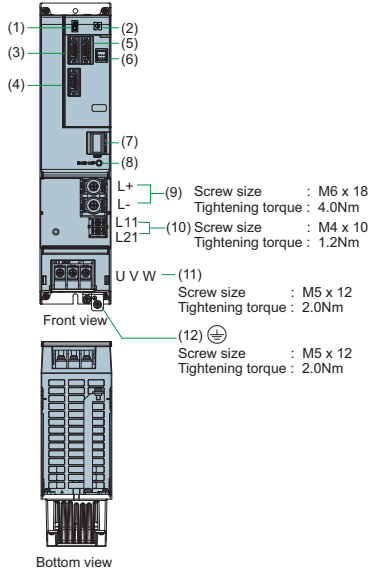
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10	8	8	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10	5.5	10	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5	12	3.5	12	1.25 to 2	16 to 14

Power supply unit
MDS-D2-CV-110

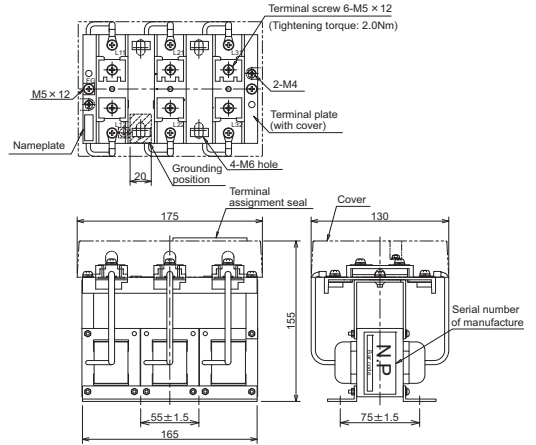
Specifications

Item	Specifications
30-minute rated output[kW]	11.0
Continuous rated output[kW]	7.5
Power facility capacity[kVA]	16.0
Output	
Rated voltage[V]	270 to 311DC
Rated current[A]	41
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz)[V]	200AC
Rated voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	35
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Heating value	
Inside panel[W]	25
Outside panel[W]	99
Cooling method	Forced air cooling
Mass[kg]	6.0
AC reactor	D-AL-11K
Selection example of contactor (option part)	S-T35-AC200V
Free-air thermal current[A]	50
Selection current (for 200V input)[A]	45
Rated output[kW]	11
Selection example of circuit protector (option part)	NF63-CW3P-50A
Rated current[A]	50
Selection current (for 200V input)[A]	45
Rated output[kW]	11

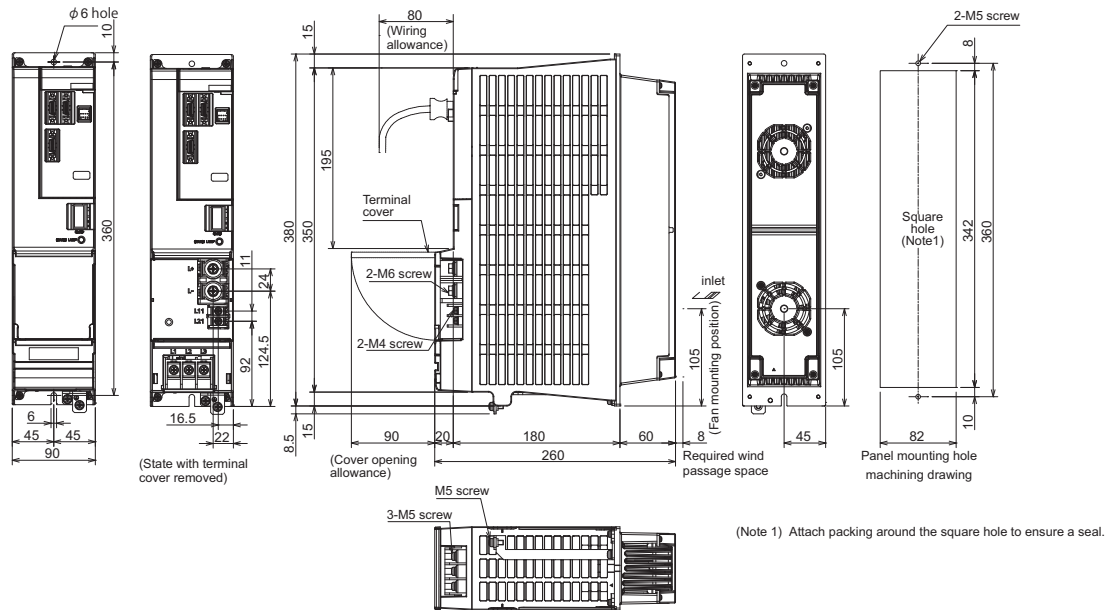


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

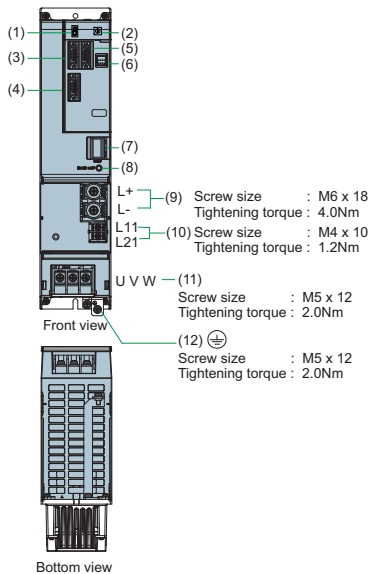
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	14	6	22	4	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	8	8	8	8	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	5.5	10	14	6	1.25 to 2	16 to 14

Power supply unit
MDS-D2-CV-185

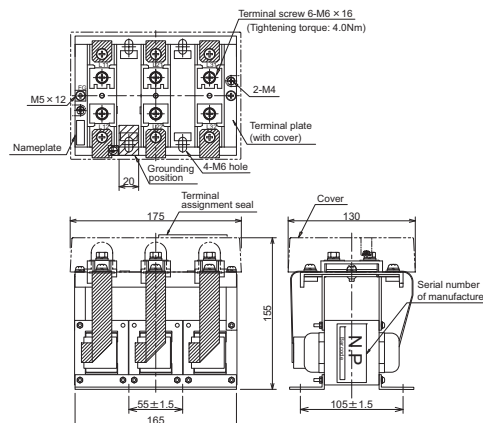
Specifications

Item	Specifications
30-minute rated output[kW]	18.5
Continuous rated output[kW]	15.0
Power facility capacity[kVA]	27.0
Output	Rated voltage[V] 270 to 311DC
	Rated current[A] 76
Input	Frequency[Hz] 50 / 60
	Tolerable frequency fluctuation[%] ±3% max
	Rated voltage(50Hz)[V] 200AC
	Rated voltage(60Hz)[V] 200 to 230AC
	Tolerable voltage fluctuation[%] +10%, -15%
	Rated current[A] 65
Control power	Frequency[Hz] 50 / 60
	Tolerable frequency fluctuation[%] ±3% max
	Voltage(50Hz)[V] 200AC
	Voltage(60Hz)[V] 200 to 230AC
	Tolerable voltage fluctuation[%] +10%, -15%
	Max. current[A] 0.2
	Max. rush current[A] 30
	Max. rush conductivity time[ms] 6
Heating value	Inside panel[W] 32
	Outside panel[W] 161
Cooling method	Forced air cooling
Mass[kg]	6.0
AC reactor	D-AL-18.5K
Selection example of contactor (option part)	S-T65-AC200V
	Free-air thermal current[A] 100
	Selection current (for 200V input)[A] 76
	Rated output[kW] 18.5
Selection example of circuit protector (option part)	NF125-CW3P-100A
	Rated current[A] 100
	Selection current (for 200V input)[A] 76
	Rated output[kW] 18.5

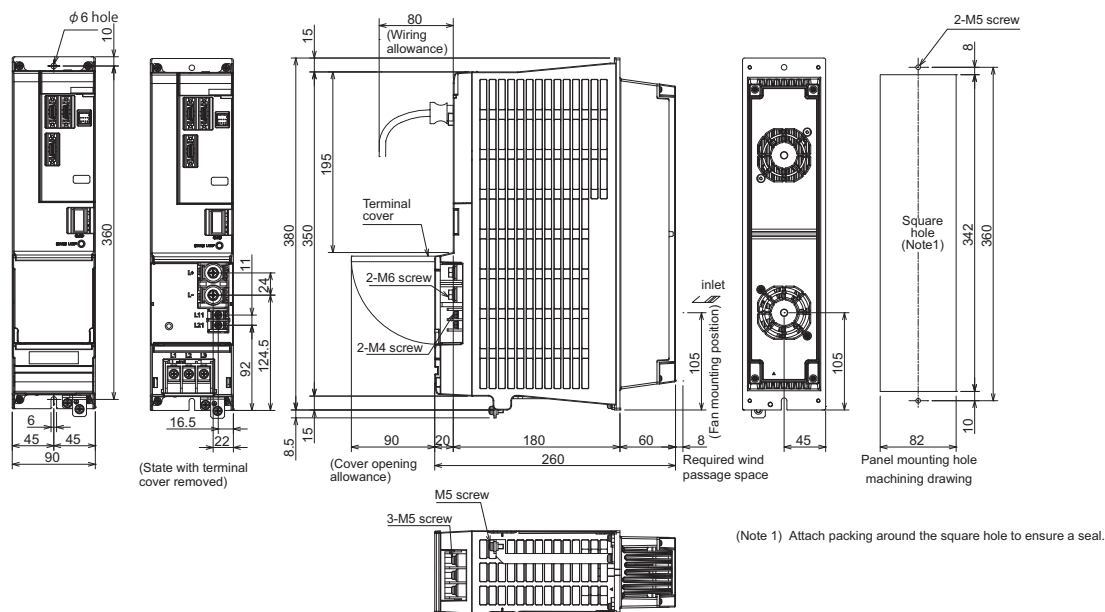


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

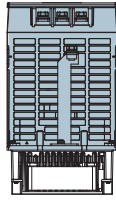
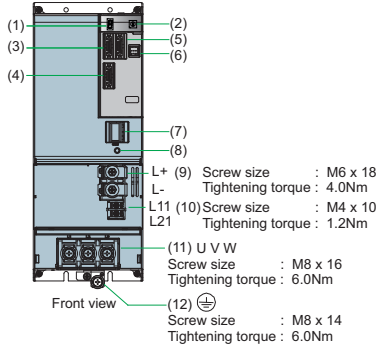
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	30	3	38	2	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	14	6	22	4	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	22	4	1.25 to 2	16 to 14

Power supply unit
MDS-D2-CV-300

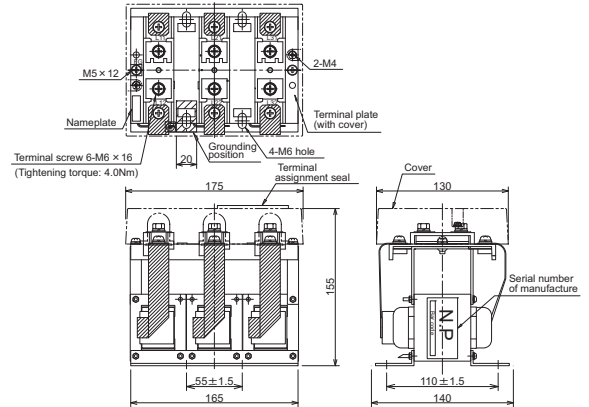
Specifications

Item	Specifications
30-minute rated output[kW]	30.0
Continuous rated output[kW]	26.0
Power facility capacity[kVA]	43.0
Output	
Rated voltage[V]	270 to 311DC
Rated current[A]	144
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz)[V]	200AC
Rated voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	107
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Heating value	
Inside panel[W]	45
Outside panel[W]	272
Cooling method	Forced air cooling
Mass[kg]	10.0
AC reactor	D-AL-30K
Selection example of contactor (option part)	S-T80-AC200V
Free-air thermal current[A]	135
Selection current (for 200V input)[A]	124
Rated output[kW]	30
Selection example of circuit protector (option part)	NF250-CW3P-125A
Rated current[A]	125
Selection current (for 200V input)[A]	124
Rated output[kW]	30

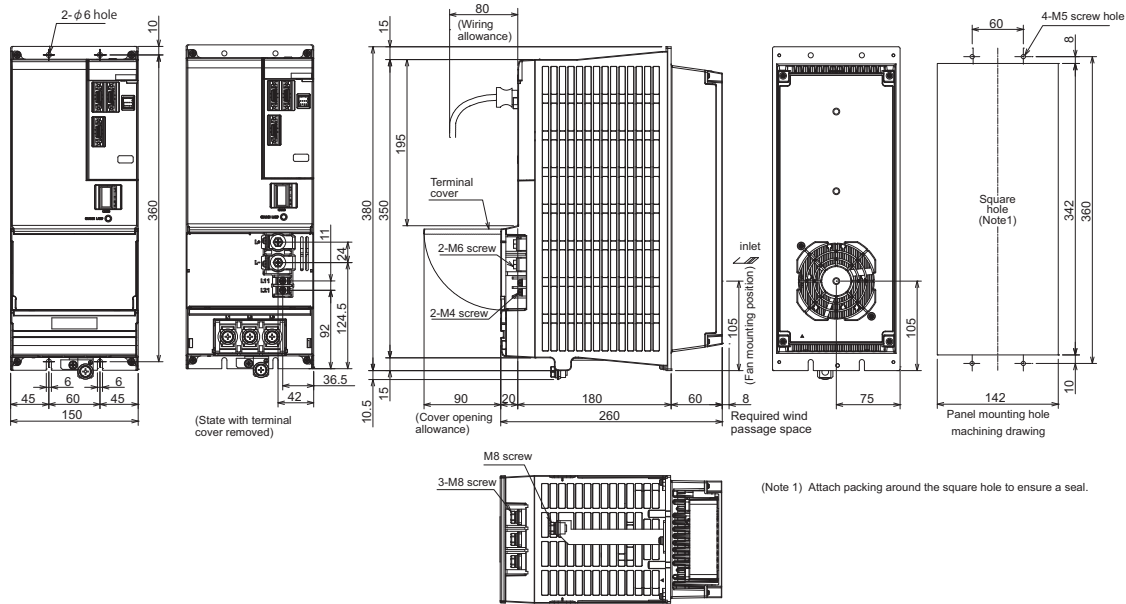


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

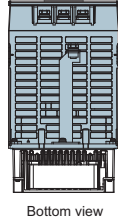
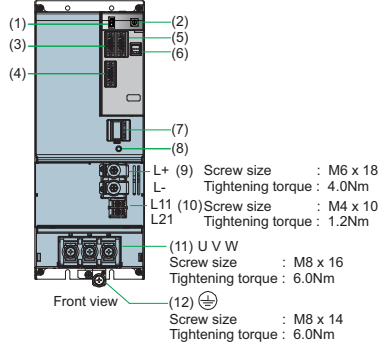
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	-	-	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	38	2	Bar enclosed		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	38	2	50	1	1.25 to 2	16 to 14

Power supply unit MDS-D2-CV-370

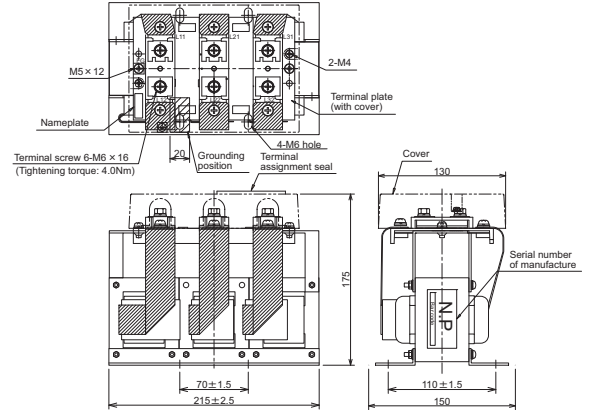
Specifications

Item	Specifications
30-minute rated output[kW]	37.0
Continuous rated output[kW]	30.0
Power facility capacity[kVA]	53.0
Output	
Rated voltage[V]	270 to 311DC
Rated current[A]	164
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz)[V]	200AC
Rated voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	121
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Heating value	
Inside panel[W]	53
Outside panel[W]	343
Cooling method	Forced air cooling
Mass[kg]	10.0
AC reactor	D-AL-37K
Selection example of contactor (option part)	S-N150-AC200V
Free-air thermal current[A]	200
Selection current (for 200V input)[A]	153
Rated output[kW]	37
Selection example of circuit protector (option part)	NF250-CW3P-175A
Rated current[A]	175
Selection current (for 200V input)[A]	153
Rated output[kW]	37

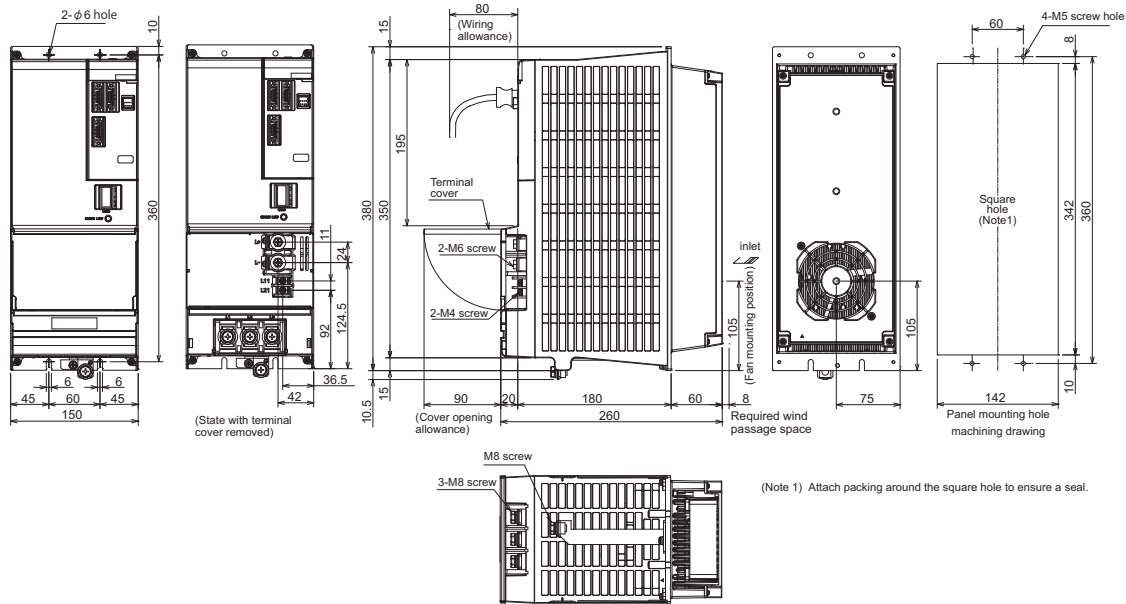


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

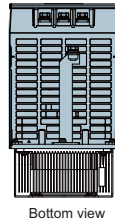
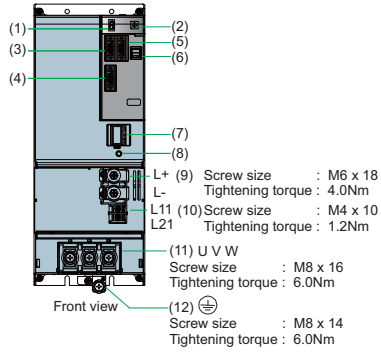
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	-	-	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	60	1/0	Bar enclosed		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	38	2	60	1/0	1.25 to 2	16 to 14

Power supply unit
MDS-D2-CV-450

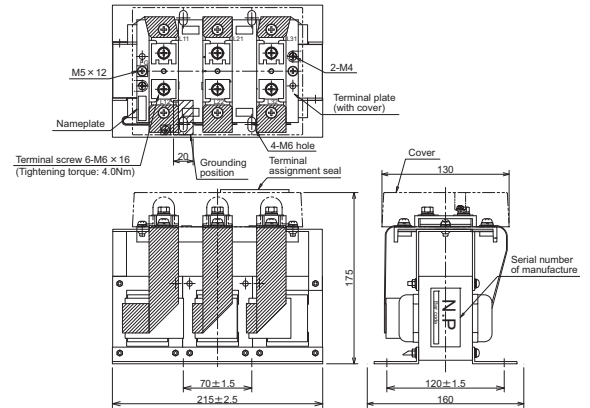
Specifications

Item	Specifications
30-minute rated output[kW]	45.0
Continuous rated output[kW]	37.0
Power facility capacity[kVA]	64.0
Output	
Rated voltage[V]	270 to 311DC
Rated current[A]	198
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz)[V]	200AC
Rated voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	148
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	200AC
Voltage(60Hz)[V]	200 to 230AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.2
Max. rush current[A]	30
Max. rush conductivity time[ms]	6
Heating value	
Inside panel[W]	104
Outside panel[W]	392
Cooling method	Forced air cooling
Mass[kg]	10.0
AC reactor	D-AL-45K
Selection example of contactor (option part)	S-N150-AC200V
Free-air thermal current[A]	200
Selection current (for 200V input)[A]	186
Rated output[kW]	45
Selection example of circuit protector (option part)	NF250-CW3P-200A
Rated current[A]	200
Selection current (for 200V input)[A]	186
Rated output[kW]	45

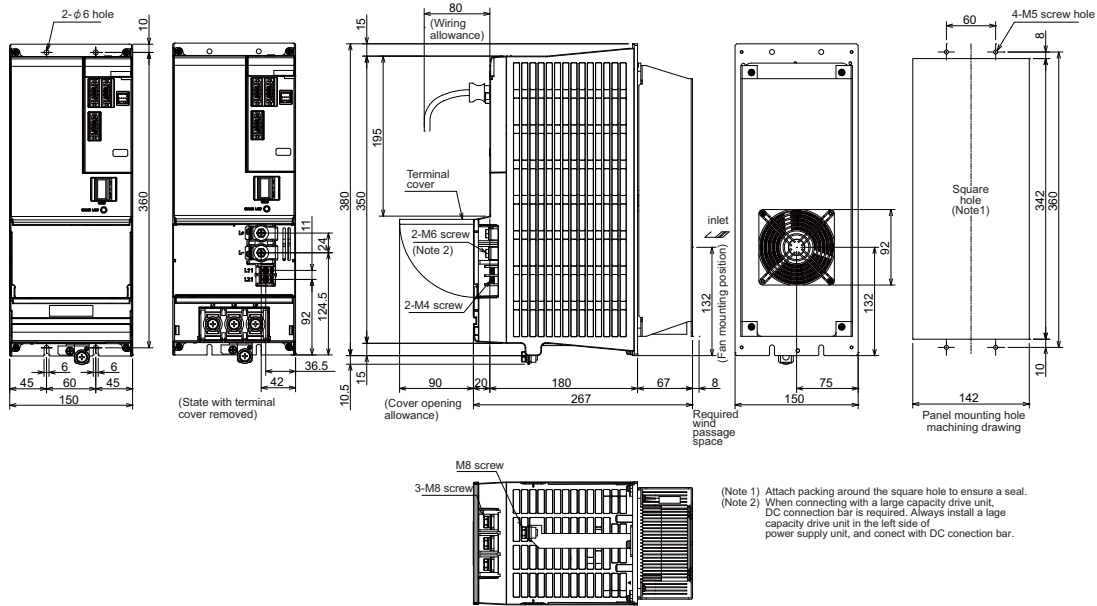


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

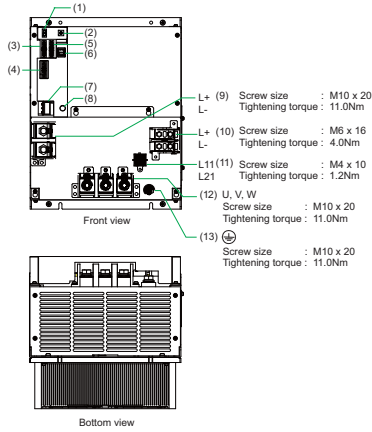
Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	-	-	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	60	1/0	Bar enclosed		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	60	1/0	60	1/0	1.25 to 2	16 to 14

Power supply unit

MDS-D2-CV-550

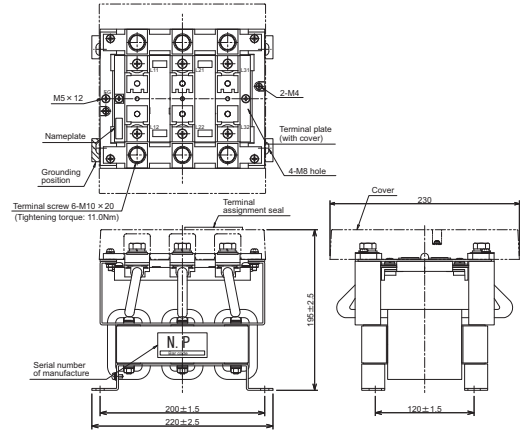
Specifications

Item	Specifications
30-minute rated output[kW]	55.0
Continuous rated output[kW]	45.0
Power facility capacity[kVA]	78.0
Output	Rated voltage[V] 270 to 311DC
	Rated current[A] 238
Input	Frequency[Hz] 50 / 60
	Tolerable frequency fluctuation[%] ±3% max
	Rated voltage(50Hz)[V] 200AC
	Rated voltage(60Hz)[V] 200 to 230AC
	Tolerable voltage fluctuation[%] +10%, -15%
	Rated current[A] 200
Control power	Frequency[Hz] 50 / 60
	Tolerable frequency fluctuation[%] ±3% max
	Voltage(50Hz)[V] 200AC
	Voltage(60Hz)[V] 200 to 230AC
	Tolerable voltage fluctuation[%] +10%, -15%
	Max. current[A] 0.2
	Max. rush current[A] 30
	Max. rush conductivity time[ms] 6
Heating value	Inside panel[W] 164
	Outside panel[W] 431
Cooling method	Forced air cooling
Mass[kg]	25.5
AC reactor	D-AL-55K
Selection example of contactor (option part)	S-N180-AC200V
	Free-air thermal current[A] 260
	Selection current (for 200V input)[A] 224
	Rated output[kW] 55
Selection example of circuit protector (option part)	NF250-CW3P-225A
	Rated current[A] 225
	Selection current (for 200V input)[A] 224
	Rated output[kW] 55

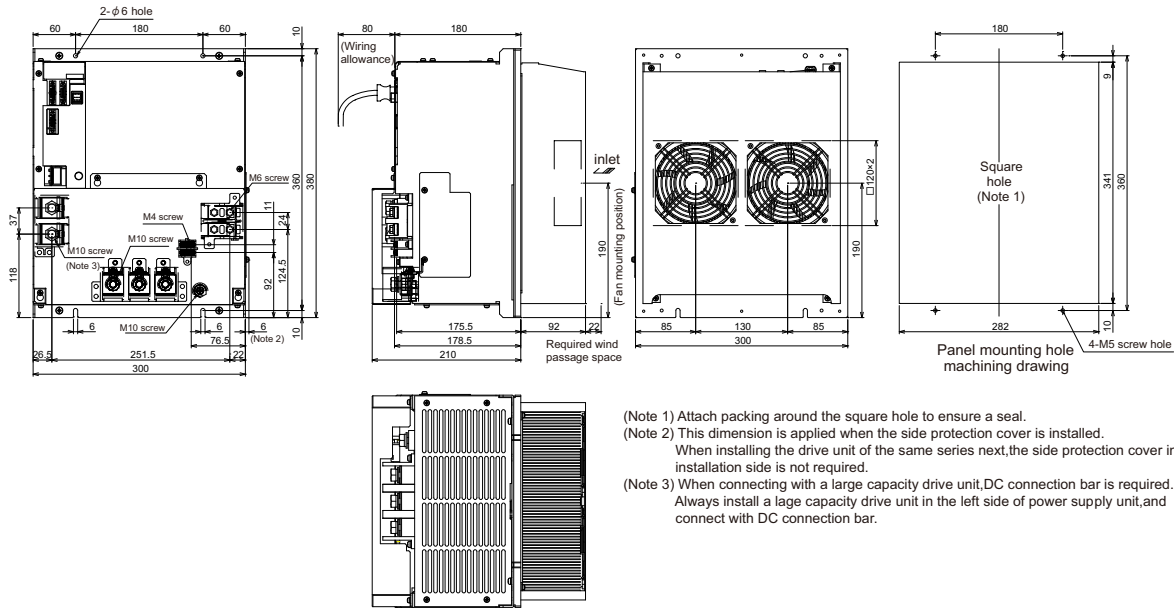


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE2	Converter voltage output terminal (DC output)
(11)	TE3	Control power input terminal (single-phase AC input)
(12)	TE1	Power input terminal (3-phase AC input)
(13)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	Bar enclosed		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	80	3/0			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	60	1/0			1.25 to 2	16 to 14

Dynamic Brake Unit (MDS-D-DBU)

The MDS-D2-V1-320W units do not have dynamic brakes built in, so install an external dynamic brake unit.

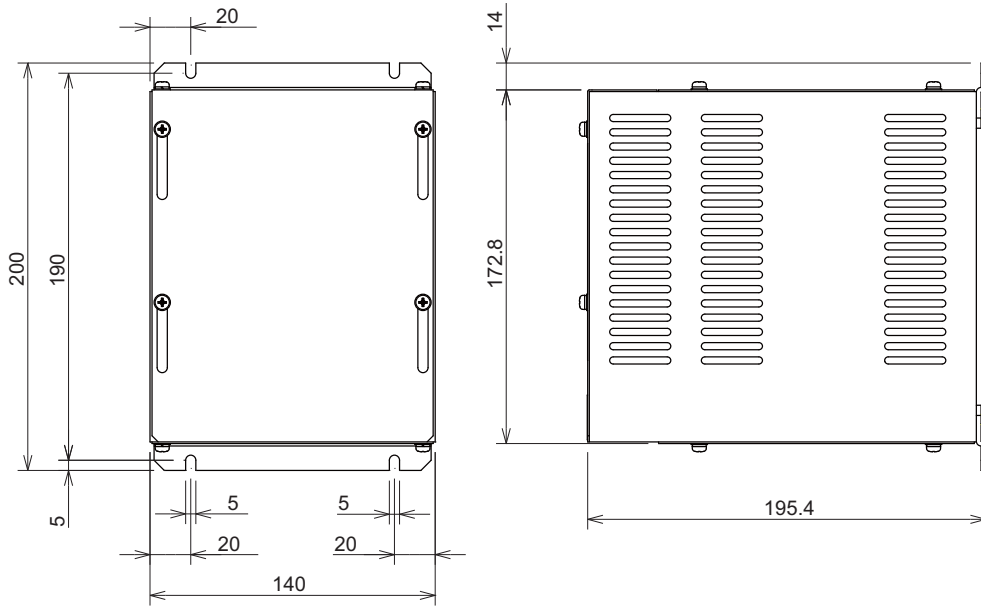
(1) Specifications

Type	Coil specifications	Wire size	Compatible drive unit	Mass (kg)
MDS-D-DBU	24VDC 160mA	5.5mm ² or more (For IV wire)	MDS-D2-V1-320W	3kg

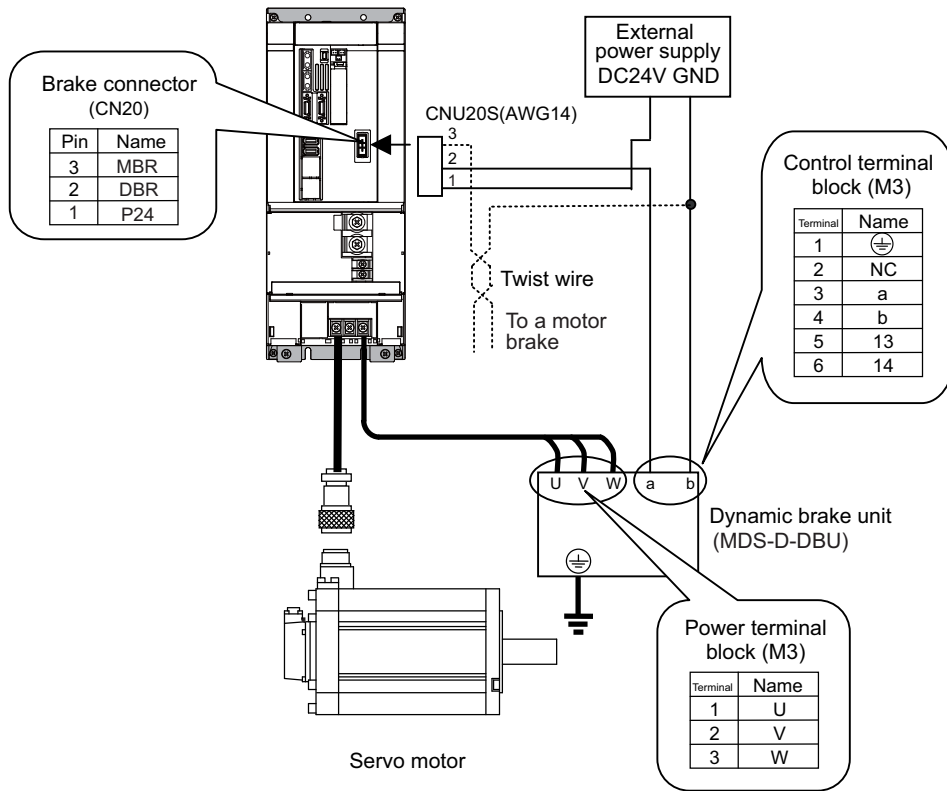
(2) Outline dimension drawings

MDS-D-DBU

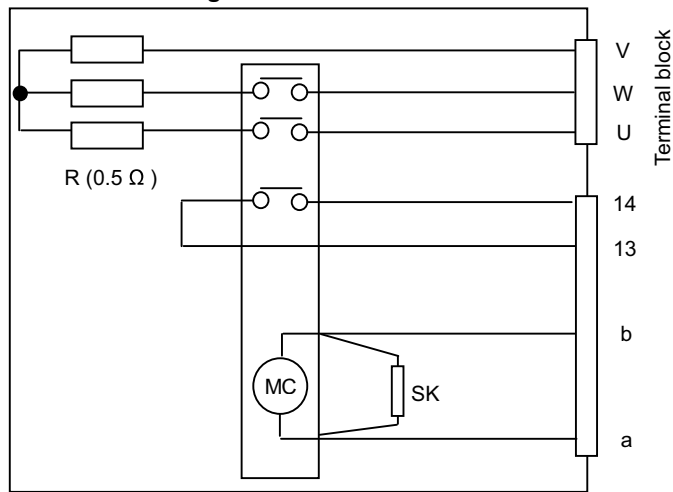
[Unit: mm]



(3) Connecting with the servo drive unit



Internal circuit diagram



CAUTION

Correctly wire the dynamic brake unit to the servo drive unit.

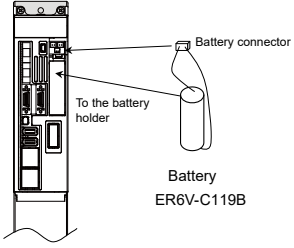
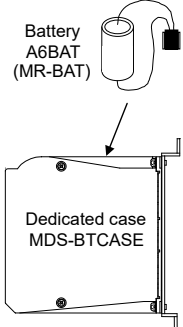
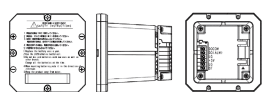
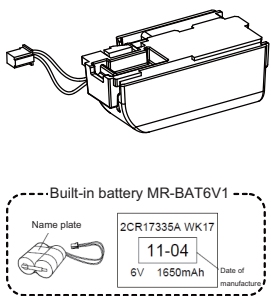
Do not use for applications other than emergencies (normal braking, etc.). The internal resistor could heat up, and lead to fires or faults.

POINT

When you use a motor with a brake, please wire (between 1pin and 3pin) for the CN20 connector.

Battery (ER6V-C119B, A6BAT, MDS-BTBOX-36, MR-BAT6V1SET)

This battery option may be required to establish absolute position system.

Type	ER6V-C119B	A6BAT(MR-BAT)	MDS-BTBOX-36	MR-BAT6V1SET
Installation type	Drive unit installation	Dedicated case type	Control panel installation	Drive unit installation
Hazard class	Not applicable	Not applicable (24 or less)	Not applicable	Not applicable
Number of connectable axes	Up to 3 axes	Up to 8 axes (When using dedicated case)	Up to 8 axes	1 axis
Change method	Battery option change	Battery option change	Battery change	Battery option change
Appearance	(1) 	(2) 	(3) 	(4) 

CAUTION

1. When transporting lithium batteries with means such as by air transport, measures corresponding to the United Nations Dangerous Goods Regulations must be taken.
2. The lithium battery must be transported according to the rules set forth by the International Civil Aviation Organization (ICAO), International Air Transportation Association (IATA), International Maritime Organization (IMO), and United States Department of Transportation (DOT), etc. The packaging methods, correct transportation methods, and special regulations are specified according to the quantity of lithium alloys. The battery unit exported from Mitsubishi is packaged in a container (UN approved part) satisfying the standards set forth in this UN Advisory.
3. To protect the absolute value, do not shut off the servo drive unit control power supply if the battery voltage becomes low (warning 9F).
4. The battery life (backup time) is greatly affected by the working ambient temperature. The above data is the theoretical value for when the battery is used 8 hours a day/240 days a year at an ambient temperature of 25°C. Generally, if the ambient temperature increases, the backup time and useful life will both decrease.

POINT

A6BAT is a battery with same specifications as MR-BAT.

(1) Cell battery (ER6V-C119B)

(a) Specifications

Battery option type		Cell battery
		ER6V-C119B
Battery model name		ER6V
Nominal voltage		3.6V
Nominal capacity		2000mAh
Battery safety	Hazard class	-
	Battery shape	Single battery
	Number of batteries used	ER6V x 1
	Lithium alloy content	0.7g
	Mercury content	1g or less
Number of connectable axes		Up to 3 axes (Note 1)
Battery continuous backup time		Up to 2 axes: Approx. 10.000 hours 3 axes connected: Approx. 6.600 hours
Battery useful life (From date of unit manufacture)		7 years
Data save time in battery replacement		Approx. 20 hours at time of delivery, approx. 10 hours after 5 years
Back up time from battery warning to alarm occurrence (Note 2)		Up to 2 axes: Approx. 100 hours 3 axes connected: Approx. 60 hours
Mass		20g

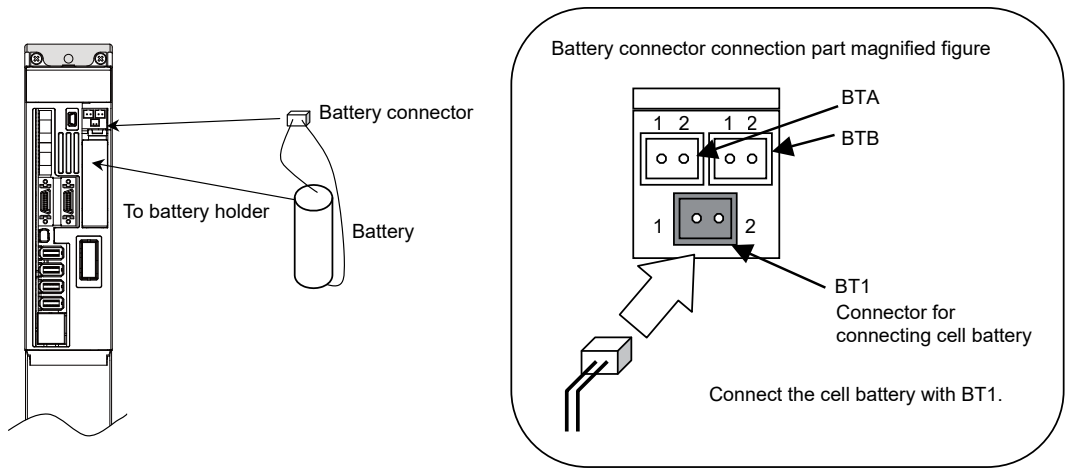
(Note 1) When using ball screw side encoder, both ball screw side encoder and motor side encoder need to be backed up by a battery, so the load becomes double.

(Note 2) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery warning occurs.

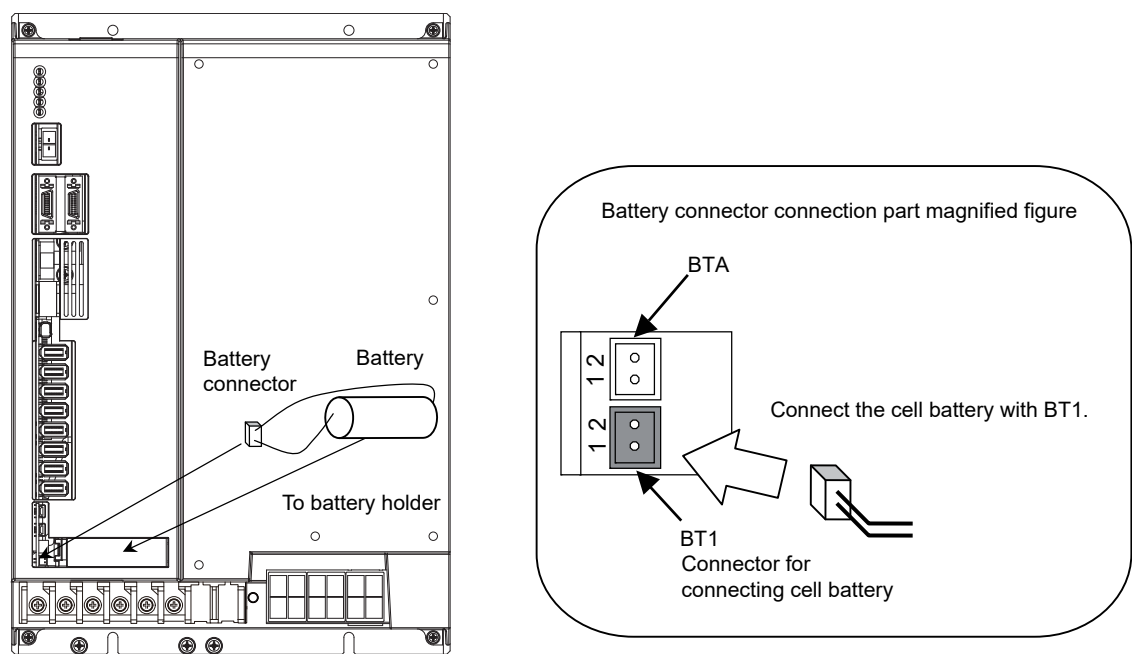
(Note 3) A battery load is generated in the axis for which the incremental control is set when a battery is connected.

- (b) Installing the cell battery
 Open the upper front cover of the servo drive unit. Connect the battery connector and then put the battery inside.

<MDS-D2 Series>



<MDS-DM2-SPV Series>



(Note) When using a cell battery, do not connect the battery unit and MDS-BTBOX-36.

 **POINT**

When using a cell battery built-in drive unit, the wiring between units is not required. The cell battery can be changed in each drive unit.

(2) Cell battery (A6BAT)

Always use the cell battery (A6BAT) in combination with the dedicated case (MDS-BTCASE).

(a) Specifications

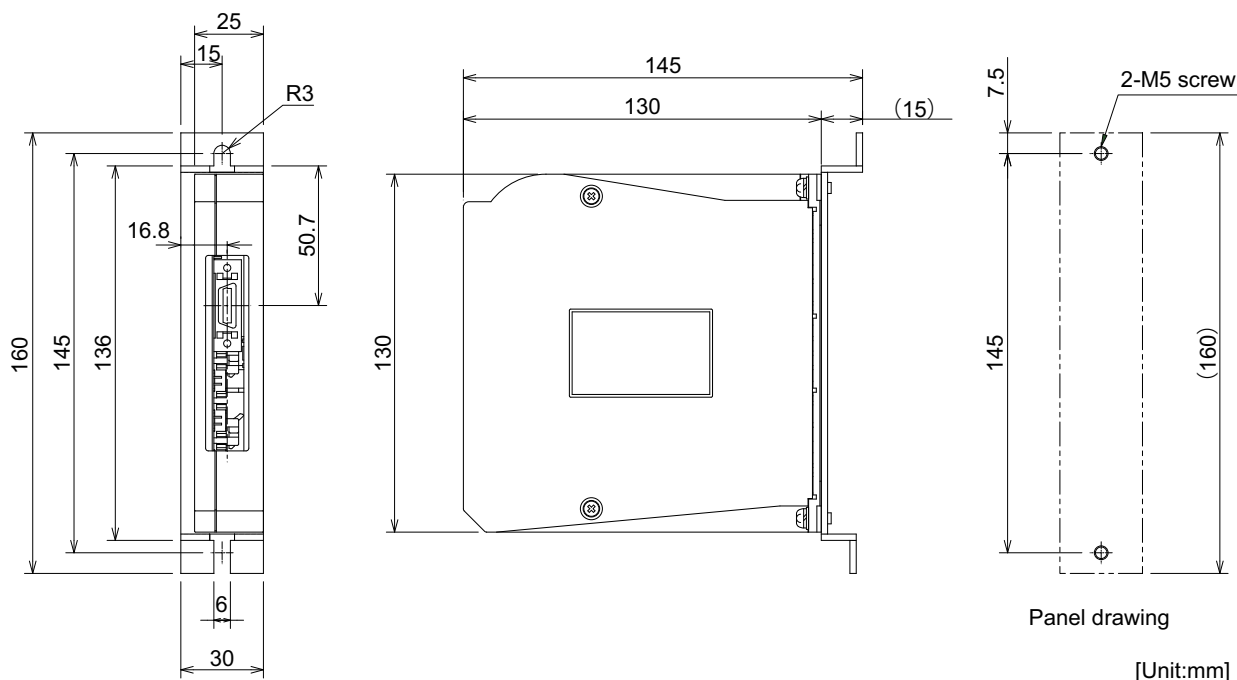
Battery option type		Cell battery
		A6BAT (MR-BAT)
Battery model name		ER17330V
Nominal voltage		3.6V
Nominal capacity		1700mAh
Battery safety	Hazard class	-
	Battery shape	Single battery
	Number of batteries used	A6BAT (MR-BAT) x 1
	Lithium alloy content	0.48g
	Mercury content	1g or less
Number of connectable axes		1 axis / (per 1 battery)
Battery continuous backup time		Approx. 10000 hours
Battery useful life (From date of unit manufacture)		5 years
Data save time in battery replacement		Approx. 20 hours at time of delivery, approx. 10 hours after 5 years
Back up time from battery warning to alarm occurrence (Note)		Approx. 80 hours
Mass		17g

(Note) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery warning occurs.

(b) Specifications of the dedicated case MDS-BTCASE

Type	MDS-BTCASE
Number of batteries installed	Up to 8 A6BATs (MR-BATs) (Install either 2, 4, 6 or 8 A6BATs (MR-BATs))
Number of connectable axes	Max. 8 axes (It varies depending on the number of batteries installed.) When A6BAT (MR-BAT) x 2, 1 to 2 axis/axes When A6BAT (MR-BAT) x 4, 3 to 4 axes When A6BAT (MR-BAT) x 6, 5 to 6 axes When A6BAT (MR-BAT) x 8, 7 to 8 axes

(c) Outline dimension drawing of the dedicated case MDS-BTCASE



(3) Battery box (MDS-BTBOX-36)

(a) Specifications

Battery option type	Battery box
	MDS-BTBOX-36
Battery model name (Note 1)	size-D alkaline batteries LR20 x 4 pieces
Nominal voltage	3.6V (Unit output), 1.5V (Isolated battery)
Number of connectable axes	Up to 8 axes
Battery continuous backup time (Note 3)	Approx. 10000 hours (when 8 axes are connected, cumulative time in non-energized state)
Back up time from battery warning to alarm occurrence (Note 3)	Approx. 336 hours (when 8 axes are connected)

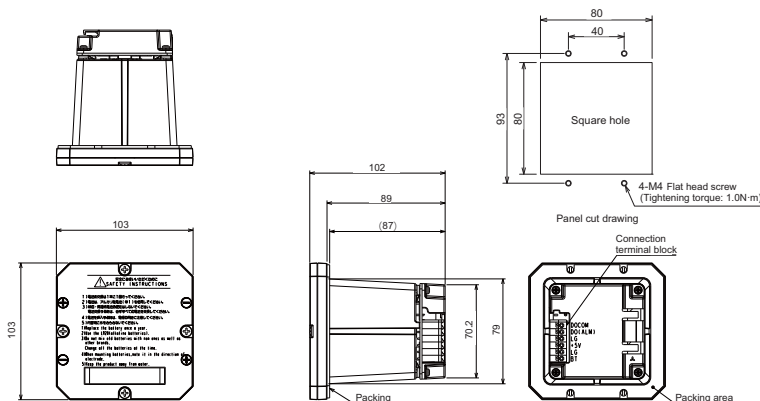
- (Note 1) Install commercially-available alkaline dry batteries into MDS-BTBOX-36. The batteries should be procured by customers. Make sure to use new batteries that have not passed the expiration date. We recommend you to replace the batteries in the one-year cycle.
- (Note 2) When using ball screw side encoder, both ball screw side encoder and motor side encoder need to be backed up by a battery, so the load becomes double.
- (Note 3) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery warning (9F) occurs.
- (Note 4) A battery load is generated in the axis for which the incremental control is set when a battery is connected.

(b) Explanation of terminals

		Name	Description
(1)	Power supply output for absolute position encoder backup	BT	3.6V output for absolute position encoder backup
(2)		LG	Ground
(3)	Power supply input for battery voltage drop detection circuit	+5V	5V power supply input for battery voltage drop detection circuit
(4)		LG	Ground
(5)	Battery voltage drop warning signal output	DO(ALM)	Battery voltage drop warning output
(6)		DOCOM	DO output common

(c) Outline dimension drawings

[Unit: mm]

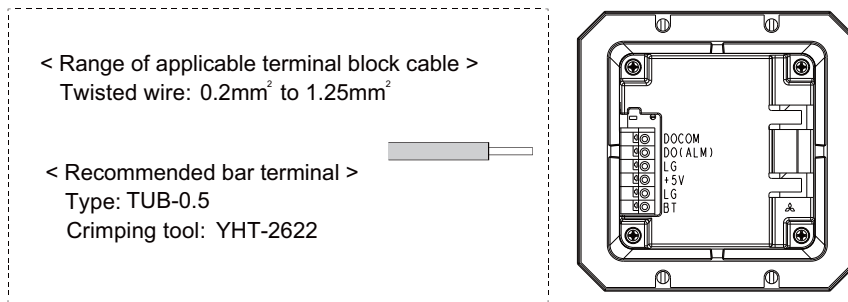


POINT
 As soon as the battery warning has occurred, replace the batteries with new ones. Make sure to use new batteries that have not passed the expiration date. We recommend you to replace the batteries in the one-year cycle.

CAUTION
 When installing the battery box on the panel, it may be damaged if the screw is tightened too much. Make sure the tightening torque of the screw.

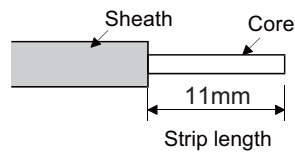
(d) Cable connection procedure

When connecting the terminal block, select a cable for the terminal block referring to the applicable size as a guide. Connect the cable by crimping the bare conductor or bar terminal. Do not pre-solder the wire.

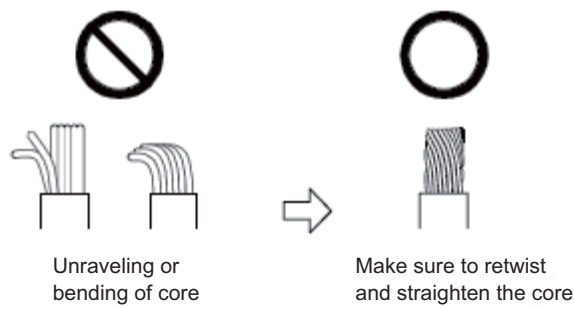


- Processing of power insulator

The strip length of the wire insulator should be 11mm.



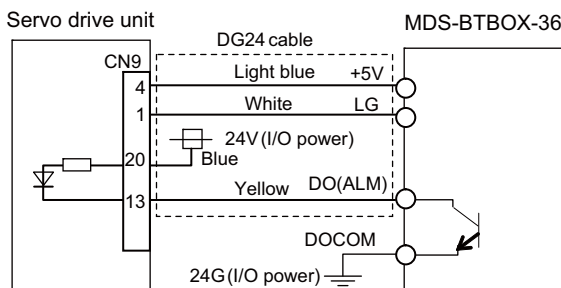
Retwist and straighten the core as shown below.



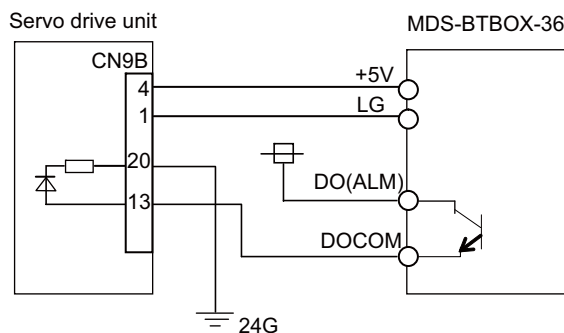
(e) Wiring of the battery voltage drop warning output

The battery voltage drop warning is detected in the MDS-BTBOX-36 and output to the servo drive unit as digital signal. Connect the battery voltage drop warning signal to one of the servo drive units supported by MDS-BTBOX-36. For the connected servo axis, set the servo parameter "SV082/bitF-C" to "2" to enable this signal input. When using 2 or 3-axis drive unit, set the value to one of the axes and set other axes in the same unit to "0" (No signal).

< MDS-D2 Series >



< MDS-DM2-SPV Series >



(f) When backing up for more than 8 axes

Add a MDS-BTBOX-36 so that the number of connectable axes for a battery unit is 8 axes or less. For all of servo drive units supported by one MDS-BTBOX-36, start the control powers ON simultaneously.

CAUTION

1. The battery voltage drop warning signal and SLS (Safely Limited Speed) function door state signal cannot be connected to the same drive unit. To use these function together as a system, connect to the different drive unit.
2. Battery voltage drop warning (9F) can also occur when the cable between the battery box and drive unit is broken.
3. For 2-axis or 3-axis drive unit, the parameter error "E4" or drivers communication error "82" occurs at all the axes when the setting of SV082(SSF5)/bitF-C differs according to axes (except 0 setting).
4. The drive unit which is connected to the battery box and cell battery cannot be used together.
5. Replace the batteries with new ones without turning the control power of the drive unit OFF immediately after the battery voltage drop alarm (9F) has been detected.
6. Replace the batteries while applying the control power of all drive units which are connected to the battery box.
7. When changing the wiring of the CN9 control input, change after SV082(SSF5)/bitF-C is set to 0. Otherwise unexpected alarms can be detected because of a mismatch of the control input signal and setting parameter.

(4) Cell battery (MR-BAT6V1SET)

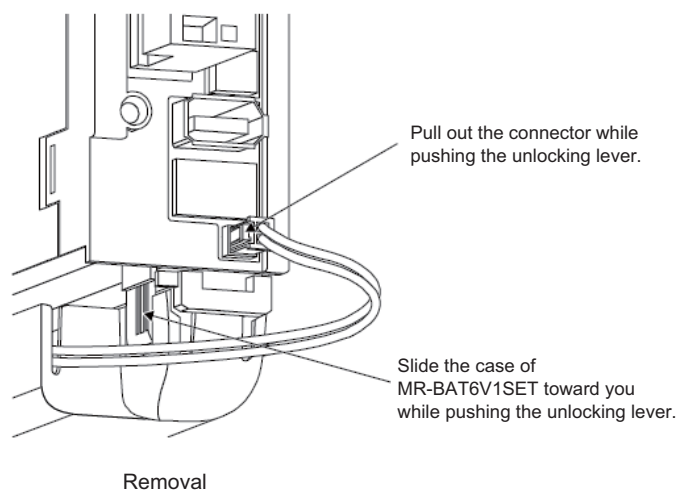
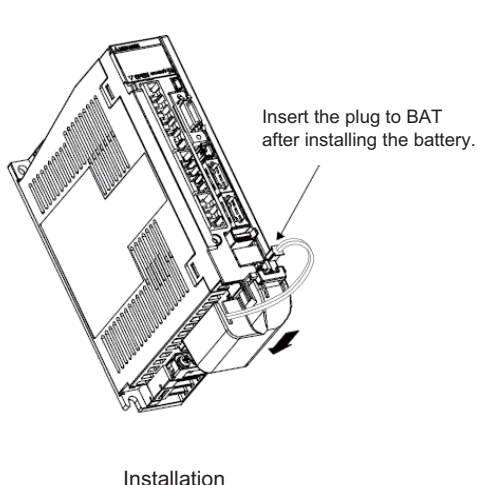
(a) Specifications

Battery option type		Cell battery MR-BAT6V1SET(Note1)
Battery model name		2CR17335A
Nominal voltage		6V
Nominal capacity		1650mAh
Battery safety	Hazard class	Class 9 Not applicable
	Battery shape	Set battery
	Number of batteries used	2
	Lithium alloy content	1.2g
	Mercury content	Less than 1ppm
Number of connectable axes		1 axis
Battery continuous backup time		Approx. 20000 hours
Battery useful life (From date of unit manufacture)		5 years
Data save time in battery replacement		Approx. 20 hours at time of delivery, approx. 10 hours after 5 years
Back up time from battery warning to alarm occurrence (Note 2)		Approx. 100 hours
Mass		34g

(Note1) MR-BAT6V1SET is a battery built in a servo drive unit. Install this battery only in the servo drive unit that executes absolute position control.

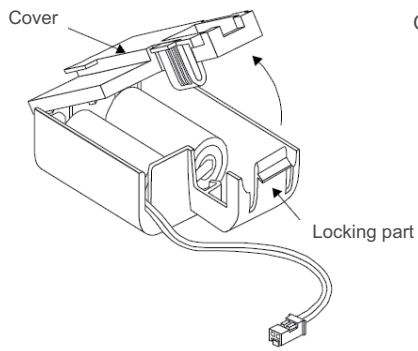
(Note 2) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery alarm occurs.

(b) Installing and removing the cell battery

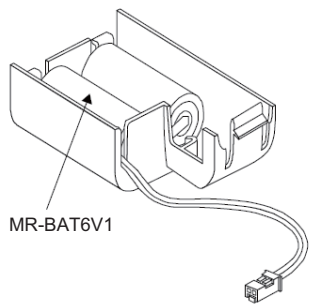


(c) Replacing the built-in battery

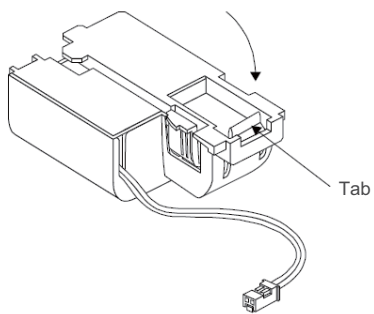
MR-BAT6V1SET that reached the end of the life can be reused by replacing the MR-BAT6V1 battery.



Open the cover while pushing the locking part.



Replace the built-in battery with a new battery for MR-BAT6V1.



Close the cover by pushing until it is fixed with the tab of the locking part.

(5) Converged battery option

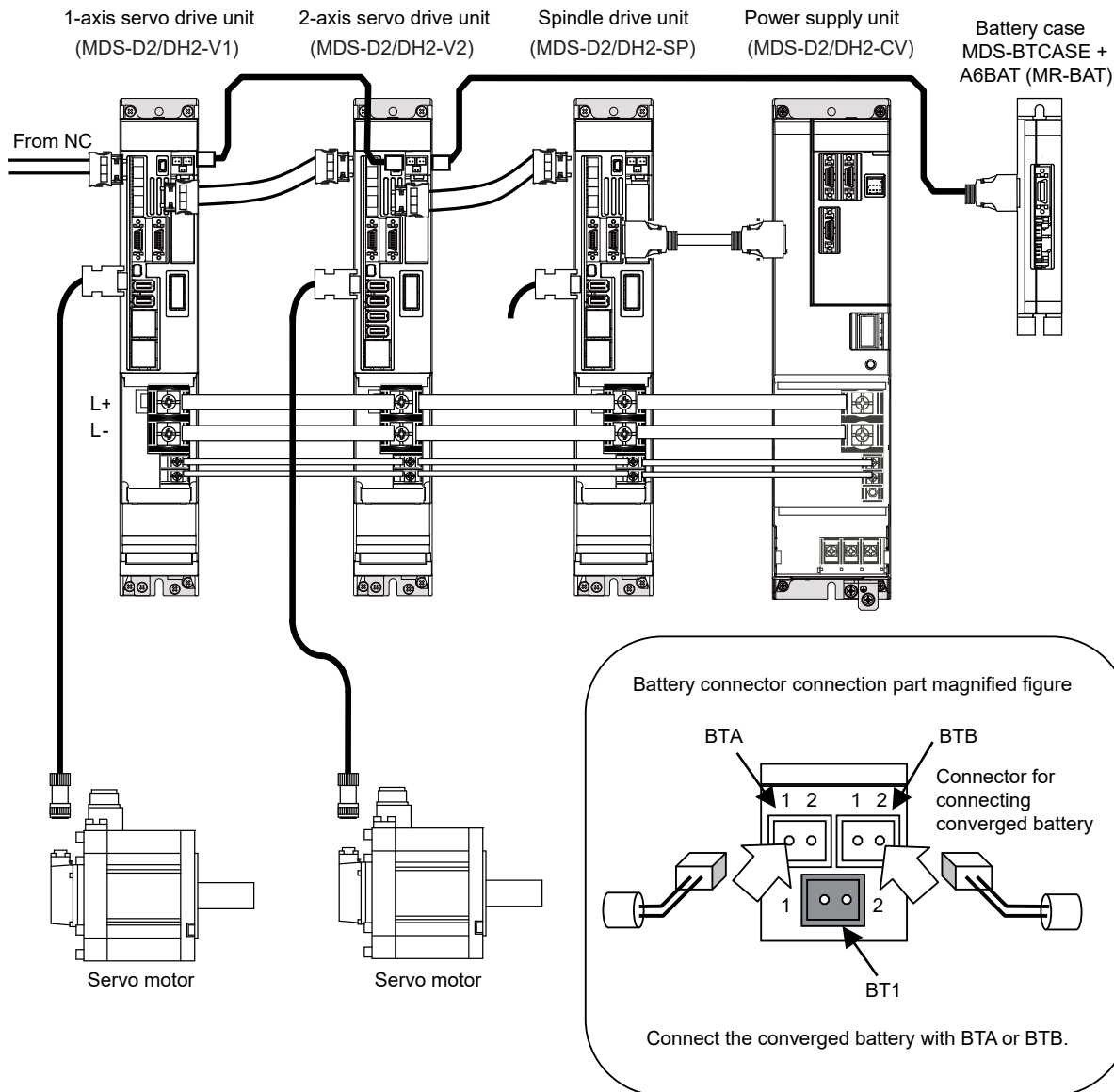
When using the following battery options, the wiring between units which configure an absolute position system is required.

Battery option type	Installation type	Battery charge
A6BAT (MR-BAT)	Dedicated case type (built-in MDS-BTCASE)	Possible
MDS-BTBOX-36	Unit and battery integration type	Possible

System configuration

<A6BAT(MR-BAT) Series>

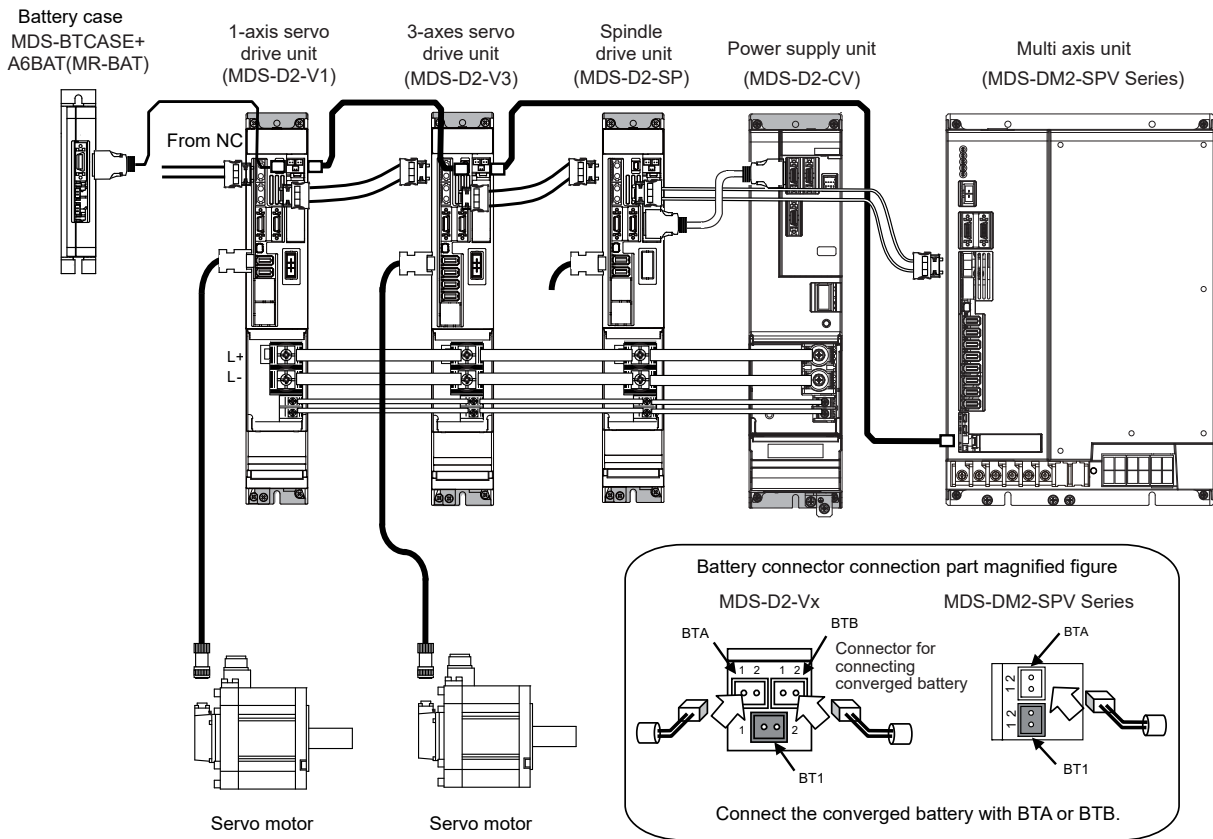
(a) MDS-D2 Series



POINT

1. This wiring is not required for the drive unit or spindle drive unit which is not an absolute system.
2. Use a shield cable for wiring between drive units.
The drive unit could malfunction.

(b) MDS-DM2 Series

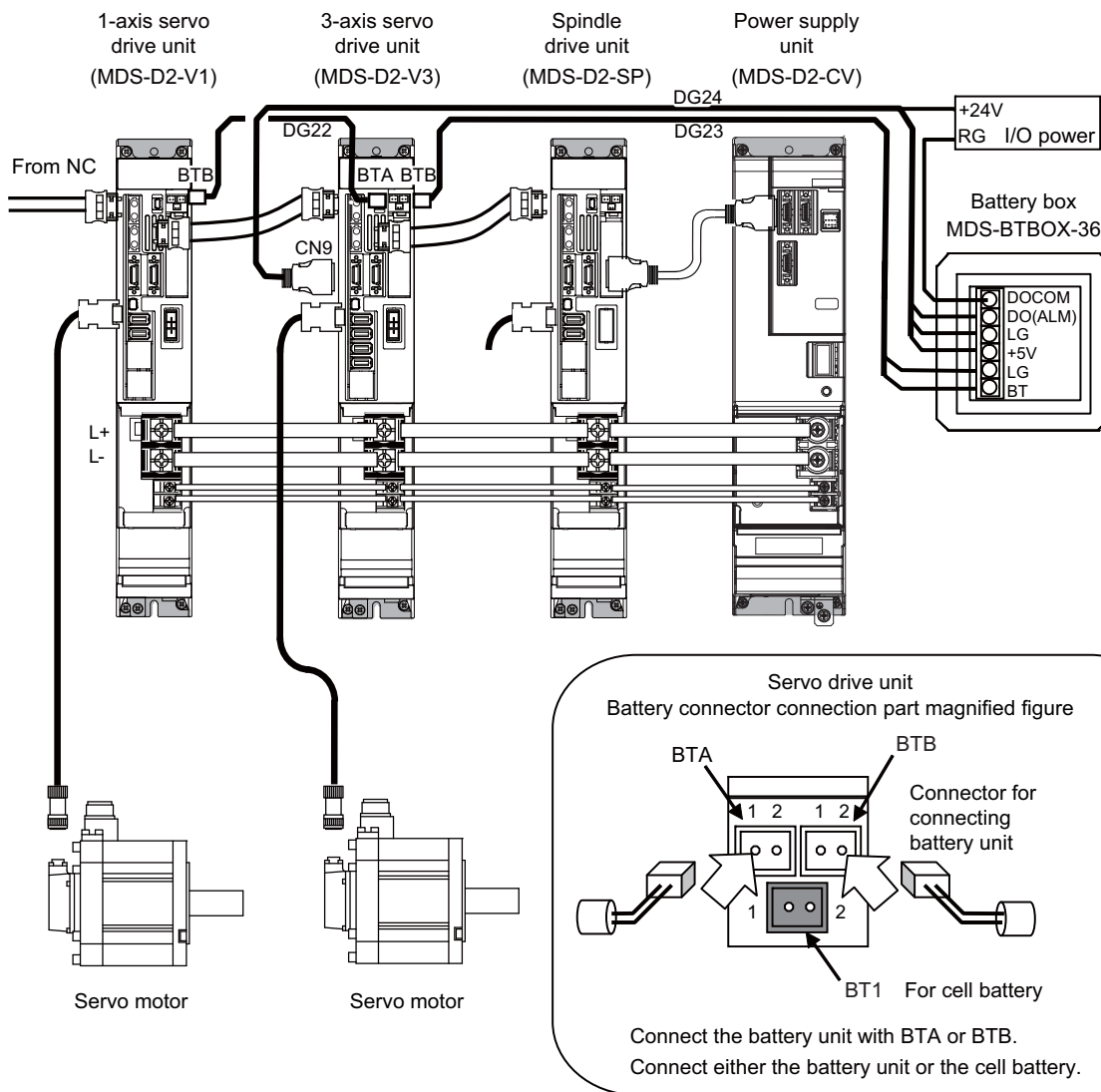


POINT

1. This wiring is not required for the drive unit or spindle drive unit which is not an absolute system.
2. Use a shield cable for wiring between drive units.
The drive unit could malfunction.

< MDS-BTBOX-36 >

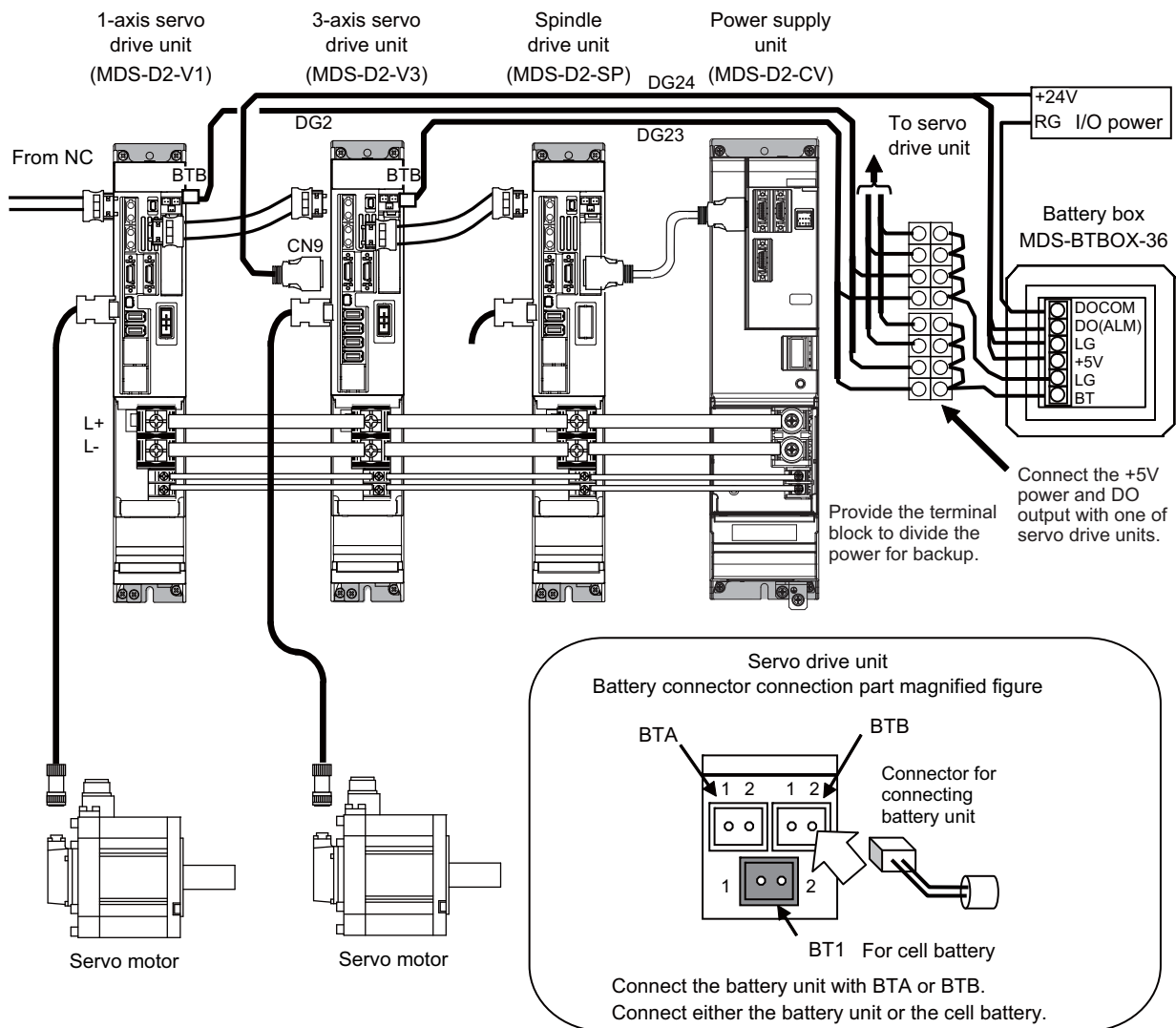
(a) MDS-D2-V1/V2/V3 Series connected in serial



CAUTION

1. 24V power for DO output must always be turned ON before the NC power input.
2. Spindle drive unit has no battery voltage drop warning function. Wiring to CN9 of drive unit must be always connected to servo drive unit.
3. The total length of battery cable (from the battery unit to the last connected drive unit) must be 30m or less.

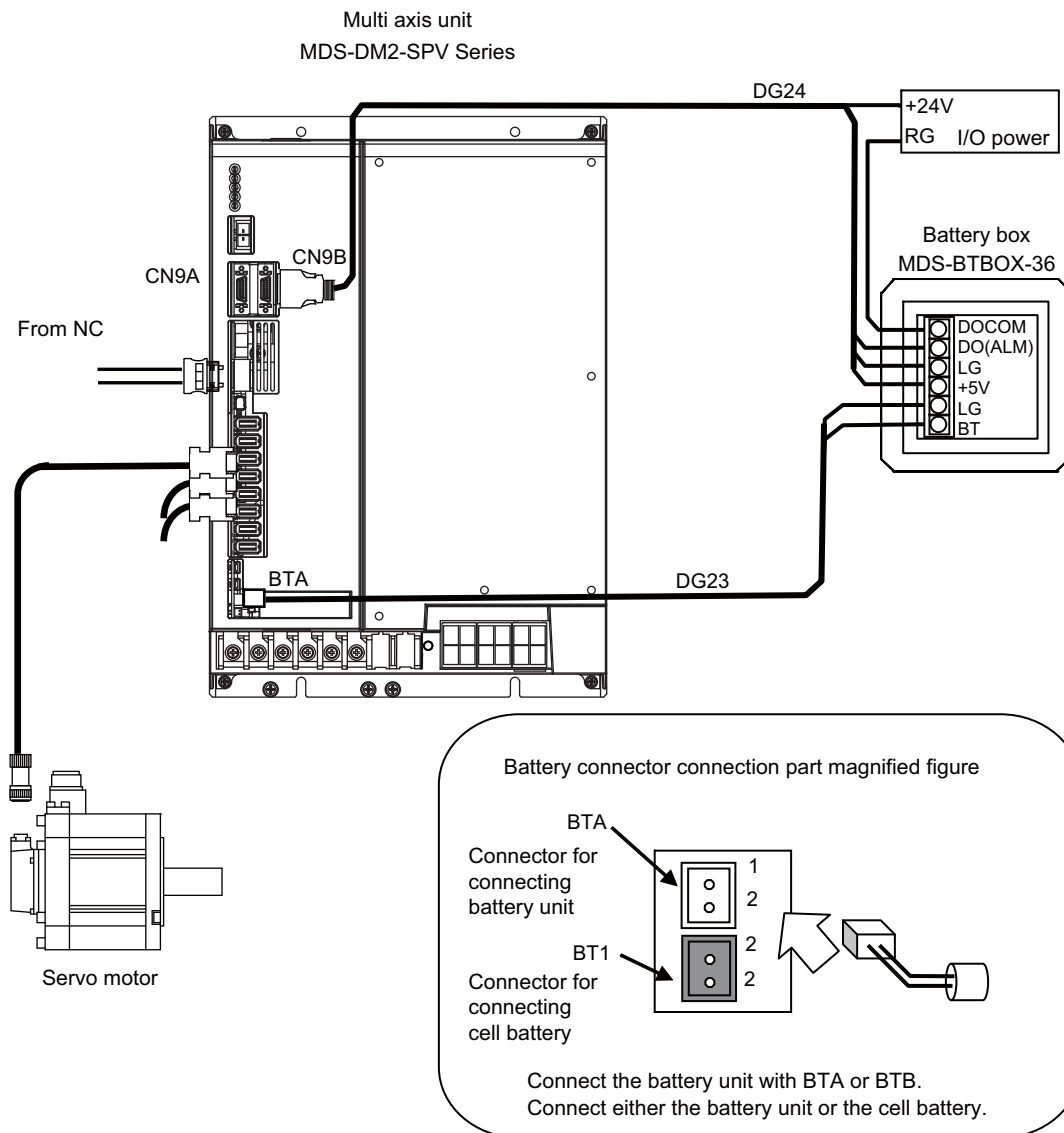
(b) MDS-D2-V1/V2/V3 Series connected in parallel



CAUTION

1. 24V power for DO output must always be turned ON before the NC power input.
2. Spindle drive unit has no battery voltage drop warning function. Wiring to CN9 of drive unit must be always connected to servo drive unit.
3. The total length of battery cable (from the battery unit to the last connected drive unit) must be 30m or less.

(c) MDS-DM2-SPV Series



⚠ CAUTION

1. 24V power for DO output must always be turned ON before the NC power input.
2. Connect the cable for alarm with CN9B on the drive unit. CN9A cannot receive the battery voltage drop warning.
3. The total length of battery cable (from the battery unit to the last connected drive unit) must be 30m or less.

Ball Screw Side Encoder (OSA105ET2A, OSA166ET2NA)

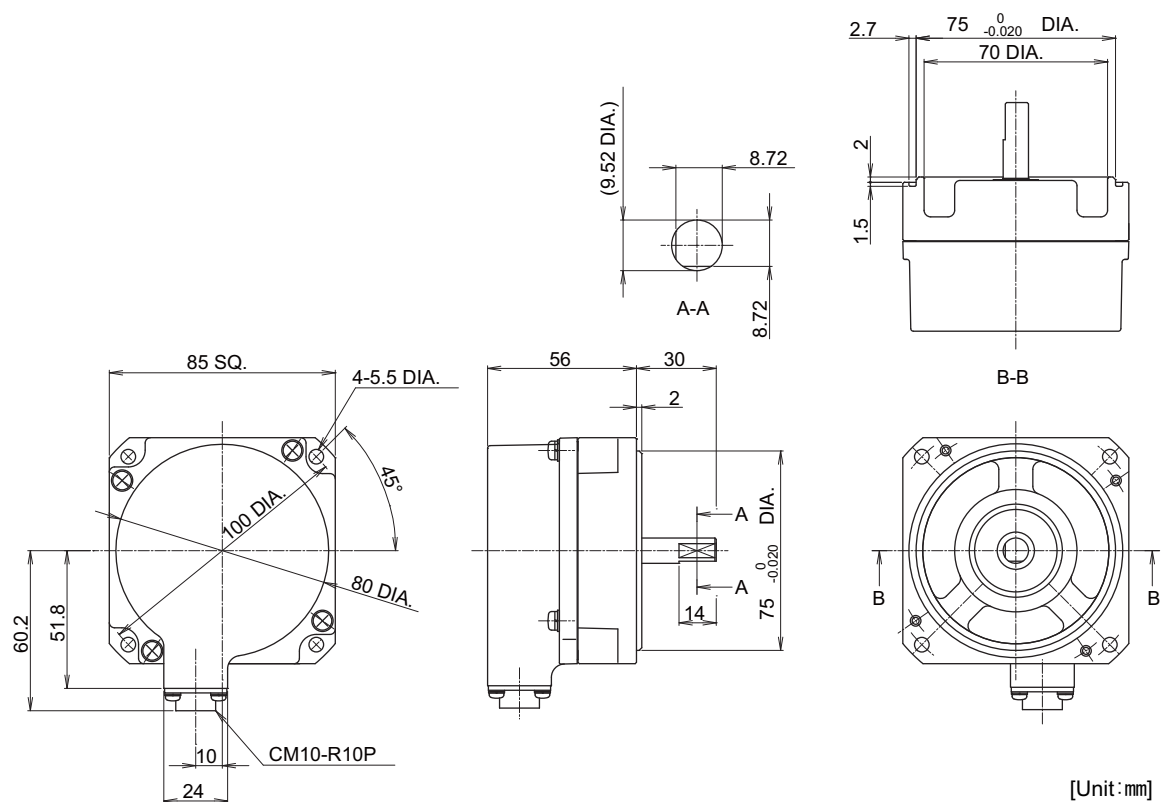
(1) Specifications

Encoder type		OSA105ET2A	OSA166ET2NA
Electrical characteristics	Encoder resolution	1,000,000 pulse/rev	16,000,000 pulse/rev
	Detection method	Absolute position method (battery backup method)	
	Accuracy (*1)	±3 seconds	
	Tolerable rotation speed at power off (*2)	500r/min	
	Encoder output data	Serial data	
	Power consumption	0.3A	
Mechanical characteristics for rotation	Inertia	$0.5 \times 10^{-4} \text{kgm}^2$ or less	
	Shaft friction torque	0.1Nm or less	
	Shaft angle acceleration	$4 \times 10^4 \text{rad/s}^2$ or less	
	Tolerable continuous rotation speed	4000r/min	
Mechanical configuration	Shaft amplitude (position 15mm from end)	0.02mm or less	
	Tolerable load (thrust direction/radial direction)	9.8N/19.8N	
	Mass	0.6kg	
	Degree of protection	IP65 (The shaft-through portion is excluded.)	
	Recommended coupling	bellows coupling	
Working environment	Ambient temperature	0°C to +55°C	
	Storage temperature	-20°C to +85°C	
	Humidity	95%Ph	
	Vibration resistance	5 to 50Hz, total vibration width 1.5mm, each shaft for 30min	
	Impact resistance	490m/s ² (50G)	

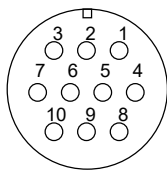
(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed.

(*2) If the tolerable rotation speed at power off is exceeded, the absolute position cannot be repaired.

(2) Outline dimension drawings
OSA105ET2A / OSA166ET2NA



(3) Explanation of connectors

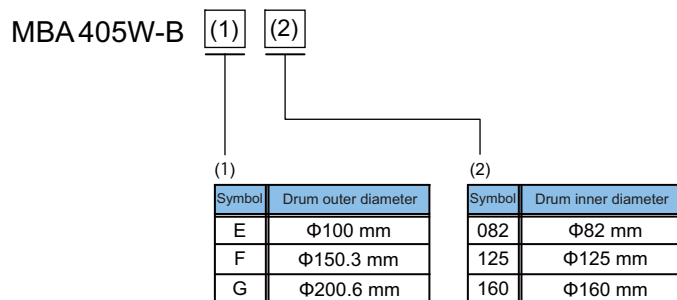


Connector pin layout

Pin	Function	Pin	Function
1	RQ	6	SD
2	RQ*	7	SD*
3	-	8	P5(+5V)
4	BAT	9	-
5	LG(GND)	10	SHD

Twin-head Magnetic Encoder (MBA Series)

(1) Type description



(2) Specifications

Encoder type		MBE405W-BE082	MBE405W-BF125	MBE405W-BG160
Electrical characteristics	Encoder resolution	4,000,000p/rev		
	Detection method	Absolute position method (battery backup method)		
	Accuracy (*1) (*2)	±4 seconds	±3 seconds	±2 seconds
	Wave number within one rotation	512 waves	768 waves	1024 waves
	Encoder output data	Serial data		
	Power consumption	0.2A or less		
Mechanical characteristics for rotation	Inertia	$0.5 \times 10^{-3} \text{kg} \cdot \text{m}^2$	$2.4 \times 10^{-3} \text{kg} \cdot \text{m}^2$	$8.7 \times 10^{-3} \text{kg} \cdot \text{m}^2$
	Tolerable continuous rotation speed	3000r/min	2000r/min	1500r/min
Mechanical configuration	Drum inner diameter	Φ82mm	Φ125mm	Φ160mm
	Drum outer diameter	Φ100mm	Φ150.3mm	Φ200.6mm
	Drum mass	0.2kg	0.46kg	1.0kg
	Degree of protection (*3)	IP67		
Working environment	Ambient temperature range	0°C to +55°C		
	Storage temperature range	-20°C to +85°C		
	Humidity	95%RH		
	Vibration resistance	Horizontal direction to the axis: 5G or less, Vertical direction to the axis: 5G or less		
	Impact resistance	490m/s ² (50G)		

(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed.

(*2) The user is requested to install the magnetic drum and installation ring in the encoder within the accuracy range specified herein. Even when the accuracy of the encoder when shipped and when installed by the user is both within the specified range, there is a difference in the installation position. Therefore, the accuracy at the time of our shipment may not be acquired.

(*3) It is the degree of protection when fitted with a connector.

(3) Specifications of preamplifier

Item	Specified value
Output communication style	High-speed serial communication I/F
Working ambient temperature	0°C to +55°C
Working ambient humidity	90%RH or less (with no dew condensation)
Atmosphere	No toxic gases
Tolerable vibration	Horizontal direction to the axis: 5G or less, Vertical direction to the axis: 5G or less
Tolerable impact	490m/s ² (50G)
Tolerable power voltage	DC5V±10%
Mass	0.33kg
Degree of protection (*2)	IP67

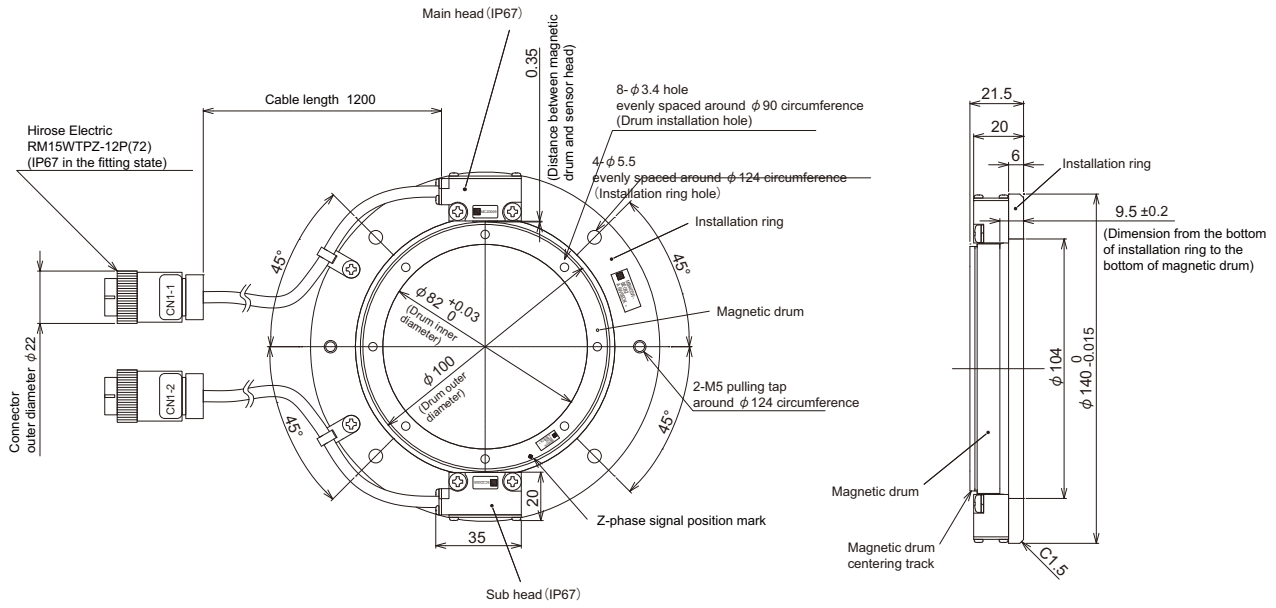
(*1) The values above are the specified values for the preamplifier provided with a twin-head magnetic encoder.

(*2) It is the degree of protection when fitted with a connector.

(4) Outline dimension drawing

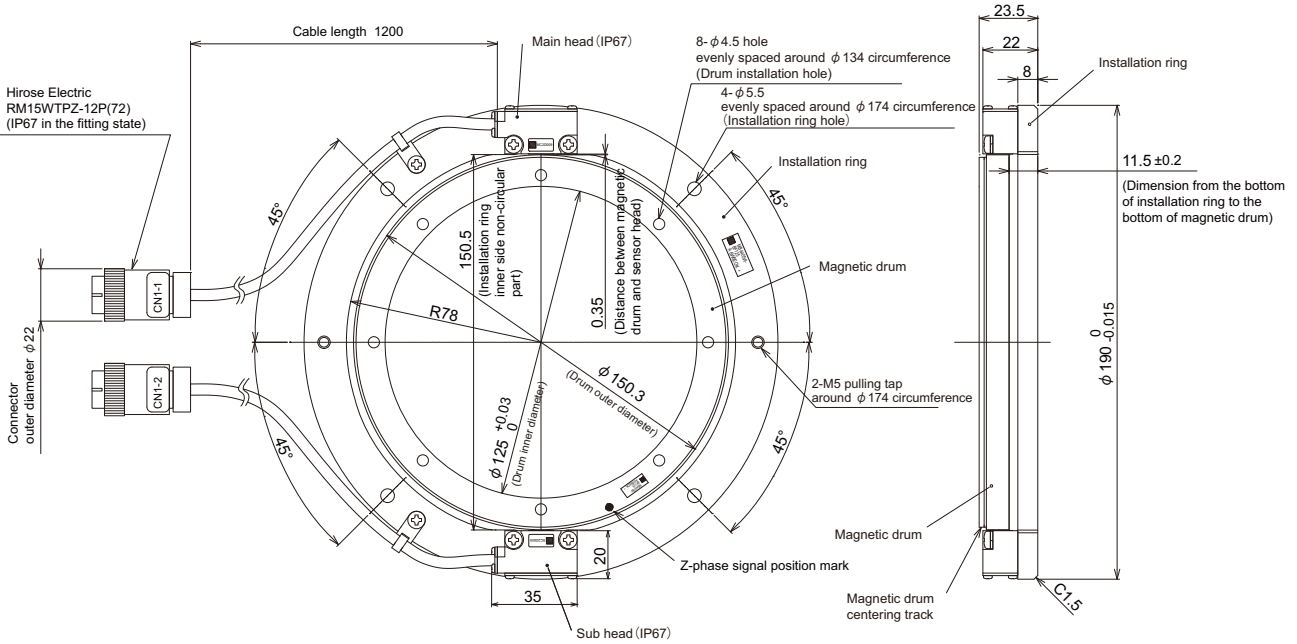
< MBA405W-BE082 >

[Unit: mm]



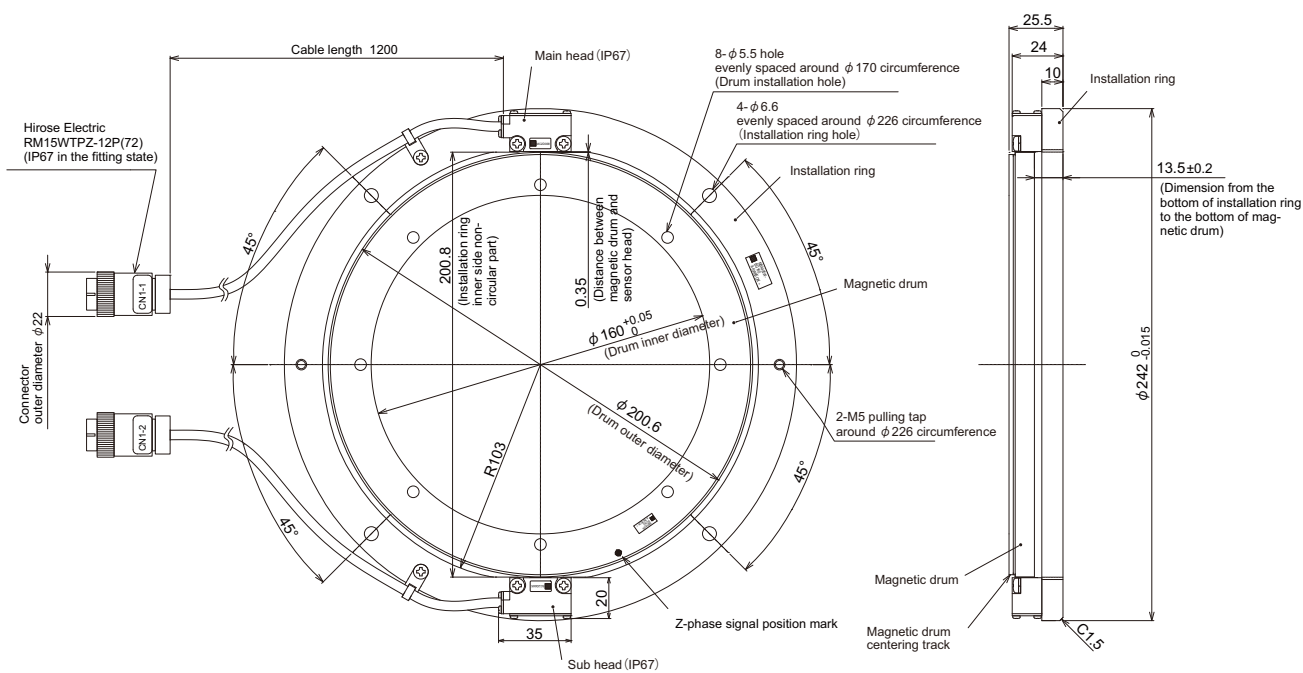
< MBA405W-BF125 >

[Unit: mm]



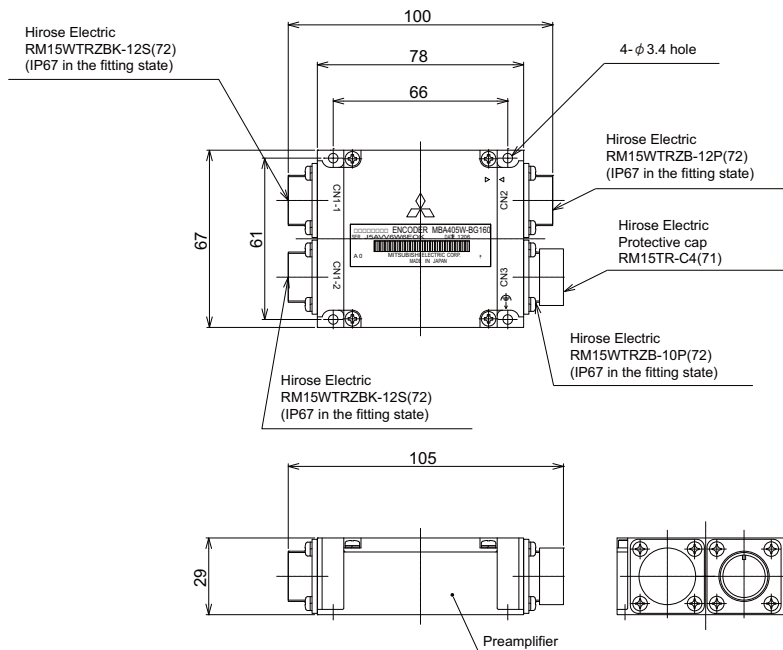
< MBA405W-BG160 >

[Unit: mm]



< Preamplifier (common) >

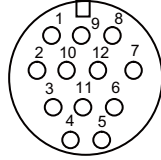
[Unit: mm]



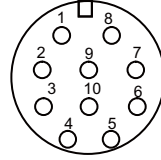
< Explanation of connectors >

Connector name	Application
CN1-1	For connection with scale (main head)
CN1-2	For connection with scale (sub head)
CN2	For connection with servo drive unit
CN3	For connection with motor thermistor

< Connector pin layout >



CN2 < Drive unit >



CN3 < Thermistor >

Pin No.	Function	Pin No.	Function
1	-	1	-
2	BT	2	-
3	SD	3	MT1-i
4	SD*	4	-
5	SHD	5	-
6	MT1	6	-
7	RQ	7	-
8	RQ*	8	-
9	P5	9	MT2-i
10	LG	10	-
11	MT2	11	-
12	CNT	12	-

Regenerative Option

The regenerative resistor generates heats, so wire and install the unit while taking care to safety. When using the regenerative resistor, make sure that flammable matters, such as cables, do not contact the resistor, and provide a cover on the machine so that dust or oil does not accumulate on the resistor and ignite.

(1) Combination with servo drive unit

Corresponding servo drive unit	Standard built-in regenerative resistor	External option regenerative resistor						
		MR-RB032	MR-RB12	MR-RB32	MR-RB30	MR-RB50	MR-RB31	MR-RB51
	Parameter setting value	1200h	1300h	1400h	1500h	1600h	1700h	1800h
	Regenerative capacity	30W	100W	300W	300W	500W	300W	500W
	Resistance value	40Ω	40Ω	40Ω	13Ω	13Ω	6.7Ω	6.7Ω
MDS-DJ-V1-10	10W	100Ω	○	○				
MDS-DJ-V1-15	10W	100Ω	○	○				
MDS-DJ-V1-30	20W	40Ω	○	○	○			
MDS-DJ-V1-40	100W	13Ω				○	○	
MDS-DJ-V1-80	100W	9Ω				○	○	○
MDS-DJ-V1-100	100W	9Ω				○	○	○
MDS-DJ-V2-3030	100W	9Ω				○	○	○

Corresponding servo drive unit	Standard built-in regenerative resistor	External option regenerative resistor					
		FCUA-RB22	FCUA-RB37	FCUA-RB55	R-UNIT2	FCUA-RB55 2 units connected in parallel	FCUA-RB75/2 2 units connected in parallel
	Parameter setting value	2400h	2500h	2600h	2900h	2E00h	2D00h
	Regenerative capacity	155W	185W	340W	700W	680W	680W
	Resistance value	40Ω	25Ω	20Ω	15Ω	10Ω	15Ω
MDS-DJ-V1-10	10W	100Ω					
MDS-DJ-V1-15	10W	100Ω					
MDS-DJ-V1-30	20W	40Ω	○				
MDS-DJ-V1-40	100W	13Ω		○	○		○
MDS-DJ-V1-80	100W	9Ω		○	○	○	○
MDS-DJ-V1-100	100W	9Ω		○	○	○	○
MDS-DJ-V2-3030	100W	9Ω		○	○		

(2) Combination with servo drive unit

⚠ CAUTION

The regenerative resistor is not incorporated in the spindle drive unit. Make sure to install the external option regenerative resistor.

Corresponding servo drive unit		External option regenerative resistor			
		MR-RB12	MR-RB32	MR-RB30	MR-RB50
		GZG200W39OHMK	GZG200W120 OHMK×3 units	GZG200W39 OHMK×3 units	GZG300W39 OHMK×3 units
	Parameter setting value	1300h	1400h	1500h	1600h
	Regenerative capacity	100W	300W	300W	500W
	Resistance value	40Ω	40Ω	13Ω	13Ω
MDS-DJ-SP-20	---	○	○		
MDS-DJ-SP-40	---			○	○
MDS-DJ-SP-80	---			○	○
MDS-DJ-SP-100	---			○	○
MDS-DJ-SP-120	---				○
MDS-DJ-SP-160	---				
MDS-DJ-SP2-2020	---			○	○

Corresponding servo drive unit		External option regenerative resistor			
		FCUA-RB22	FCUA-RB37	FCUA-RB55	FCUA RB75/2(1 unit)
		Parameter setting value	2400h	2500h	2600h
Regenerative capacity	155W	185W	340W	340W	
Resistance value	40Ω	25Ω	20Ω	30Ω	
MDS-DJ-SP-20	---	○	○		
MDS-DJ-SP-40	---	○	○	○	○
MDS-DJ-SP-80	---		○	○	○
MDS-DJ-SP-100	---			○	
MDS-DJ-SP-120	---				
MDS-DJ-SP-160	---				
MDS-DJ-SP2-2020	---	○	○	○	

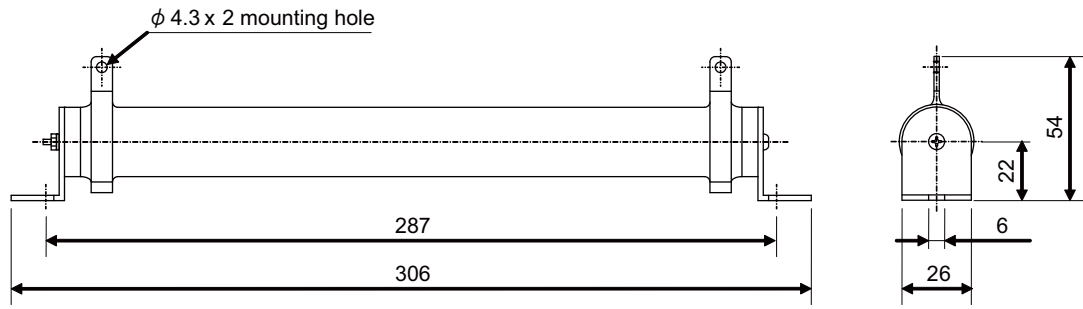
Corresponding servo drive unit		External option regenerative resistor						
		R-UNIT1	R-UNIT2	R-UNIT3	R-UNIT4	R-UNIT5	FCUA-RB55 2 units connected in parallel	FCUA-RB75/2 2 units connected in parallel
		Parameter setting value	2800h	2900h	2A00h	2B00h	2C00h	2E00h
Regenerative capacity	700W	700W	2100W	2100W	3100W	680W	680W	
Resistance value	30Ω	15Ω	15Ω	10Ω	10Ω	10Ω	15Ω	
MDS-DJ-SP-20	---							
MDS-DJ-SP-40	---	○	○	○			○	
MDS-DJ-SP-80	---	○	○	○	○	○	○	
MDS-DJ-SP-100	---		○	○	○	○	○	
MDS-DJ-SP-120	---		○	○	○	○	○	
MDS-DJ-SP-160	---				○	○		
MDS-DJ-SP2-2020	---							

⚠ CAUTION

Only the designated combination can be used for the external option regenerative resistor and drive unit. There is a risk of fire, so always use the designated combination.

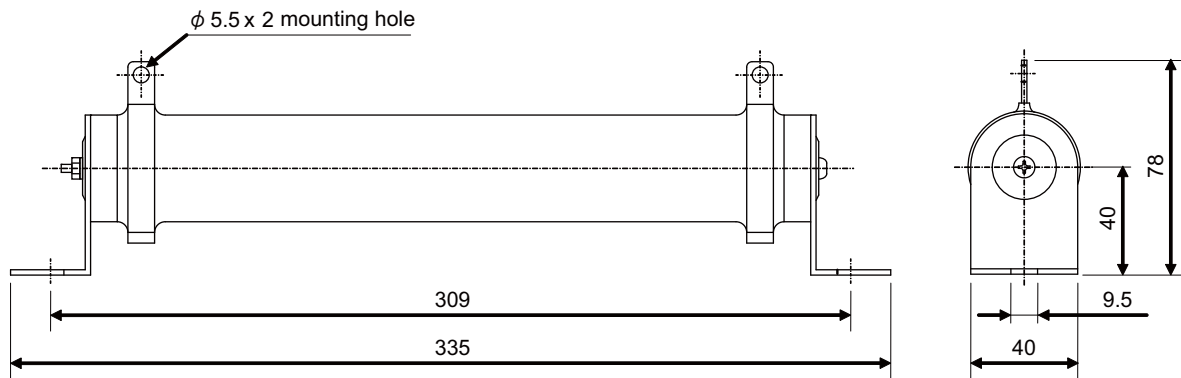
- (3) External option regenerative resistor
 < GZG200W39OHMK, GZG200W120OHMK >

[Unit:mm]



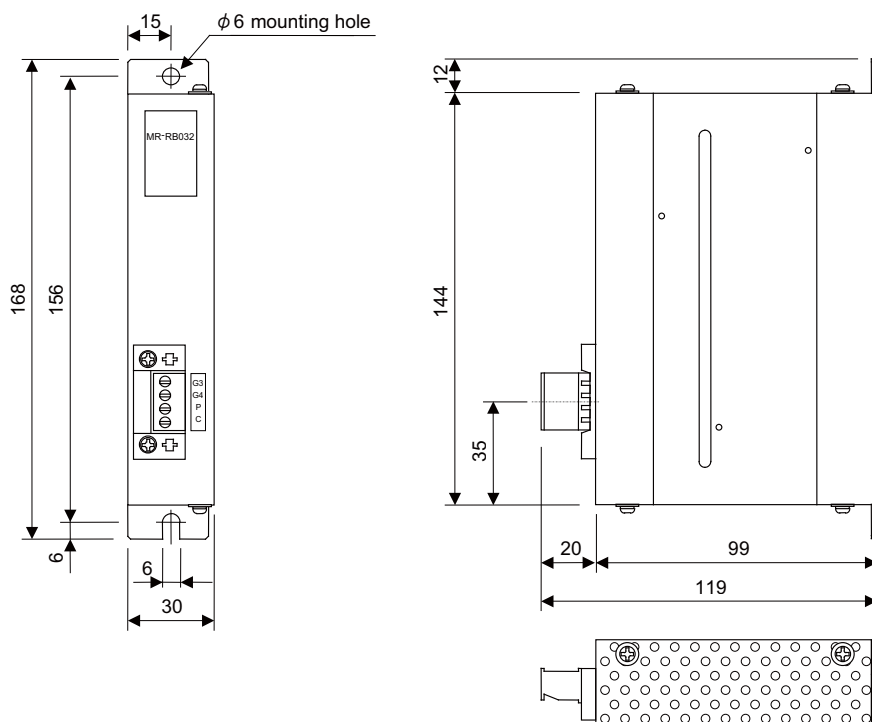
- < GZG300W39OHMK >

[Unit:mm]



(4) External option regenerative resistor unit
 < MR-RB032 >

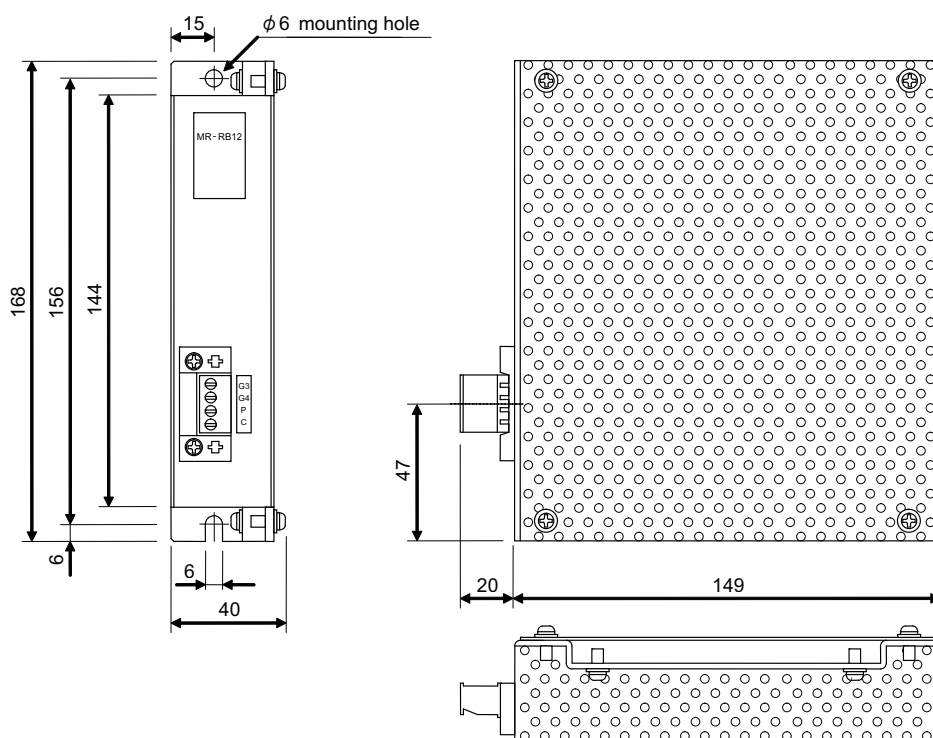
[Unit:mm]



Type	Regenerative capacity (W)	Resistance value (Ω)	Mass (kg)
MR-RB032	30	40	0.5

< MR-RB12 >

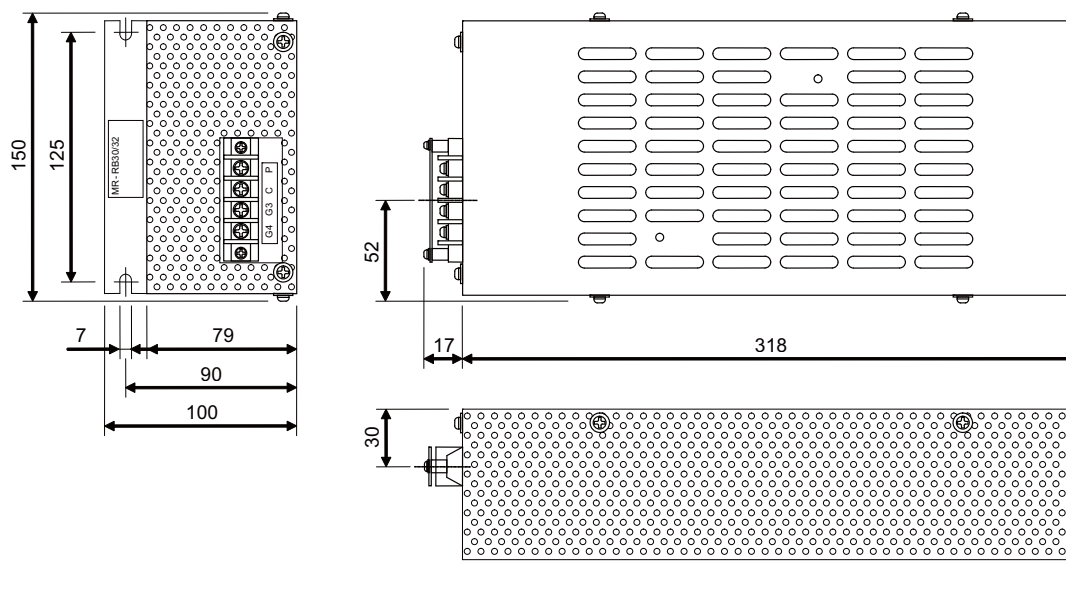
[Unit:mm]



Type	Regenerative capacity (W)	Resistance value (Ω)	Mass (kg)
MR-RB12	100	40	0.8

< MR-RB32, MR-RB30, MR-RB31 >

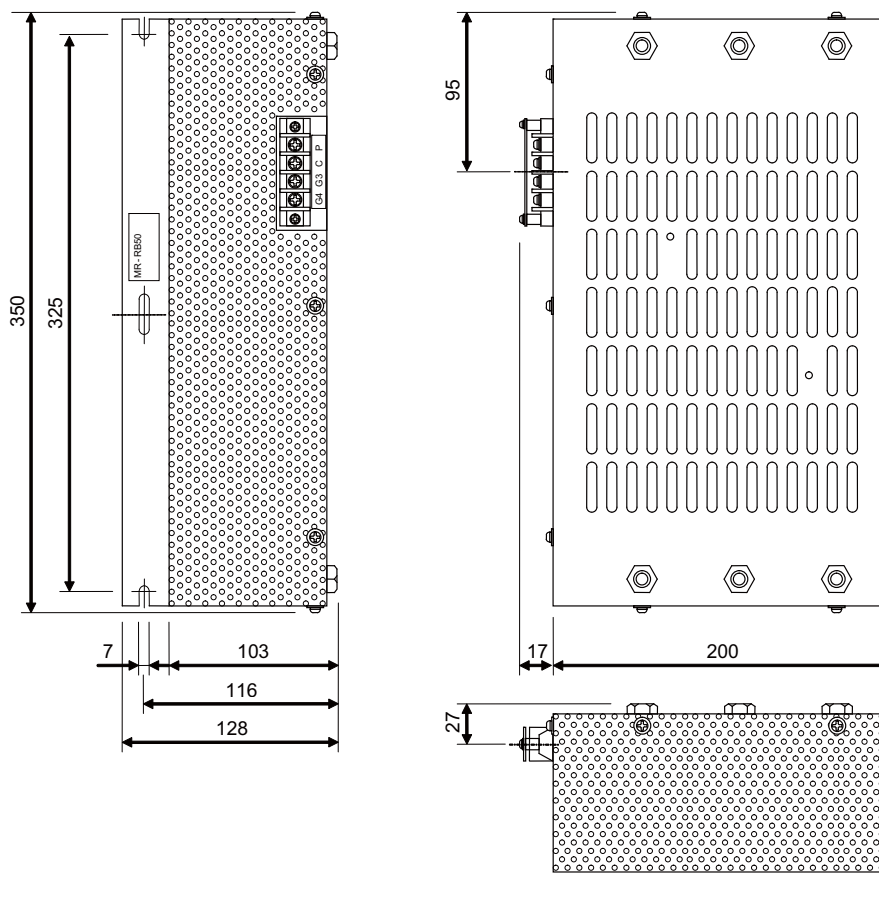
[Unit:mm]



Type	Regenerative capacity (W)	Resistance value (Ω)	Mass (kg)
MR-RB32	300	40	2.9
MR-RB30	300	13	2.9
MR-RB31	300	6.7	2.9

< MR-RB50, MR-RB51 >

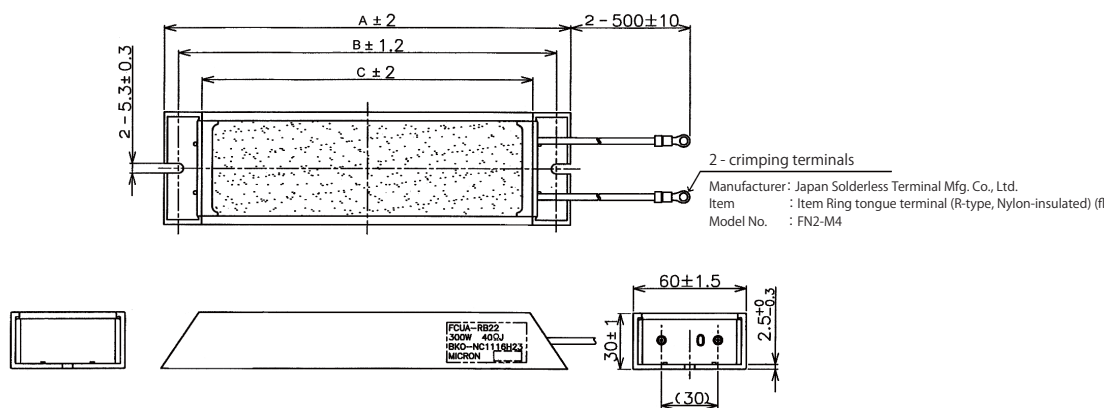
[Unit:mm]



Type	Regenerative capacity (W)	Resistance value (Ω)	Mass (kg)
MR-RB50	500	13	5.6
MR-RB51	500	6.7	5.6

< FCUA-RB22, FCUA-RB37 >

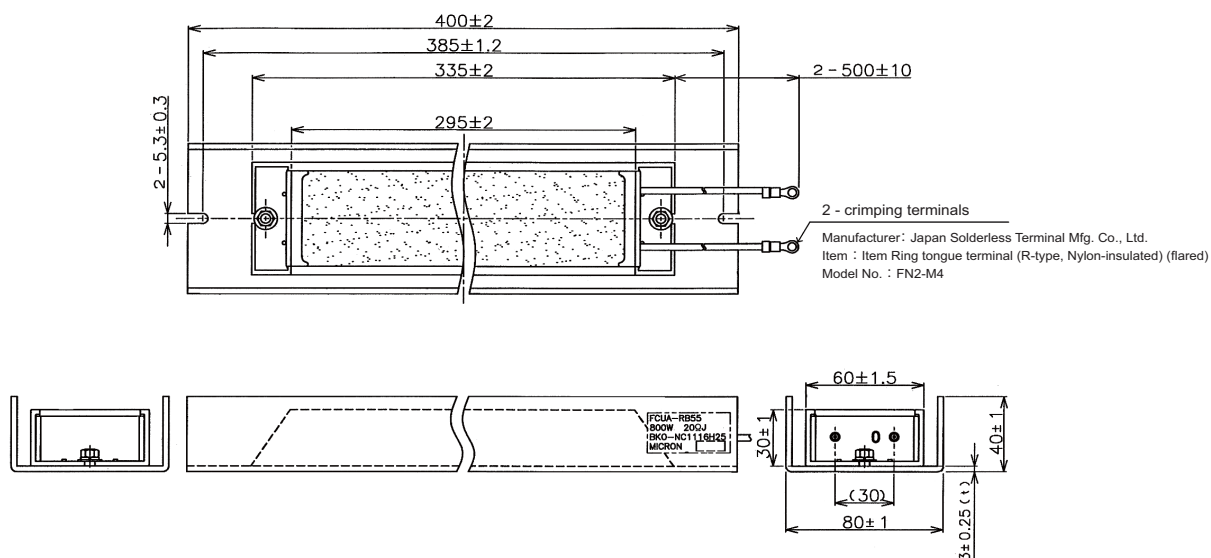
[Unit:mm]



Type	Regenerative capacity (W)	Outline dimension (mm)			Resistance value (Ω)	Mass (kg)
		A	B	C		
FCUA-RB22	155	215	200	175	40	0.8
FCUA-RB37	185	335	320	295	25	1.2

< FCUA-RB55, FCUA-RB75/2 >

[Unit:mm]



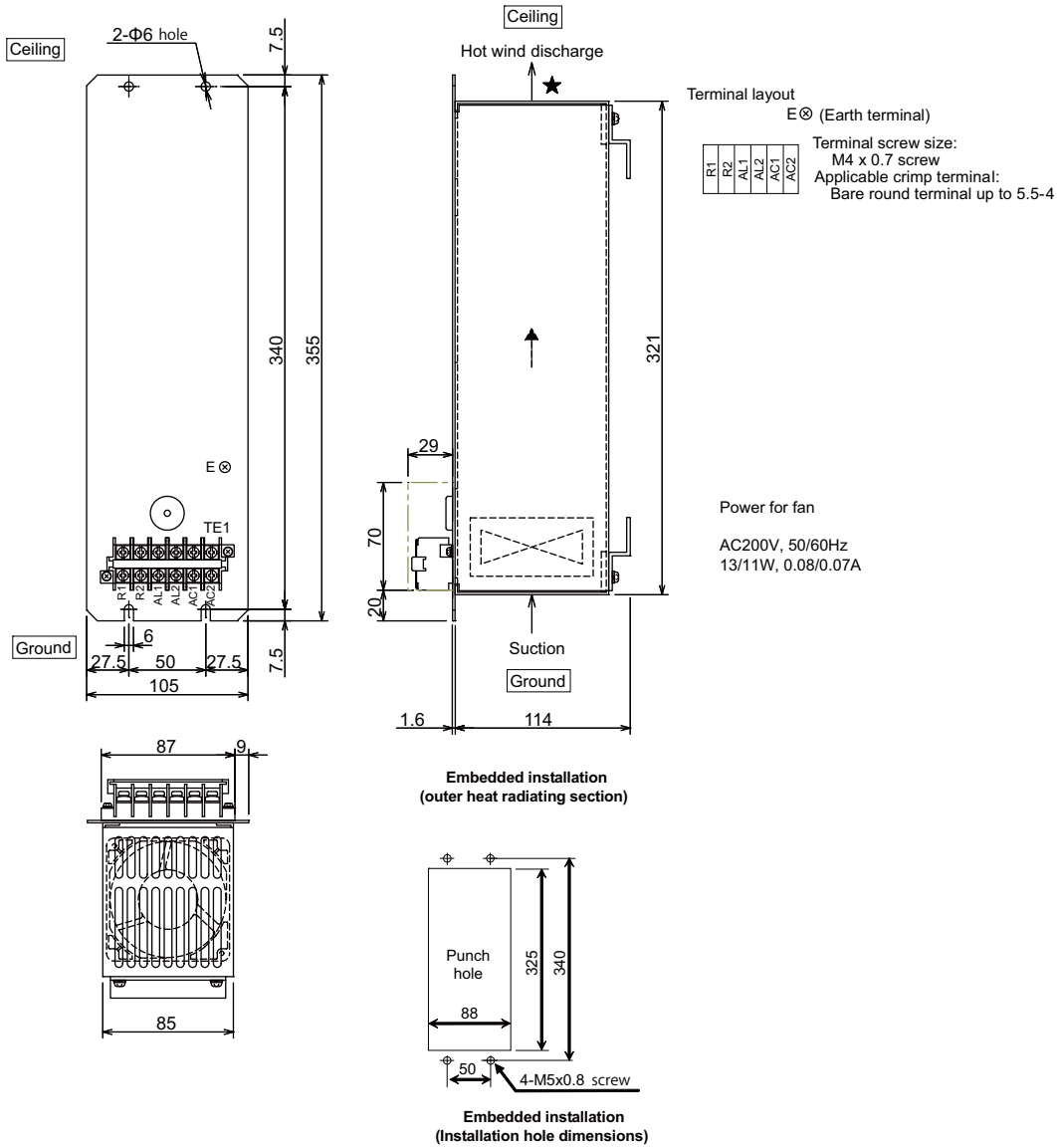
Type	Regenerative capacity (W)	Resistance value (Ω)	Mass (kg)
FCUA-RB55	340	20	2.2
FCUA-RB75/2 (2 units connected in parallel)	680	15	2.2

⚠ CAUTION

1. When using an operation pattern in which the regenerative resistor is used at a high frequency, the surface of the resistor may exceed 300°C, so take care to the installation and the heat radiation. Do not install the resistor in a place where it can be easily touched by hand or body parts as touching could lead to burns. Install a well-ventilated protective cover (punched metal, etc.) if body parts might come in contact.
2. Installation of the regenerative resistor on a metallic surface outside the panel is recommended to improve the heat radiating effect.
3. Install the regenerative resistor so that the section where the lead wires are led out is not at the top of the resistor.

< R-UNIT-1, -2 >

[Unit:mm]



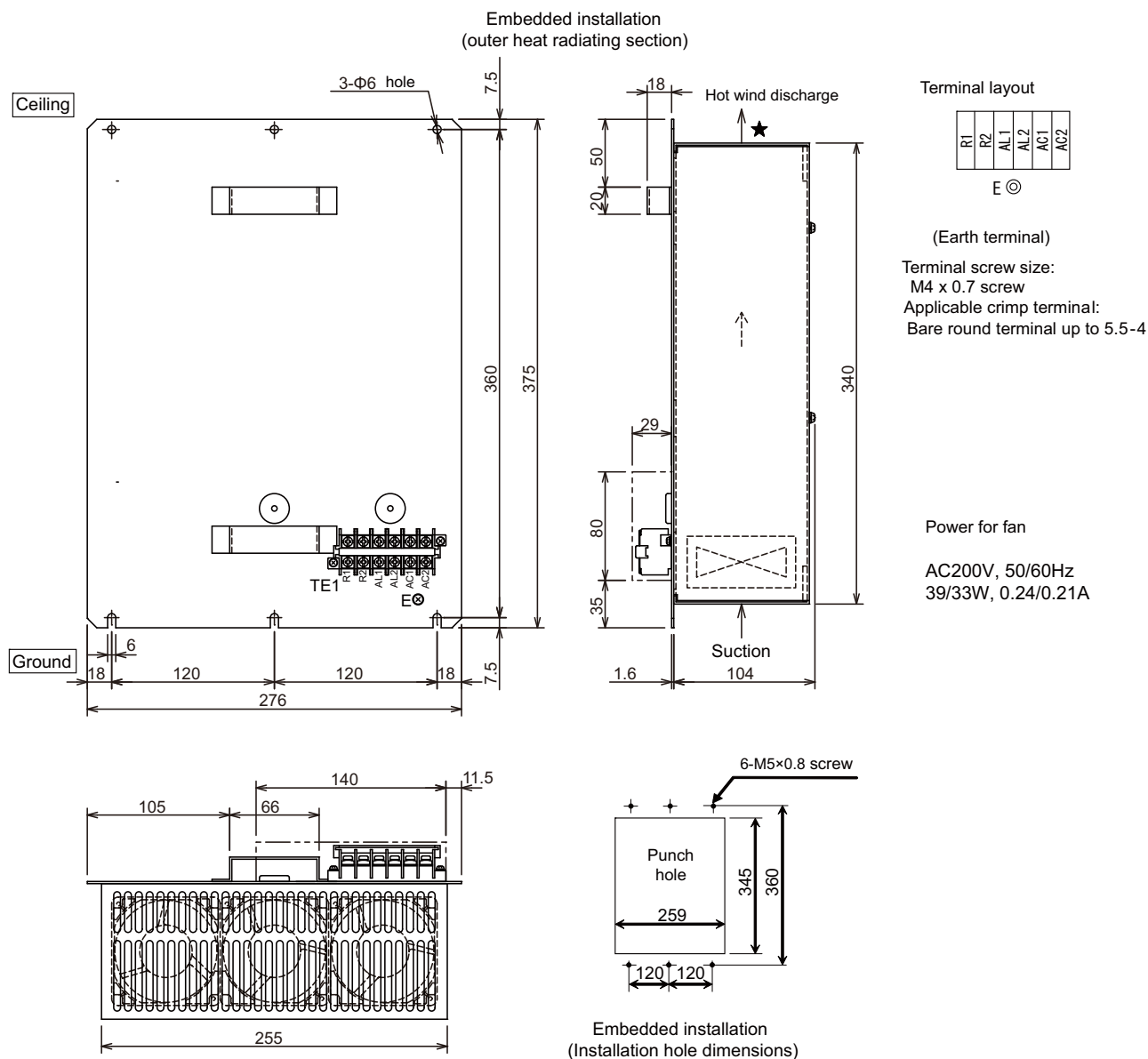
Type	Regenerative capacity (W)	Resistance value (Ω)	Mass (kg)
R-UNIT-1	700	30	4.3
R-UNIT-2	700	15	4.4

⚠ CAUTION

1. Do not wire or arrange other devices in front of the section marked with a ★ as extremely hot wind will be blown out.
2. For the installation direction of this resistor, the "Ceiling" is the top and "Ground" is the bottom.
3. Touching the resistor when it is hot could lead to burns. Always install a protective cover or consider the installation site so that workers will not touch the unit.
4. The resistor's heating value will differ according to the acceleration/deceleration frequency, speed being used and the load GD² conditions, etc. However, install the resistor so that the hot wind is always exhausted to outside the panel.

< R-UNIT-3, -4 >

[Unit:mm]



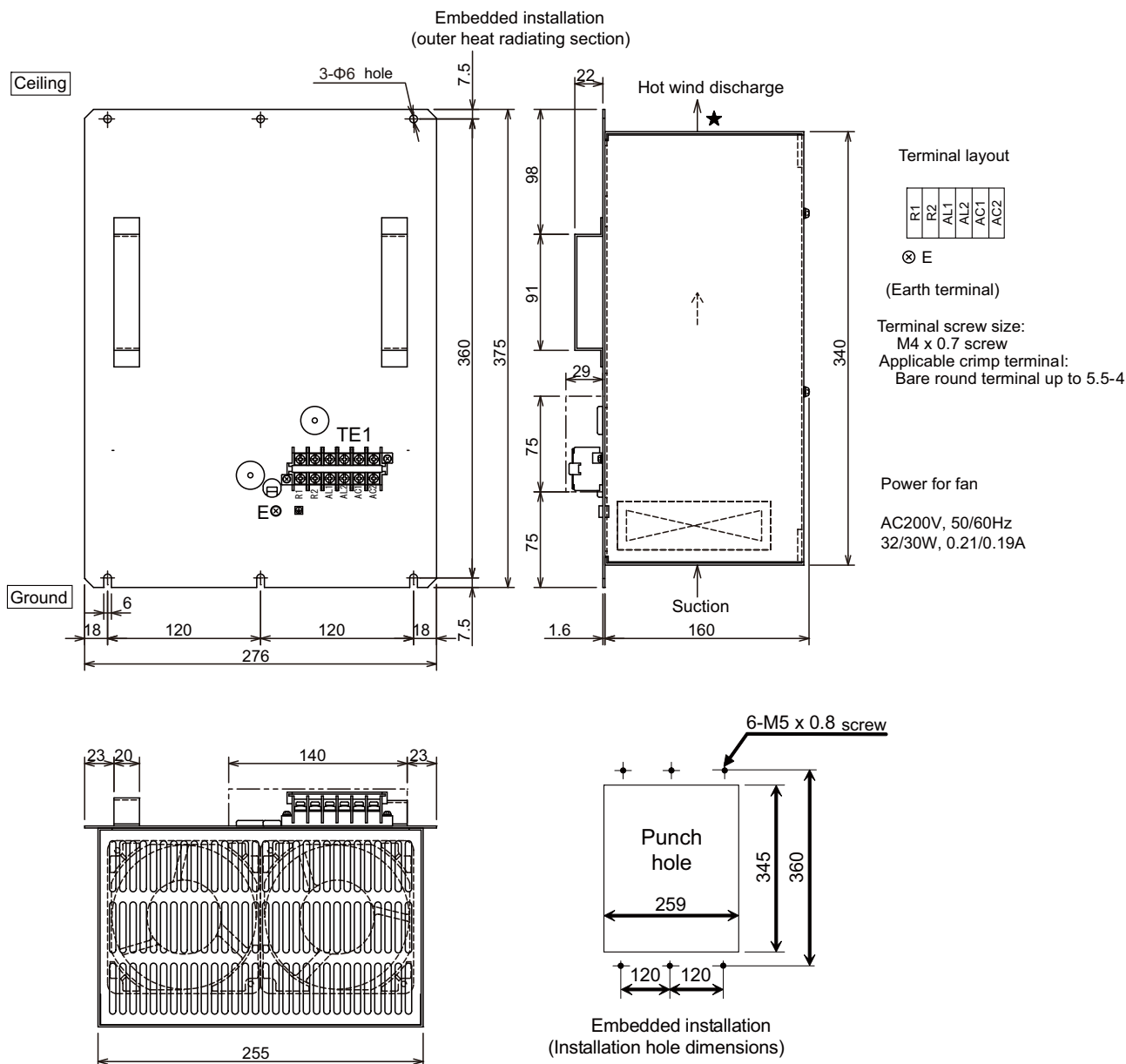
Type	Regenerative capacity (W)	Resistance value (Ω)	Mass (kg)
R-UNIT-3	2100	15	10.8
R-UNIT-4	2100	10	11.0

CAUTION

1. Attach packing to the flange section.
2. Do not wire or arrange other devices in front of the section marked with a ★ as extremely hot wind will be blown out.
3. For the installation direction of this resistor, the "Ceiling" is the top and "Ground" is the bottom.
4. Touching the resistor when it is hot could lead to burns. Always install a protective cover or consider the installation site so that workers will not touch the unit.
5. The resistor's heating value will differ according to the acceleration/deceleration frequency, speed being used and the load GD² conditions, etc. However, install the resistor so that the hot wind is always exhausted to outside the panel.

< R-UNIT-5 >

[Unit:mm]



Type	Regenerative capacity (W)	Resistance value (Ω)	Mass (kg)
R-UNIT-5	3100	10	15.0

CAUTION

1. Attach packing to the flange section.
2. Do not wire or arrange other devices in front of the section marked with a ★ as extremely hot wind will be blown out.
3. For the installation direction of this resistor, the "Ceiling" is the top and "Ground" is the bottom.
4. Touching the resistor when it is hot could lead to burns. Always install a protective cover or consider the installation site so that workers will not touch the unit.
5. The resistor's heating value will differ according to the acceleration/deceleration frequency, speed being used and the load GD² conditions, etc. However, install the resistor so that the hot wind is always exhausted to outside the panel.

Encoder for Spindle Motor

(1) No-variable speed control

(When spindle and motor are directly coupled or coupled with a 1:1 gear ratio)

Spindle control item	Control specifications	Without spindle side encoder	With spindle side encoder
Spindle control	Normal cutting control	●	This normally is not used for no-variable speed control.
	Constant surface speed control (lathe)	●	
	Thread cutting (lathe)	●	
Orientation control	1-point orientation control	●	
	Multi-point orientation control	●	
	Orientation indexing	●	
Synchronous tap control	Standard synchronous tap	●	
	Synchronous tap after zero point return	●	
Spindle synchronous control	Without phase alignment function	●	
	With phase alignment function	●	
C-axis control	C-axis control	● (Note 2)	●

(Note 1) ● :Control possible

x :Control not possible

(Note 2) When spindle and motor are coupled with a 1:1 gear ratio, use of a spindle side encoder is recommended to assure the precision.

(2) Variable speed control

(When using V-belt, or when spindle and motor are connected with a gear ratio other than 1:1)

Spindle control item	Control specifications	Without spindle side encoder	With spindle side encoder		
			TS5690/ERM280/MPCI/MBE405W Series	OSE-1024	Proximity switch
Spindle control	Normal cutting control	●	●	●	●
	Constant surface speed control (lathe)	● (Note 2)	●	●	● (Note 2)
	Thread cutting (lathe)	x	●	●	x
Orientation control	1-point orientation control	x	●	●	● (Note 4)
	Multi-point orientation control	x	●	●	x
	Orientation indexing	x	●	●	x
Synchronous tap control	Standard synchronous tap	● (Note 3)	●	●	● (Note 3)
	Synchronous tap after zero point return	x	●	●	x
Spindle synchronous control	Without phase alignment function	● (Note 2)	●	●	● (Note 2)
	With phase alignment function	x	●	●	x
C-axis control	C-axis control	x	●	x	x

(Note 1) ● :Control possible

x :Control not possible

(Note 2) Control not possible when connected with the V-belt.

(Note 3) Control not possible when connected with other than the gears.

(Note 4) Orientation is carried out after the spindle is stopped when a proximity switch is used.

As for 2-axis spindle drive unit, setting is available only for one of the axes.

Spindle Side ABZ Pulse Output Encoder (OSE-1024 Series)

When a spindle and motor are connected with a V-belt, or connected with a gear ratio other than 1:1, use this spindle side encoder to detect the position and speed of the spindle. Also use this encoder when orientation control and synchronous tap control, etc are executed under the above conditions.

(1) Specifications

Encoder type		OSE-1024-3-15-68	OSE-1024-3-15-68-8
Mechanical characteristics for rotation	Inertia	0.1x10 ⁻⁴ kgm ² or less	0.1x10 ⁻⁴ kgm ² or less
	Shaft friction torque	0.98Nm or less	0.98Nm or less
	Shaft angle acceleration	10 ⁴ rad/s ² or less	10 ⁴ rad/s ² or less
	Tolerable continuous rotation speed	6000 r/min	8000 r/min
Mechanical configuration	Bearing maximum non-lubrication time	20000h/6000r/min	20000h/8000r/min
	Shaft run-out (position 15mm from end)	0.02mm or less	0.02mm or less
	Tolerable load (thrust direction/radial direction)	10kg/20kg Half of value during operation	10kg/20kg Half of value during operation
	Mass	1.5kg	1.5kg
	Degree of protection	IP54	
	Squareness of flange to shaft	0.05mm or less	
	Flange matching eccentricity	0.05mm or less	
Working environment	Ambient temperature range	-5°C to +55°C	
	Storage temperature range	-20°C to +85°C	
	Humidity	95%Ph	
	Vibration resistance	5 to 50Hz, total vibration width 1.5mm, each shaft for 30min.	
	Impact resistance	294.20m/s ² (30G)	

(2) Detection signals

Signal name	Number of detection pulses
A, B phase	1024p/rev
Z phase	1p/rev

Connector pin layout

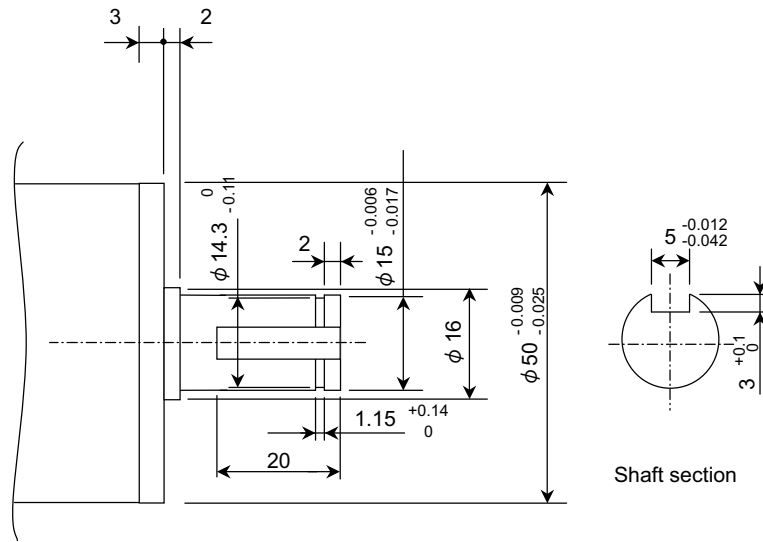
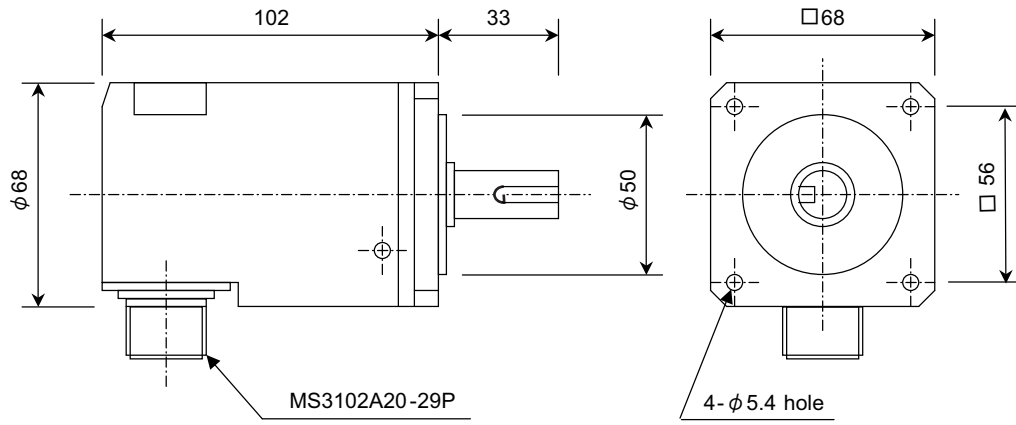
Pin	Function	Pin	Function
A	A+ signal	K	0V
B	Z+ signal	L	-
C	B+ signal	M	-
D	-	N	A- signal
E	Case earth	P	Z- signal
F	-	R	B- signal
G	-	S	-
H	+5V	T	-
J	-		

CAUTION

Cautions for connecting the spindle end with an OSE-1024 encoder

1. Confirm that the gear ratio (pulley ratio) of the spindle end to the encoder is 1:1.
2. Use a timing belt when connecting by a belt.

(3) Outline dimension drawings



Key way magnified figure

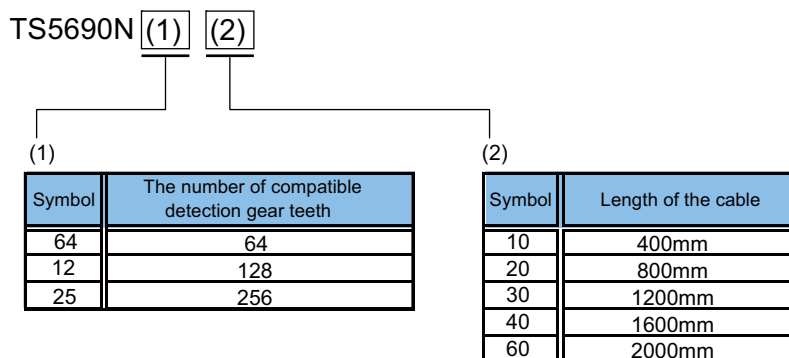
[Unit: mm]

Spindle side encoder (OSE-1024-3-15-68, OSE-1024-3-15-68-8)

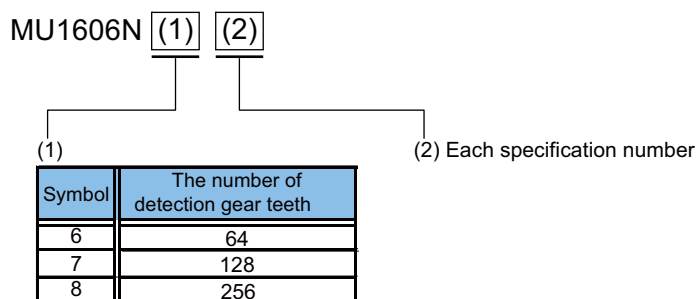
Spindle Side PLG Serial Output Encoder (TS5690, MU1606 Series)

This encoder is used when a more accurate synchronous tapping control or C-axis control than OSE encoder is performed to the spindle which is not directly-connected to the spindle motor.

- (1) Type configuration
< Sensor type >



- < Detection gear type >



- (2) Specifications

Sensor	Series type	TS5690N64xx					TS5690N12xx					TS5690N25xx				
	xx (The end of the type name)	10	20	30	40	60	10	20	30	40	60	10	20	30	40	60
	Length of lead [mm]	400 ±10	800 ±20	1200 ±20	1600 ±30	2000 ±30	400 ±10	800 ±20	1200 ±20	1600 ±30	2000 ±30	400 ±10	800 ±20	1200 ±20	1600 ±30	2000 ±30
Detection gear	Type	MU1606N601					MU1606N709					MU1606N805				
	The number of teeth	64					128					256				
	Outer diameter [mm]	Φ52.8					Φ104.0					Φ206.4				
	Inner diameter [mm]	Φ40H5					Φ80H5					Φ140H5				
	Thickness [mm]	12					12					14				
Notched fitting section	Shrink fitting [mm]	0.020 to 0.040					0.030 to 0.055					0.050 to 0.085				
	Outer diameter [mm]	Φ72.0					Φ122.0					Φ223.6				
The number of output pulse	Outer diameter tolerance [mm]	+0.010 to +0.060					-0.025 to +0.025					-0.025 to +0.025				
	A/B phase	64					128					256				
	Z phase	1					1					1				
	Detection resolution [p/rev]	2 million					4 million					8 million				
	Absolute accuracy at stop	150"					100"					95"				
	Tolerable speed [r/min]	40,000					20,000					10,000				
	Signal output	Mitsubishi high-speed serial														

CAUTION

1. Selected encoders must be able to tolerate the maximum rotation speed of the spindle.
2. Please contact your Mitsubishi Electric dealer for the special products not listed above.

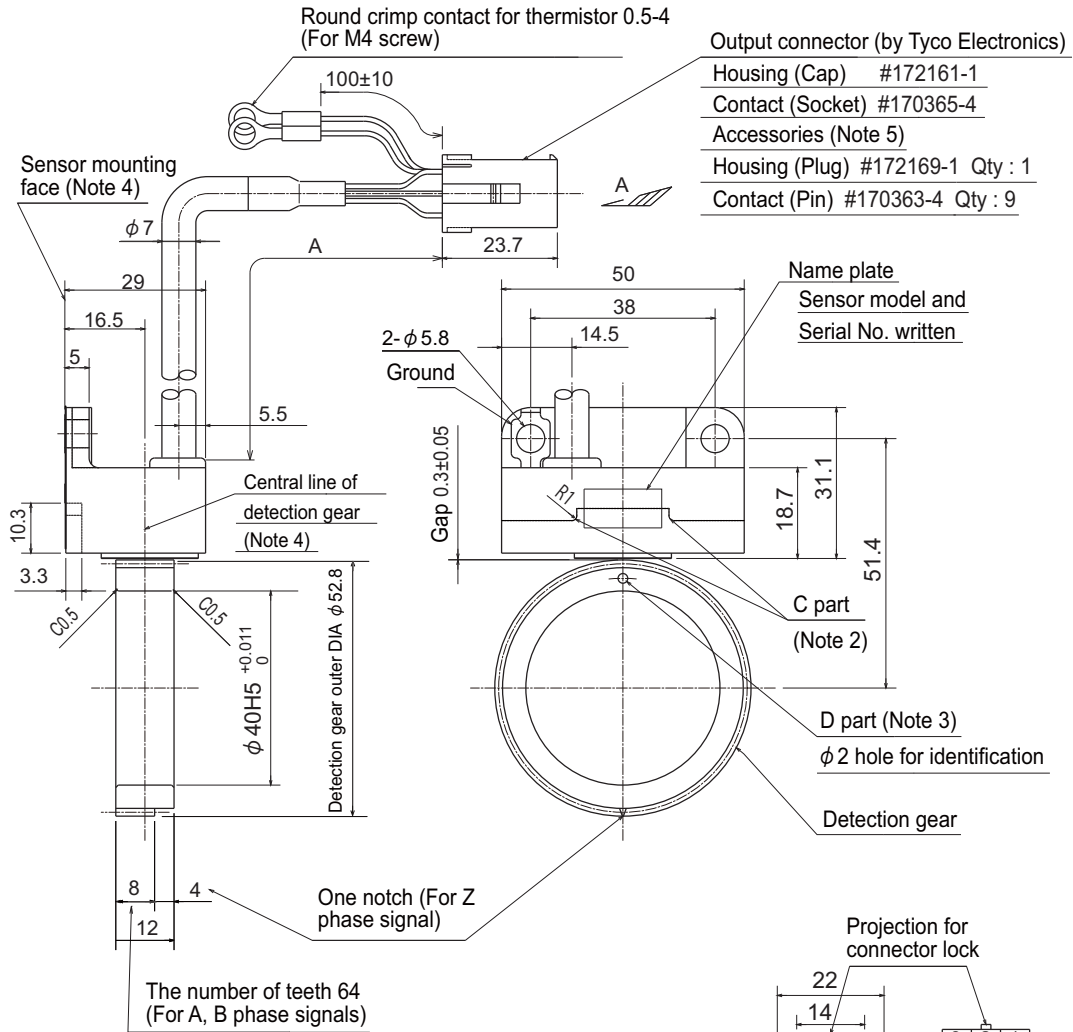
(3) Outline dimension drawings

CAUTION

Always apply the notched fitting section machining with the specified dimensions to the sensor installation surface.

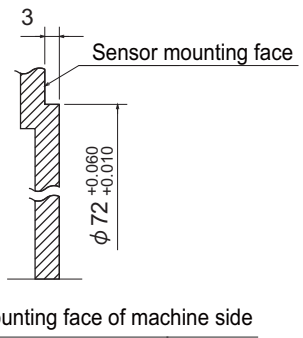
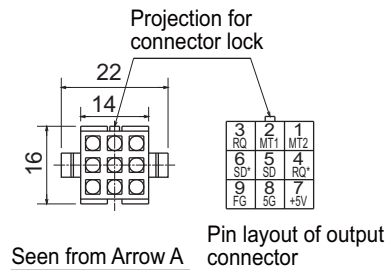
< TS5690N64xx + MU1606N601 >

[Unit: mm]



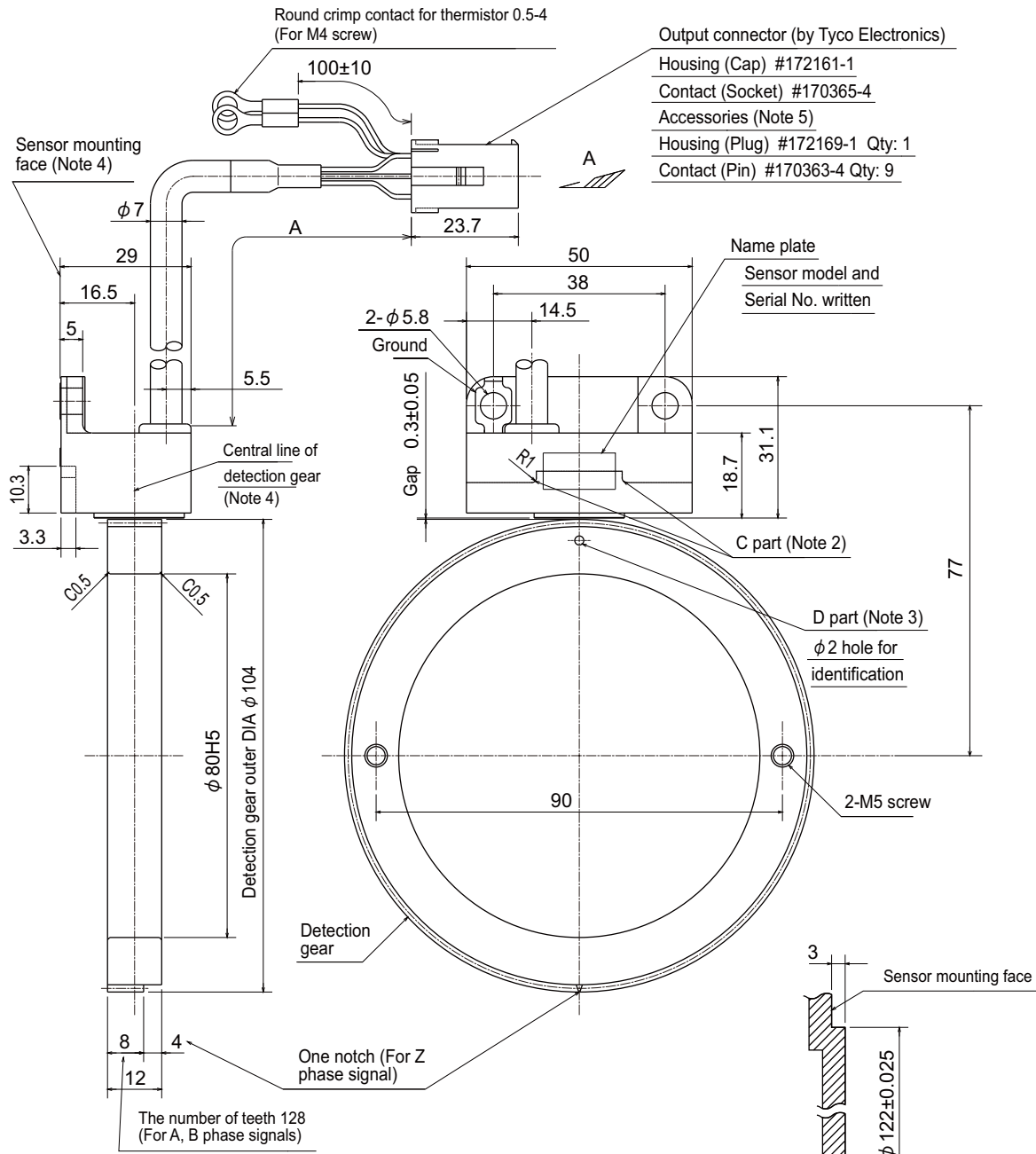
- (Note 1) Handle with care as this is a precision component. Pay special attention not to apply excessive external force on the sensor's detection face. Applying such force will cause a fault.
- (Note 2) In installing the sensor, keep the protruding fitting of $\phi 72^{+0.060}_{+0.010}$ mm on the machine side, and push the C part of the sensor mounting seat against the fitting.
- (Note 3) In installing the detection gear, make sure that the D part side comes the opposite side of the sensor installation side (sensor's lead wire side).
- (Note 4) The deviation of the center of the detection gear is 16.5 ± 0.25 mm from the sensor mounting face.
- (Note 5) A connector of the signal cable side (one plug and nine pins) is attached.

Sensor		Detection gear
Parts name	Lead wire length A [mm]	Parts name
TS5690N6410	400±10	MU1606N601
TS5690N6420	800±20	
TS5690N6430	1200±20	
TS5690N6440	1600±30	
TS5690N6460	2000±30	



< TS5690N12xx + MU1606N709 >

[Unit: mm]

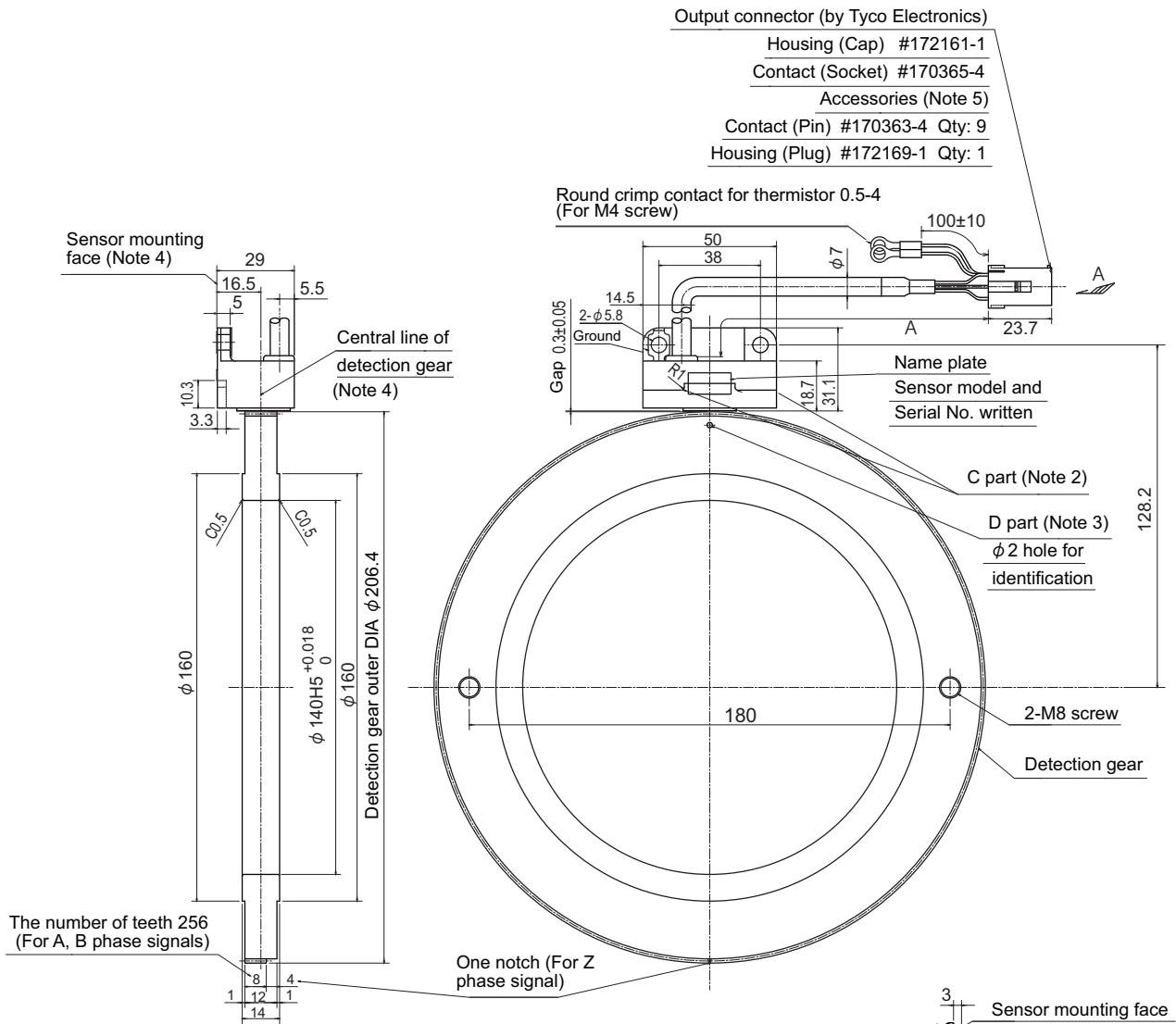


- (Note 1) Handle with care as this is a precision component. Pay special attention not to apply excessive external force on the sensor's detection face. Applying such force will cause a fault.
- (Note 2) In installing the sensor, keep the protruding fitting of $\phi 122\pm 0.025$ mm on the machine side, and push the C part of the sensor mounting seat against the fitting.
- (Note 3) In installing the detection gear, make sure that the D part side comes the opposite side of the sensor installation side (sensor's lead wire side).
- (Note 4) The deviation of the center of the detection gear is 16.5 ± 0.25 mm from the sensor mounting face.
- (Note 5) A connector of the signal cable side (one plug and nine pins) is attached.

Sensor		Detection gear
Parts name	Lead wire length A [mm]	Parts name
TS5690N1210	400±10	MU1606N709
TS5690N1220	800±20	
TS5690N1230	1200±20	
TS5690N1240	1600±30	
TS5690N1260	2000±30	

< TS5690N25xx + MU1606N805 >

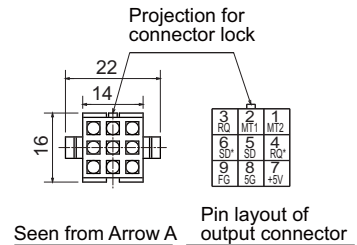
[Unit: mm]



- (Note 1) Handle with care as this is a precision component. Pay special attention not to apply excessive external force on the sensor's detection face. Applying such force will cause a fault.
- (Note 2) In installing the sensor, keep the protruding fitting of $\phi 223.6 \pm 0.025$ mm on the machine side, and push the C part of the sensor mounting seat against the fitting.
- (Note 3) In installing the detection gear, make sure that the D part side comes the opposite side of the sensor installation side (sensor's lead wire side).
- (Note 4) The deviation of the center of the detection gear is 16.5 ± 0.25 mm from the sensor mounting face.
- (Note 5) A connector of the signal cable side (one plug and nine pins) is attached.

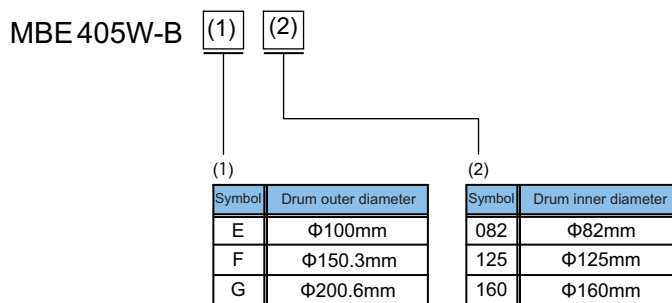
Encoder mounting face of machine side

Sensor		Detection gear
Parts name	Lead wire length A [mm]	Parts name
TS5690N2510	400±10	MU1606N805
TS5690N2520	800±20	
TS5690N2530	1200±20	
TS5690N2540	1600±30	
TS5690N2560	2000±30	



Twin-head Magnetic Encoder (MBE Series)

(1) Type description



(2) Specifications

Encoder type		MBE405W-BE082	MBE405W-BF125	MBE405W-BG160
Electrical characteristics	Encoder resolution	4,000,000p/rev		
	Detection method	Incremental		
	Accuracy (*1) (*2)	±4 seconds	±3 seconds	±2 seconds
	Wave number within one rotation	512 waves	768 waves	1024 waves
	Encoder output data	Serial data		
	Power consumption	0.2A or less		
Mechanical characteristics for rotation	Inertia	$0.5 \times 10^{-3} \text{kg} \cdot \text{m}^2$	$2.4 \times 10^{-3} \text{kg} \cdot \text{m}^2$	$8.7 \times 10^{-3} \text{kg} \cdot \text{m}^2$
	Tolerable continuous rotation speed	15000r/min	10000r/min	8000r/min
Mechanical configuration	Drum inner diameter	Φ82mm	Φ125mm	Φ160mm
	Drum outer diameter	Φ100mm	Φ150.3mm	Φ200.6mm
	Drum mass	0.2kg	0.46kg	1.0kg
	Degree of protection (*3)	IP67		
Working environment	Ambient temperature range	0°C to +55°C		
	Storage temperature range	-20°C to +85°C		
	Humidity	95%RH		
	Vibration resistance	Horizontal direction to the axis: 5G or less, Vertical direction to the axis: 5G or less		
	Impact resistance	490m/s ² (50G)		

(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed.

(*2) The user is requested to install the magnetic drum and installation ring in the encoder within the accuracy range specified herein. Even when the accuracy of the encoder when shipped and when installed by the user is both within the specified range, there is a difference in the installation position. Therefore, the accuracy at the time of our shipment may not be acquired.

(*3) It is the degree of protection when fitted with a connector.

(3) Specifications of preamplifier

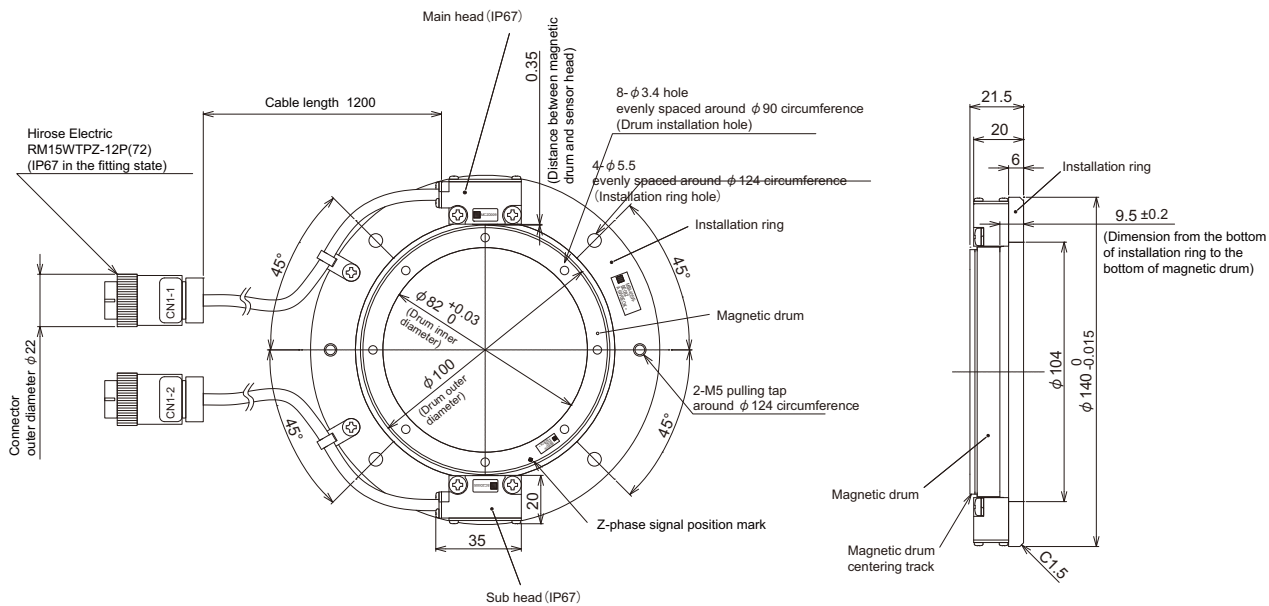
Item	Specified value
Output communication style	High-speed serial communication I/F
Working ambient temperature	0°C to +55°C
Working ambient humidity	90%RH or less (with no dew condensation)
Atmosphere	No toxic gases
Tolerable vibration	Horizontal direction to the axis: 5G or less, Vertical direction to the axis: 5G or less
Tolerable impact	490m/s ² (50G)
Tolerable power voltage	DC5V±10%
Mass	0.33kg
Degree of protection (*2)	IP67

(*1) The values above are the specified values for the preamplifier provided with a twin-head magnetic encoder.

(*2) It is the degree of protection when fitted with a connector.

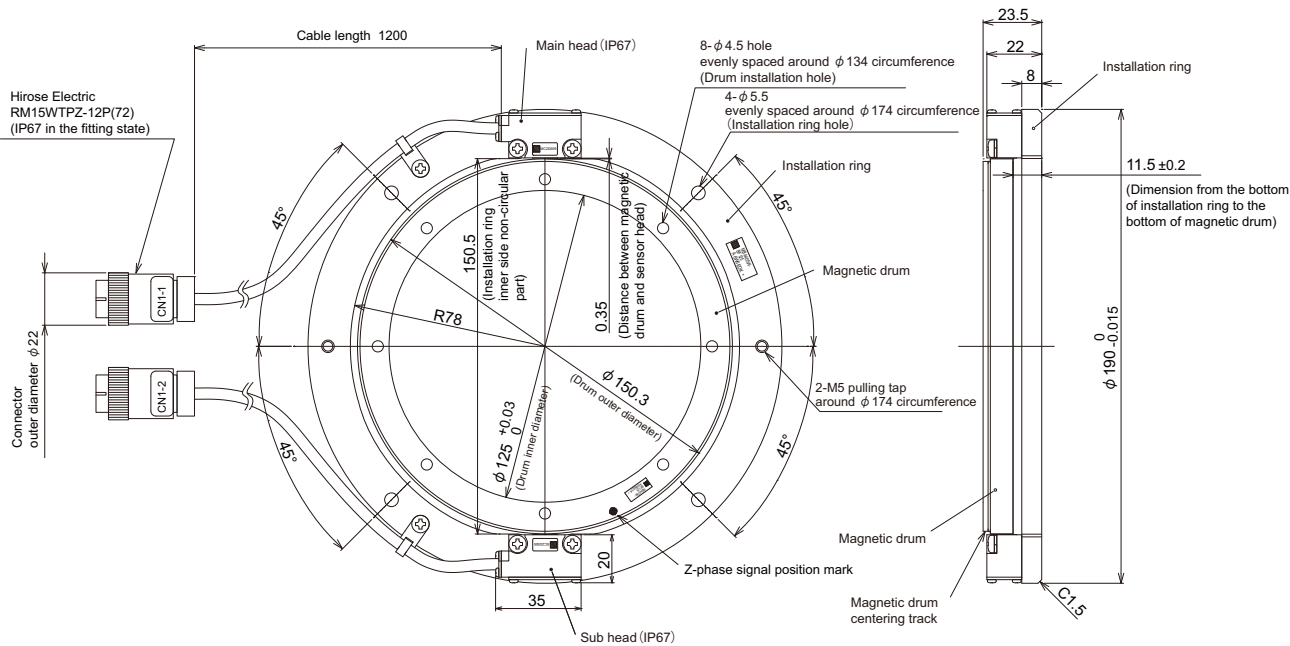
(4) Outline dimension drawing
 < MBE405W-BE082 >

[Unit: mm]



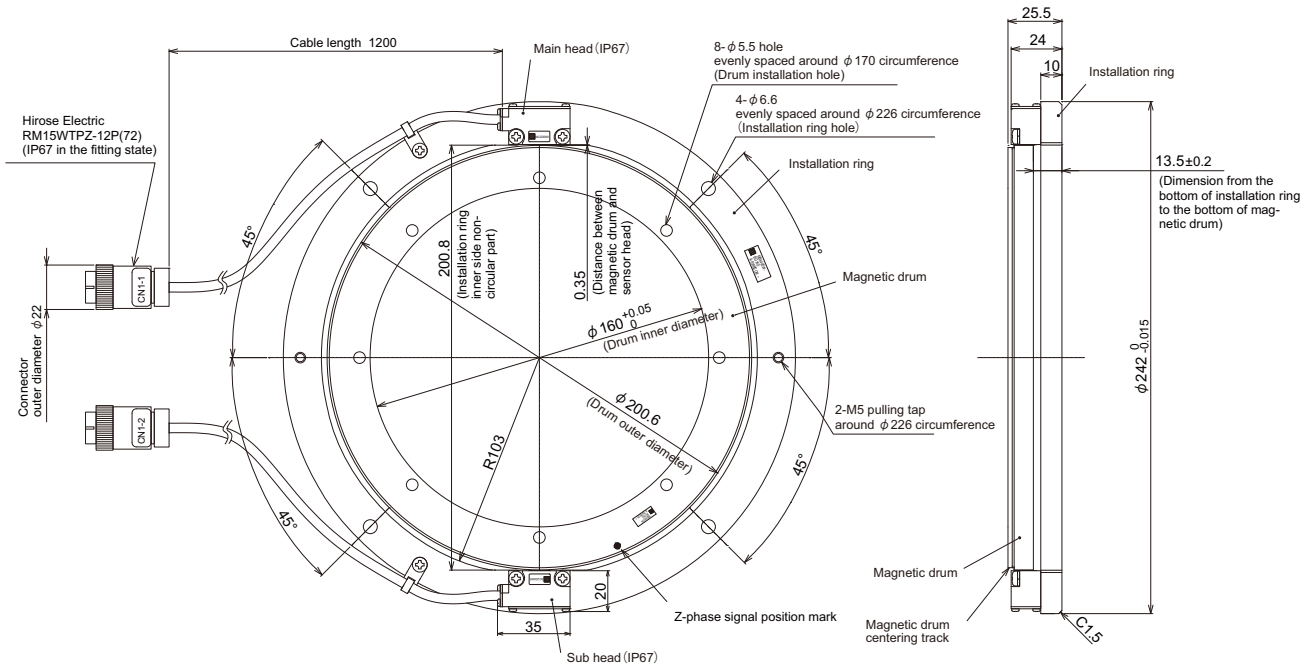
< MBE405W-BF125 >

[Unit: mm]



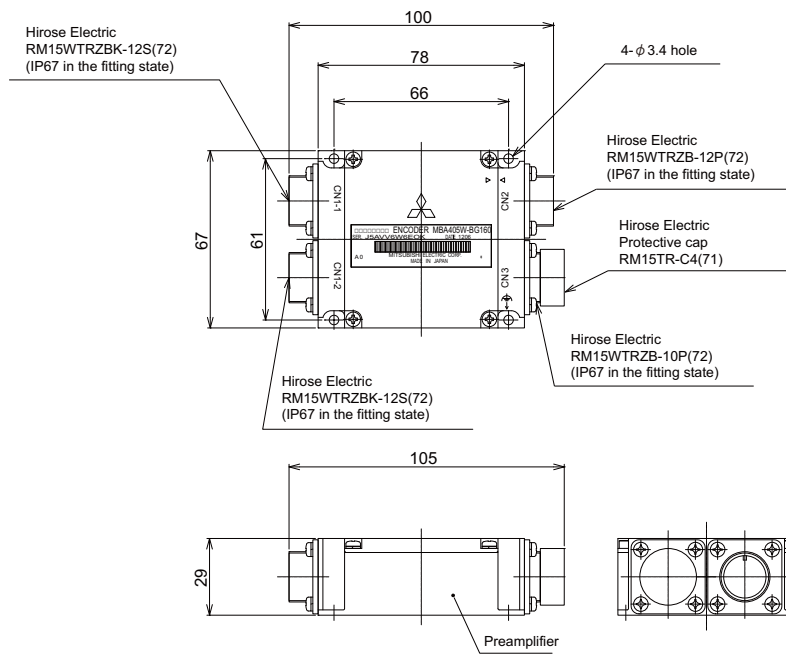
< MBE405W-BG160 >

[Unit: mm]



< Preampifier (common) >

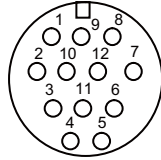
[Unit: mm]



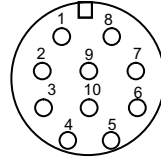
< Explanation of connectors >

Connector name	Application
CN1-1	For connection with scale (main head)
CN1-2	For connection with scale (sub head)
CN2	For connection with spindle drive unit
CN3	For connection with motor thermistor

< Connector pin layout >



CN2 < Drive unit >



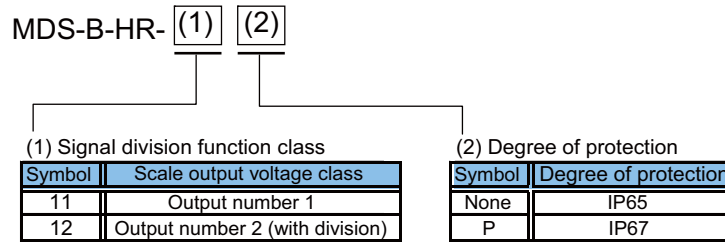
CN3 < Thermistor >

Pin No.	Function	Pin No.	Function
1	-	1	-
2	-	2	-
3	SD	3	MT1-i
4	SD*	4	-
5	SHD	5	-
6	MT1	6	-
7	RQ	7	-
8	RQ*	8	-
9	P5	9	MT2-i
10	LG	10	-
11	MT2	11	-
12	CNT	12	-

Serial Output Interface Unit for ABZ Analog Encoder MDS-B-HR

This unit superimposes the scale analog output raw waves, and generates high resolution position data. Increasing the encoder resolution is effective for the servo high-gain. MDS-B-HR-12(P) is used for the synchronous control system that 1-scale 2-drive operation is possible.

(1) Type configuration



(2) Specifications

Type	MDS-B-HR-	11	12	11P	12P
Compatible scale (example)		LS186 / LS486 / LS186C / LS486C (HEIDENHAIN)			
Signal 2-division function		-	*	-	*
Analog signal input specifications		A-phase, B-phase, Z-phase (Amplitude 1Vp-p)			
Compatible frequency		Analog raw waveform max. 200kHz			
Scale resolution		Analog raw waveform/512 division			
Input/output communication style		High-speed serial communication I/F, RS485 or equivalent			
Working ambient temperature		0 to 55°C			
Working ambient humidity		90%RH or less (with no dew condensation)			
Atmosphere		No toxic gases			
Tolerable vibration		98.0 m/s ² (10G)			
Tolerable impact		294.0 m/s ² (30G)			
Tolerable power voltage		5VDC±5%			
Maximum heating value		2W			
Mass		0.5kg or less			
Degree of protection		IP65		IP67	

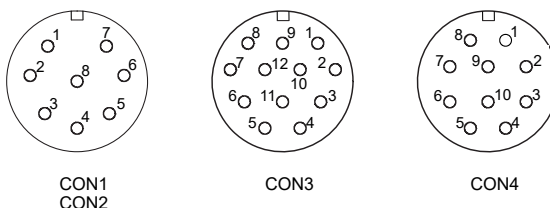
(3) Explanation of connectors

Connector name	Application	Remarks
CON1	For connection with servo drive unit (2nd system)	Not provided for 1-part system specifications
CON2	For connection with servo drive unit	
CON3	For connection with scale	
CON4	For connection with pole detection unit (MDS-B-MD)	*Used for linear servo system

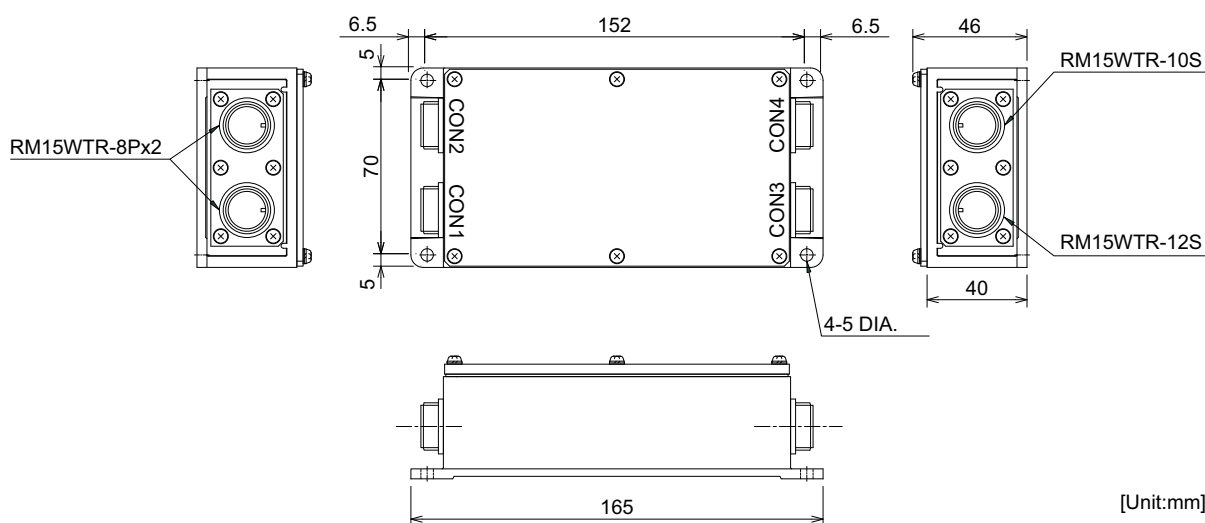
CON1		CON2		CON3		CON4	
Pin No.	Function	Pin No.	Function	Pin No.	Function	Pin No.	Function
1	RQ+ signal	1	RQ+ signal	1	A+ phase signal	1	A phase signal
2	RQ- signal	2	RQ- signal	2	A- phase signal	2	REF signal
3	SD+ signal	3	SD+ signal	3	B+ phase signal	3	B phase signal
4	SD- signal	4	SD- signal	4	B- phase signal	4	REF signal
5	P5	5	P5	5	Z+ phase signal	5	P24
6	P5	6	P5	6	Z- phase signal	6	MOH signal
7	GND	7	GND	7	-	7	P5
8	GND	8	GND	8	-	8	P5
				9	-	9	TH signal
				10	-	10	GND
				11	P5		
				12	GND		

<Connector pin layout >

Connector	Type
CON1	RM15WTR- 8P(Hirose Electric)
CON2	
CON3	RM15WTR-12S(Hirose Electric)
CON4	RM15WTR-10S(Hirose Electric)

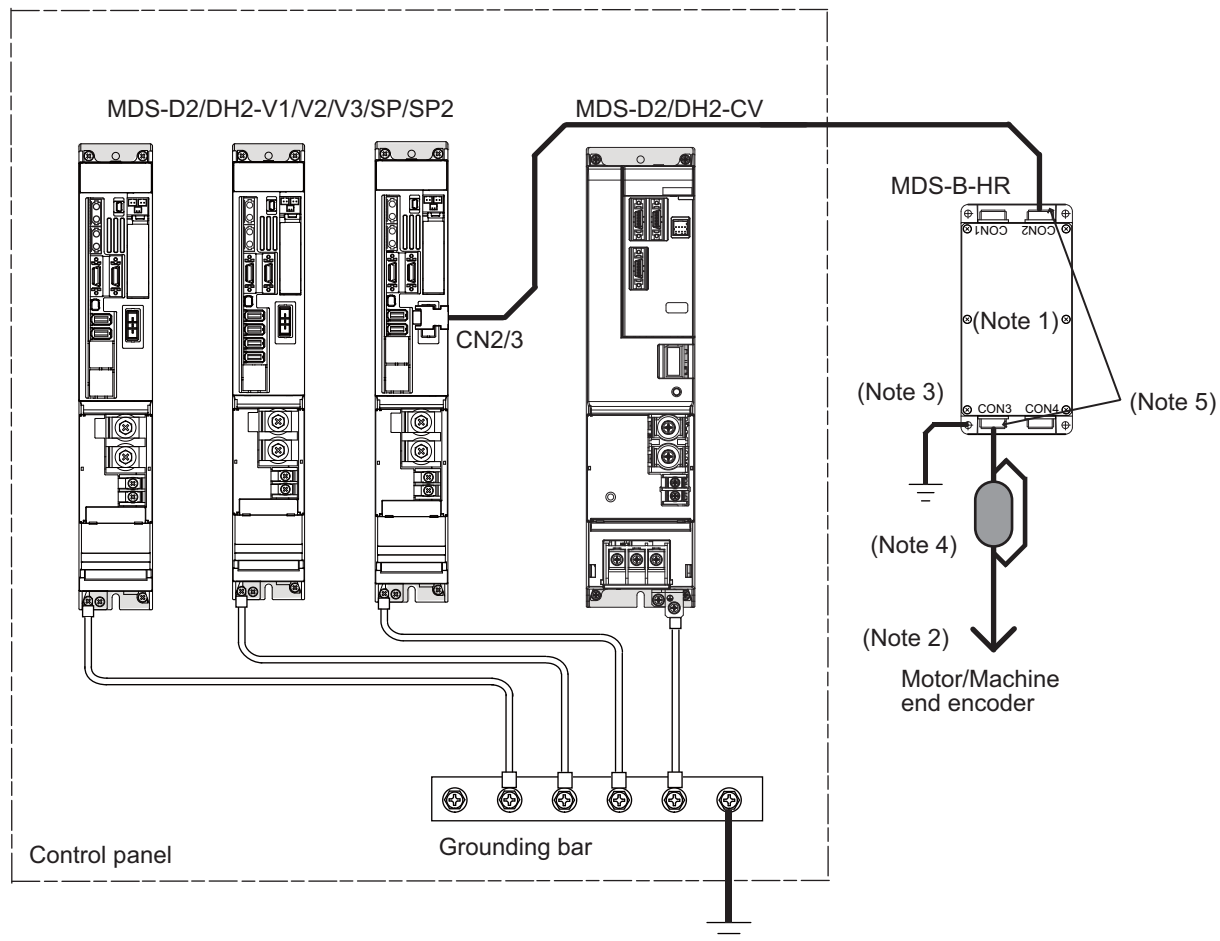


(4) Outline dimension drawings



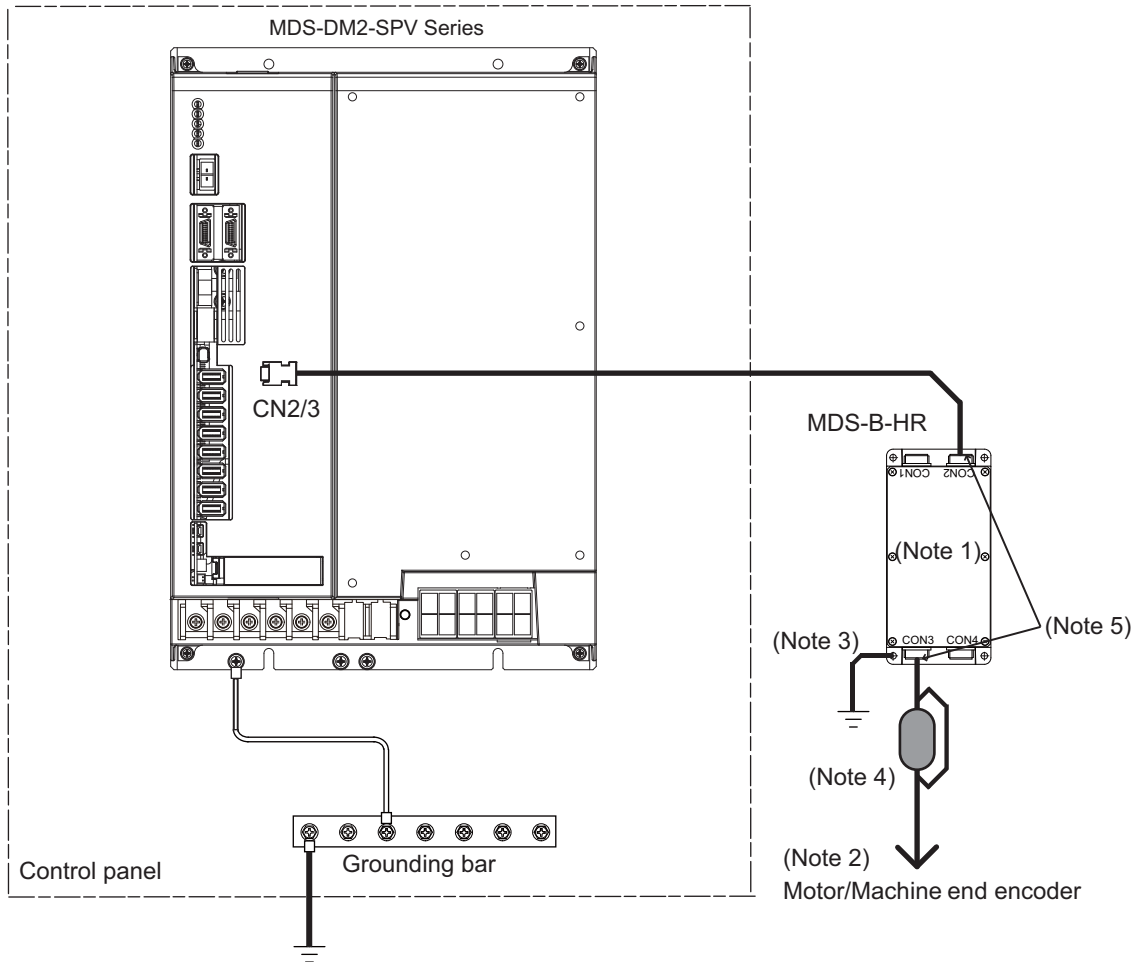
[Unit:mm]

(5) Example of wiring



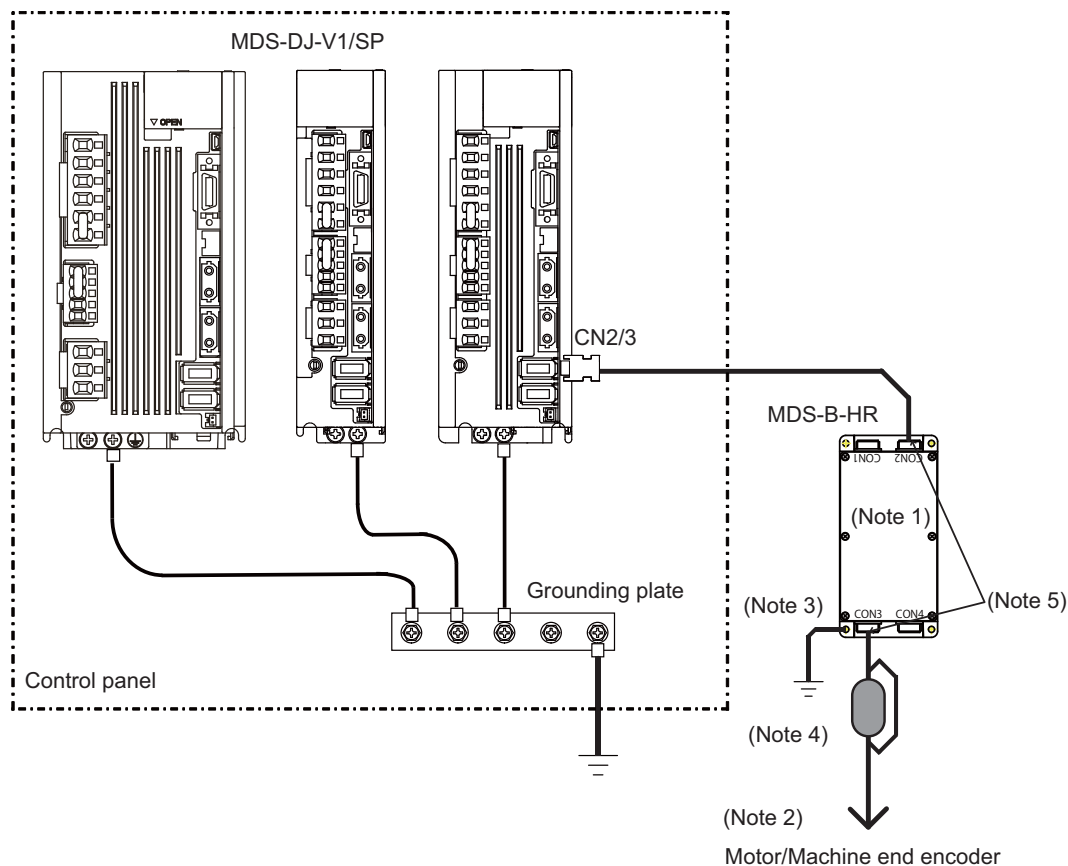
- (Note 1) Install the MDS-B-HR unit outside the control panel.
- (Note 2) For connections between an encoder and MDS-B-HR unit, keep the cable length as short as possible.
- (Note 3) Ground the MDS-B-HR unit.
- (Note 4) Place a ferrite core as close as possible to the MDS-B-HR unit.
Wind the cable around the unit one time when installing a ferrite core.
- (Note 5) Use shielded cables and join the shield to the connector shell.

< MDS-DM2 Series >



- (Note 1) Install the MDS-B-HR unit outside the control panel.
- (Note 2) For connections between an encoder and MDS-B-HR unit, keep the cable length as short as possible.
- (Note 3) Ground the MDS-B-HR unit.
- (Note 4) Place a ferrite core as close as possible to the MDS-B-HR unit.
Wind the cable around the unit one time when installing a ferrite core.
- (Note 5) Use shielded cables and join the shield to the connector shell.

< MDS-DJ Series >



- (Note 1) Install the MDS-B-HR unit outside the control panel.
- (Note 2) For connections between an encoder and MDS-B-HR unit, keep the cable length as short as possible.
- (Note 3) Ground the MDS-B-HR unit.
- (Note 4) Place a ferrite core as close as possible to the MDS-B-HR unit.
Wind the cable around the unit one time when installing a ferrite core.
- (Note 5) Use shielded cables and join the shield to the connector shell.

Serial Signal Division Unit MDS-B-SD

This unit has a function to divide the position and speed signals fed back from the high-speed serial encoder and high-speed serial linear scale. This unit is used to carry out synchronized control of the motor with two MDS-D2/DH2-V1 drive units.

(1) Specifications

Type	MDS-B-SD
Compatible servo drive unit	MDS-D2/DH2-V1-□
Input/output communication style	High-speed serial communication I/F, RS485 or equivalent
Working ambient temperature	0 to 55°C
Working ambient humidity	90%RH or less (with no dew condensation)
Atmosphere	No toxic gases
Tolerable vibration	98.0 m/s ² (10G)
Tolerable impact	294.0 m/s ² (30G)
Tolerable power voltage	5VDC±10%
Maximum heating value	4W
Mass	0.5kg or less
Degree of protection	IP20



POINT

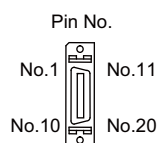
Always provide one MDS-B-SD unit for one speed command synchronous control operation.
The CN2 system's CN2A and the CN3 system's CN3A cannot be connected to different servo drive units.

(2) Explanation of connectors

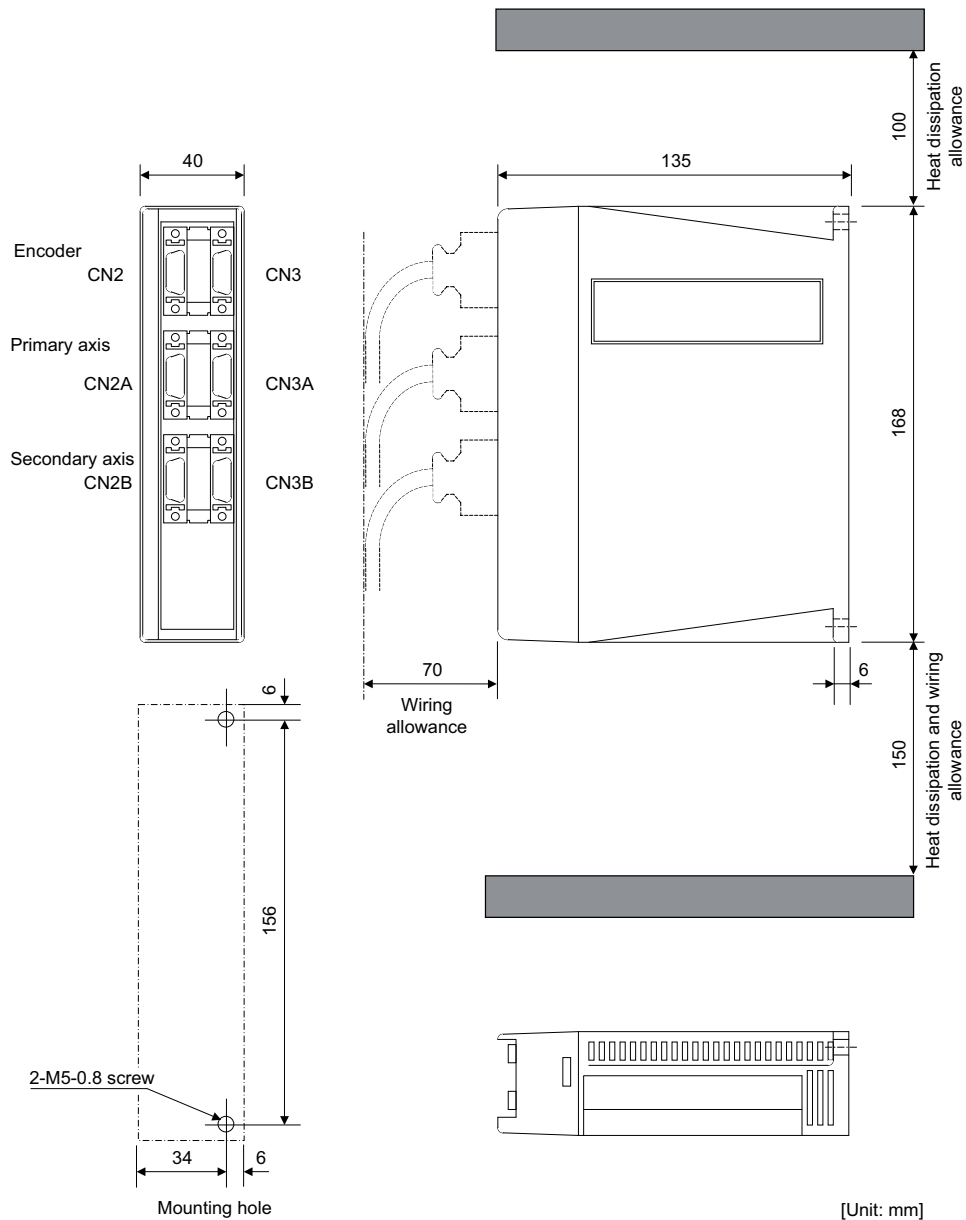
Encoder connector : CN2			
Pin No.	Name	Pin No.	Name
1	LG	11	LG
2		12	
3		13	
4		14	
5		15	
6	SD	16	SD*
7	RQ	17	RQ*
8		18	
9	BAT	19	
10	P5 (+5V)	20	P5 (+5V)

< Connector pin layout >

Encoder connector : CN2



(3) Outline dimension drawings



Optical Communication Repeater Unit (FCU7-EX022)

When the distance of the optical communication cable between NC control unit and drive unit is over 30m (M700V/M70V/E70 Series: maximum 30m, M700/M70/C70 Series: maximum 20m), the communication can be performed by relaying the optical signal. Using up to two units, relay of the total length of up to 90m can be performed.

<Product features>

- (a) When the distance of the optical communication cable between NC control unit and drive unit is over 30m, the communication can be performed by relaying the optical signal.
- (b) The relay between NC control unit and drive unit can be performed for up to two channels.
- (c) If the distance between NC control unit and drive unit is even within 30m, the cable can be divided by the relay in transporting the machine.
- (d) Same mounting dimension as the remote I/O unit (DX unit).

**CAUTION**

This unit can not be used between drive units.

(1) Specifications

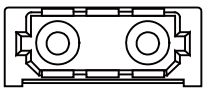
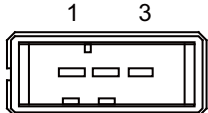
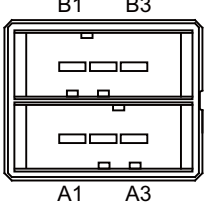

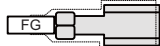
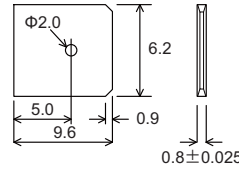
Item		FCU7-EX022		
24VDC input	Input voltage	24V±10% (21.6V to 26.4V)		
	Inrush current	35A		
	Power consumption	10W		
	Consumption current	0.4A		
Optical interface	Channel number	2 channels		
	Connectable number	Maximum 2		
Environment	Ambient temperature	Operation	0°C to +55°C	
		Storage	-20°C to +60°C	
	Ambient humidity	Operation (long term)	+10%RH to +75%RH (with no dew condensation)	
		Operation (short term)	+10%RH to +95%RH (with no dew condensation. Short term is within about one month.)	
		Storage	+10%RH to +75%RH (with no dew condensation)	
	Vibration	Operation	4.9m/s ²	
		Transportation	34.3m/s ²	
	Impact resistance	Operation	29.4m/s ²	
Atmosphere	No corrosive gas, oil mist, or dust			
Dimension	Dimension	(depth)135mm × (width)40mm × (height)168mm		
	Mounting method	Screw cramp with M5 2 screw cramps		
Mass	0.42kg			

(2) Explanation of connectors

Connector name	Application	Remarks
OPT1IN, OPT1OUT, OPT2IN, OPT2OUT	Optical connector	
DCIN	24VDC Power connector	
DCOUT	24VDC/ Power OFF detection output connector	Relays the PD25/27 output to NC control unit.
ACFAIL	Power OFF detection connector	Relays the power OFF detection signal (ACFAIL) when sharing 24V power from PD25/PD27 for NC control unit and optical communication repeater unit. It will not be used when dedicated general-purpose power supply for optical communication repeater unit is prepared.
FG	FG Faston terminal	

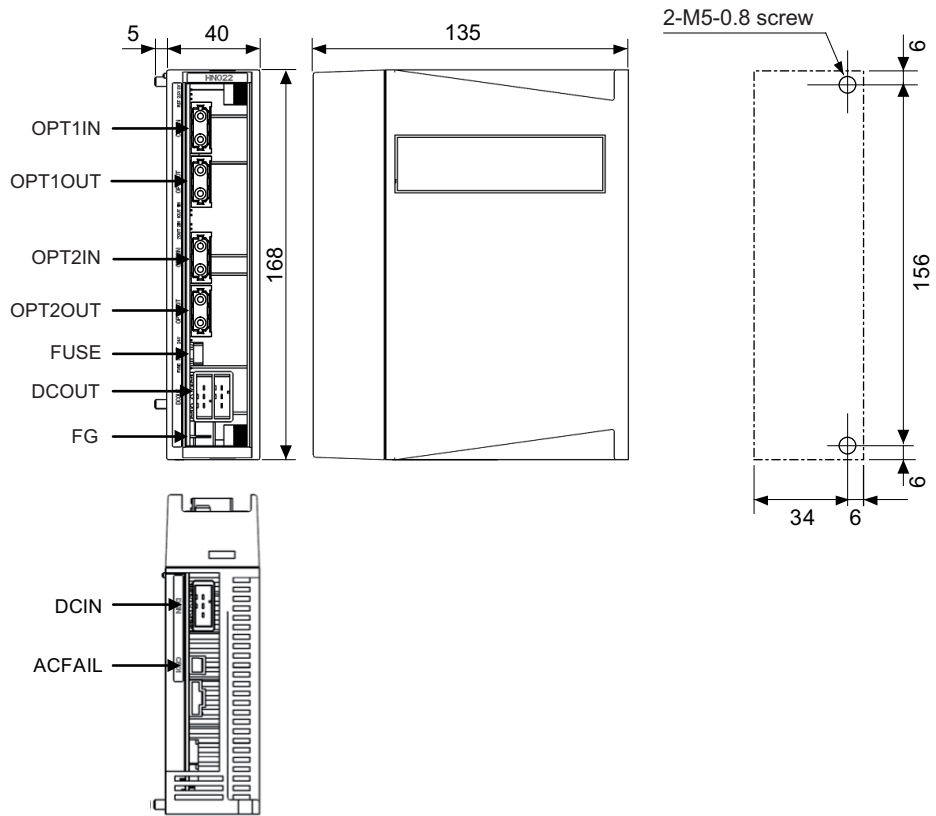
DCIN		DCOUT			ACFAIL		
Pin No.	Name	Pin No.	Name	Pin No.	Name	Pin No.	Name
1	24VDC	A1	ACFAIL	B1	24VDC	1	COM
2	0V (RG)	A2	COM	B2	0V (RG)	2	ACFAIL
3	FG	A3	NC	B3	FG		

< Connector pin layout >

Optical communication I/F (OPT1IN, OPT1OUT, OPT2IN, OPT2OUT)	DC24V input (DCIN)	DC24V output (DCOUT)	Power OFF input ACFAIL (Terminal name:CF01)	FG terminal (FG)
				
<p><Cable side connector type> (PCF type) Connector: CF-2D101-S Recommended manufacturer: Japan Aviation Electronics</p> <p><Cable side connector type> (POF type) Connector: PF-2D101 Recommended manufacturer: Japan Aviation Electronics</p>	<p><PCB side connector type> Connector: 2-178293-5 Recommended manufacturer: Tyco Electronics</p> <p><Cable side connector type> Connector: 2-178288-3 Contact: 1-175218-5 Recommended manufacturer: Tyco Electronics</p>	<p><PCB side connector type> Connector: 3-178137-5 Recommended manufacturer: Tyco Electronics</p> <p><Cable side connector type> Connector: 2-178127-6 Contact: 1-175218-5 Recommended manufacturer: Tyco Electronics</p>	<p><PCB side connector type> Connector: 53103-0230 Recommended manufacturer: MOLEX</p> <p><Cable side connector type> Connector: 005057-9402 Contact: 0016020103 Recommended manufacturer: MOLEX</p>	<p><Cable side faston terminal type name> Type name: 175022-1 (For AWG20-14 250 series) Recommended manufacturer: Tyco Electronics Terminal protection tube: 174817-2 (Yellow) [Unit: mm]</p>  <p>Unit side tab terminal shape (Note) The faston terminal "175022-1" of the cable side is a simple lock type. Make sure to insert until the simple lock pin is in the Φsecond hole. Firmly press the simple lock release tab when unplugging it.</p>

(3) Outline dimension drawings

[Unit: mm]



DC Connection Bar

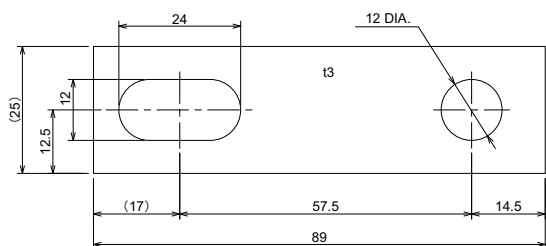
When connecting a large capacity drive unit with L+L- terminal of power supply unit, DC connection bar is required. In use of the following large capacity drive units, use a dedicated DC connection bar. The DC connection bar to be used depends on the connected power supply, so make a selection according to the following table.

Large capacity drive unit	Power supply unit	Required connection bar
MDS-D2-SP-400 MDS-D2-SP-640	MDS-D2-CV-300 MDS-D2-CV-370 MDS-D2-CV-450	D-BAR-B1006
MDS-D2-SP-400 MDS-D2-SP-640	MDS-D2-CV-550	D-BAR-A1010 (Two-parts set)

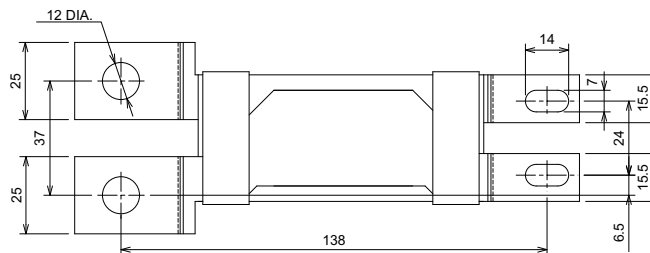
(1) Outline dimension drawings

[Unit:mm]

D-BAR-A1010



D-BAR-B1006



(Note) D-BAR-A1010 is a set of two DC connection bars.



POINT

Always install a large capacity drive unit in the left side of power supply unit, and connect with DC connection bar.

Power Backup Unit (MDS-D-PFU)

MDS-D-PFU unit is a system to protect the machine and the drive units safely by decelerating and stopping the motor at power failure.

(1) Type configuration

MDS- (1) -PFU

(1)

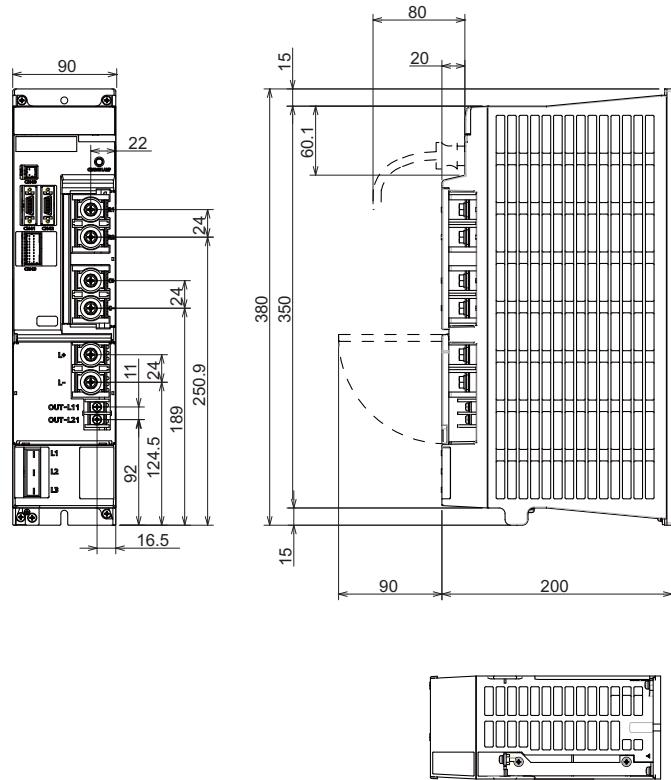
Symbol	Voltage class
D	200V
DH	400V

(2) Specifications

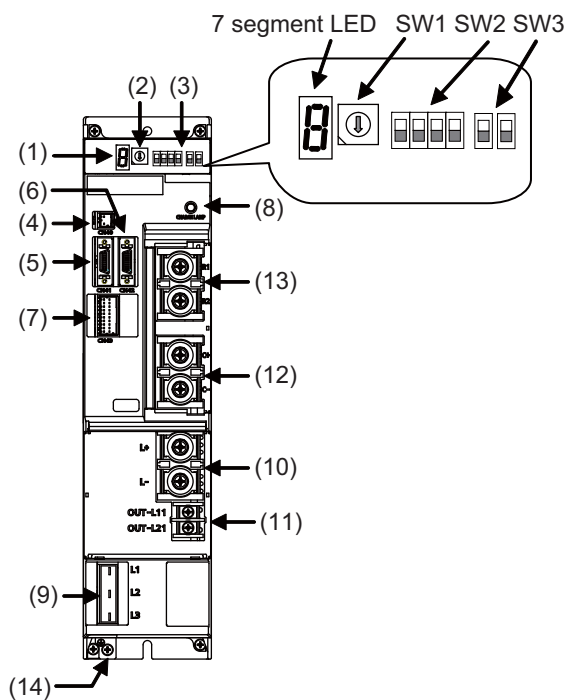
Model Name		MDS-D-PFU
AC Input	Rated voltage [V]	200 to 230AC (50/60Hz) Tolerable fluctuation : between +10% and -15%
	Frequency [Hz]	50/60 Tolerable fluctuation : between +3% and -3%
	Rated current [A]	4
DC Input and output	Rated voltage [V]	270 to 311DC
	Rated current [A]	Regenerating Input: MAX 300A Powering Output: MAX 200A
AC output for control power supply backup	Voltage [V]	Single phase 200 to 230VAC (50Hz or 60Hz) 50Hz at backup
	Current [A]	MAX 4
	Maximum number of connectable drive units	6 (excluding power supply units)
	Changeover time	100ms or less after instantaneous interruption of AC input
	Minimum backup time	75ms or longer (When 200VAC is input and the maximum number of connectable drive units is connected)
Degree of protection		IP20 (Except for Terminal block and Connector)
Environment	Ambient temperature	Operation: 0 to 55°C (with no freezing) Storage / Transportation: -15°C to 70°C (with no freezing)
	Ambient humidity	Operation / Storage / Transportation: 90%RH or less (with no dew condensation)
	Atmosphere	Indoors (no direct sunlight) With no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
	Altitude	Operation/Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level
	Vibration	Operation / Storage: 4.9m/s ² (0.5G) or less
Cooling method		Natural air cooling
Mass [kg]		4

(3) Outline dimension drawings
< MDS-D-PFU >

[Unit : mm]

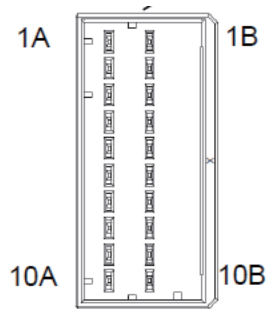


(4) Explanation of each part
< MDS-D-PFU >



		Name	Application	Screw size	Compatible wire
(1)	Control circuit	LED	Unit status indication 7 segment LED	---	---
(2)		SW1	Function setting rotary switch	---	---
(3)		SW2,SW3	Function setting DIP switch	---	---
(4)		CN40	(Not used)	---	---
(5)		CN41	For connecting MDS-D2/DH2-CV	---	---
(6)		CN42	Maintenance	---	---
(7)		CN43	DIO	---	---
(8)		Charge LED	---	Voltage status indication between TE4 terminals	---
(9)	Main circuit	TE1	L1 L2 L3 Control power input terminal (Three-phase AC input)	---	AWG#14 (2mm ²)
(10)		TE2	L+ L- Power backup unit voltage input/output terminal Connected to the L+ and L- terminals of the power supply unit	M6×18 Tightening torque 4.0Nm	AWG#4 (22 mm ²) or above
(11)		TE3	OUT-L11 OUT-L21 Power backup unit voltage output terminal (AC output) Connected to the L11 and L21 terminals of the power supply unit and drive unit	M4×10 Tightening torque 1.2Nm	AWG#14 (2mm ²)
(12)		TE4	C+ C- Capacitor unit connection terminal	M6×18 Tightening torque 4.0Nm	AWG#10 (5.5 mm ²)
(13)		TE5	R1 R2 Regenerative resistor connection terminal	M6×18 Tightening torque 4.0Nm	AWG#10 (5.5 mm ²)
(14)		PE	Grounding terminal	M4×12 Tightening torque 1.2Nm	AWG#14 (2mm ²)

(5) Explanation of connectors
 < CN43 connector >



No.	Signal name	Function	Description
1B	24VOUT	Internal 24V output	Internal 24V output. This enables connection to the 24V input power supply for DO. (Note that the DO output current should be 100mA or less.)
2B	DO_COM	DO common terminal	Common terminal for DO output circuit
5B	DO2	Tool escape request	ON:Normal, OFF: Tool escape request
10B	THM1	Thermal error detection	Shorted: Normal, Open: Error detection
1A	24GOUT	Internal 24V output GND	
2A	DO_COM2	DO common terminal 2	
3A	DO_COM2	DO common terminal 2	
10A	THM2(24GOUT)	Thermal error detection	GND for internal 24V input

Regenerative Resistor for Power Backup Unit (R-UNIT-7)

Check the availability of connection of the power backup unit and the regenerative resistor for the power backup unit. The regenerative resistor generates heats, so wire and install the unit while taking care to safety.

(1) Specifications

Model Name		R-UNIT-7
Compatible power backup unit name		MDS-D-PFU
Resistance value [Ω]		1.4
Instantaneous regeneration capacity [kW]		114
Allowable regeneration workload [kJ]		180
Environment	Ambient temperature	Operation: 0 to 55°C (with no freezing) Storage / Transportation: -15°C to 70°C (with no freezing)
	Ambient humidity	Operation / Storage / Transportation: 90%RH or less (with no dew condensation)
	Atmosphere	Indoors (no direct sunlight) With no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
	Altitude	Operation/Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level
	Vibration	Operation / Storage: 4.9m/s ² (0.5G) or less
Cooling method		Natural air cooling
Mass [kg]		10

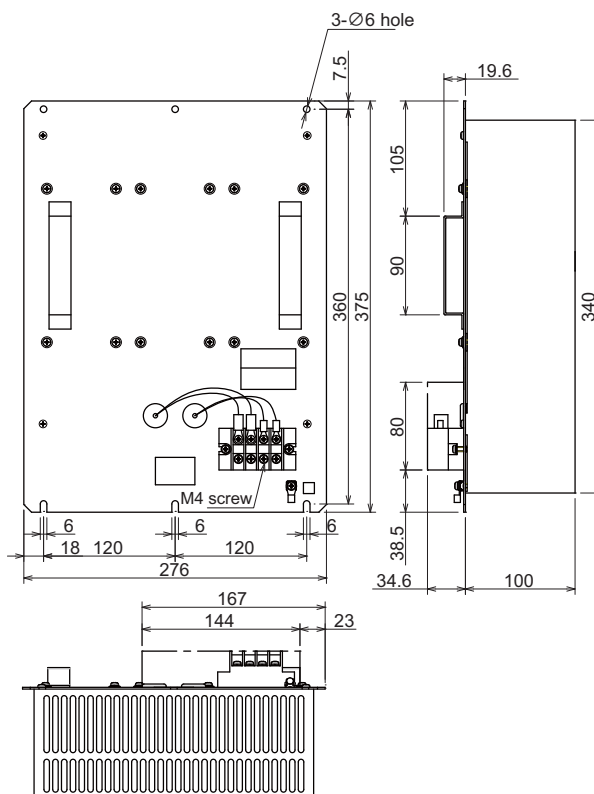
CAUTION

- Only the designated combination can be used for the power backup unit and the regenerative resistor for the power backup unit.
There is a risk of fire, so always use the designated combination.
- Select the function selection rotary switch (SW1) of the power backup unit according to the regenerative resistor for the power backup unit to be used.

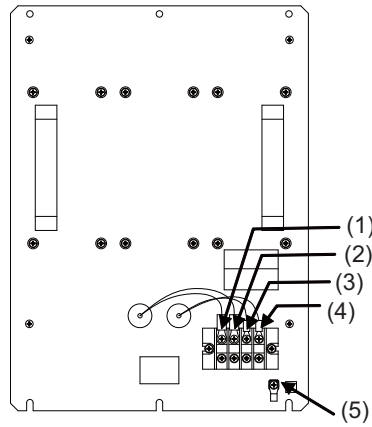
(2) Outline dimension drawings

< R-UNIT-7 >

[Unit : mm]



(3) Explanation of each part
< R-UNIT-7 >



Name		Function	Compatible wire	Terminal specification
(1)	R1	PFU connection terminal	AWG10 (5.5 mm ²)	M4 screw
(2)	R2			Compatible crimp terminal: Round: Up to 5.5-4
(3)	AL1	Thermal connection output terminal	AWG#18 to AWG#24 (0.75mm ² to 0.2mm ²)	M4 screw
(4)	AL2			Compatible crimp terminal: Round: Up to 1.25-4
(5)	E	Grounding terminal	AWG10 (5.5 mm ²)	M4 screw Compatible crimp terminal: Round: Up to 5.5-4

Capacitor Unit for Power Backup Unit (MDS-D-CU)

Check the availability of connection of the power backup unit and the capacitor unit. The powering energy at retraction/tool escape is supplied to the capacitor unit.

(1) Specifications

Model Name		MDS-D-CU
Compatible power backup unit name		MDS-D-PFU
Capacity [μ F]		28000
DC Input and output	Rated voltage [V]	DC270 to 311
	Ambient temperature	Operation: 0 to 55°C (with no freezing) Storage / Transportation: -15°C to 70°C (with no freezing)
Environment	Ambient humidity	Operation / Storage / Transportation: 90%RH or less (with no dew condensation)
	Atmosphere	Indoors (no direct sunlight) With no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
	Altitude	Operation/Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level
	Vibration	Operation / Storage: 4.9m/s ² (0.5G) or less
Cooling method		Natural air cooling
Mass [kg]		11

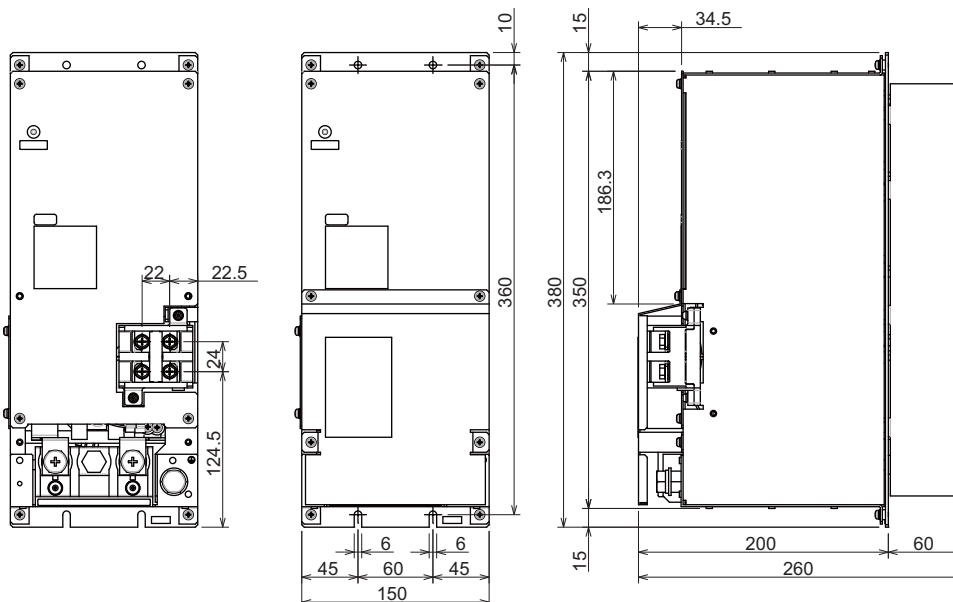
CAUTION

1. Only the designated combination can be used for the power backup unit and the capacitor unit.
There is a risk of fire, so always use the designated combination.
2. Do not reverse the polarity when connecting.
3. When using the retraction/tool escape function, the supported software version for the power backup unit is A1 or later.
4. Select the function setting dip switch (SW2) of the power backup unit according to the capacitor unit to be used.

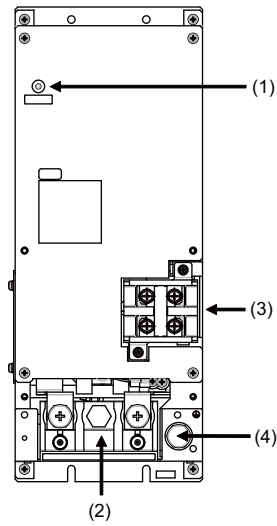
(2) Outline dimension drawings

< MDS-D-CU >

[Unit : mm]



(3) Explanation of each part
< MDS-D-CU >

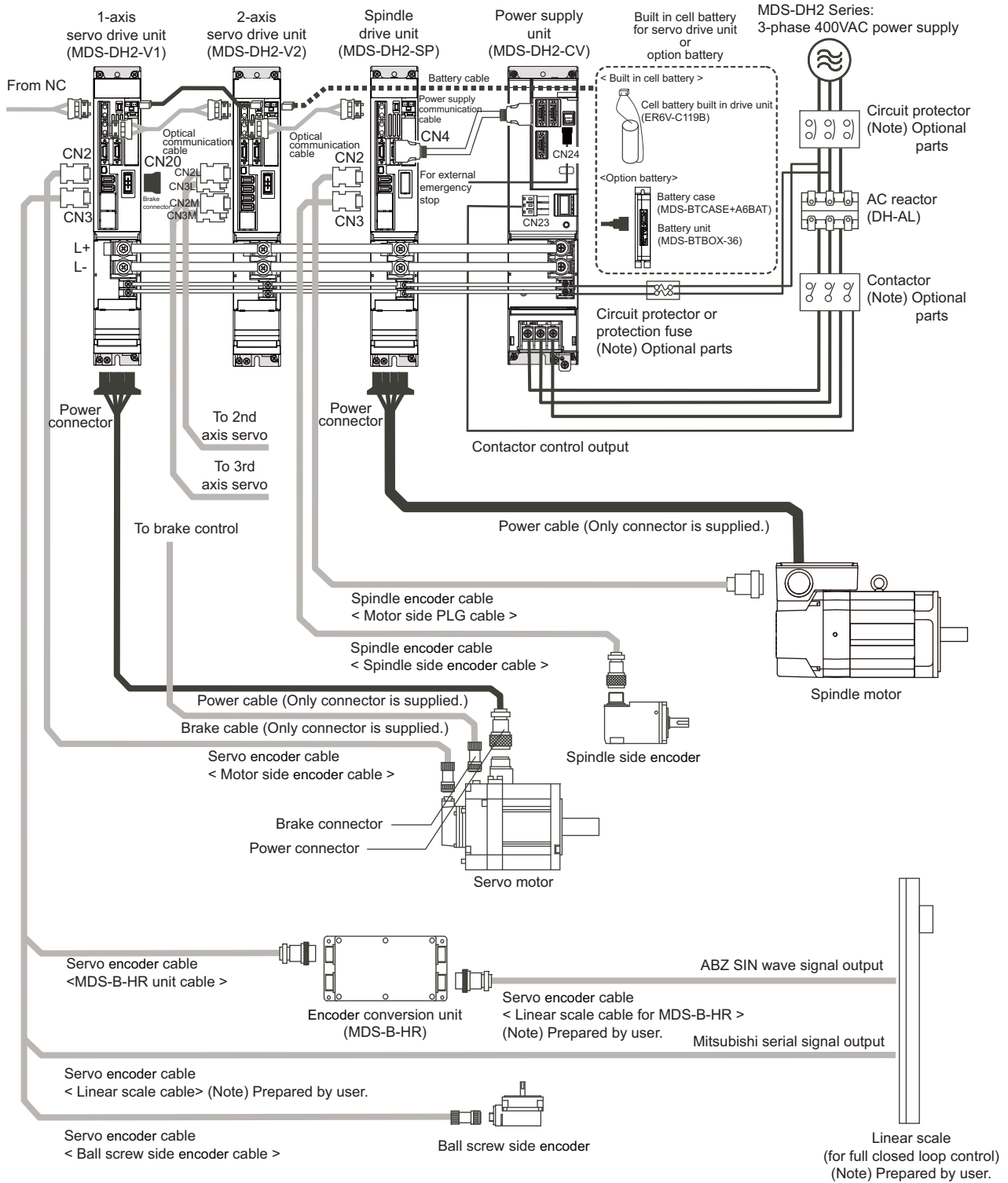


	Name		Function	Compatible wire	Terminal specification
(1)	Charge LED	---	Voltage status indication between TE1 terminals	---	---
(2)	TE1	C+ C-	PFU connection terminal	AWG#4 (22 mm ²)	M10 screw Compatible crimp terminal: Round Up to 8-10
(3)	TE2	C+ C-	Capacitor unit connection terminal (for extension)	AWG#4 (22 mm ²)	M6 screw Compatible crimp terminal: Round Up to 8-6
(4)	PE		Grounding terminal	AWG#10 (5.5mm ²)	M10 screw Compatible crimp terminal: Round Up to 8-10

400V System Servo/spindle Drive System

System Configuration

< MDS-DH2 Series >



Explanation of Type

1. Servo motor type

< HF-H Series >

HF-H (1) (2) (3) - (4)

(1) Rated output · Maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
75	0.75kW	5000r/min	90 SQ.
105	1.0kW	5000r/min	90 SQ.
54	0.5kW	4000r/min	130 SQ.
104	1.0kW	4000r/min	130 SQ.
154	1.5kW	4000r/min	130 SQ.
204	2.0kW	4000r/min	176 SQ.
354	3.5kW	4000r/min	176 SQ.
453	4.5kW	3500r/min	176 SQ.
703	7.0kW	3000r/min	176 SQ.
903	9.0kW	3000r/min	204 SQ.

(3) Shaft end structure

Symbol	Shaft end structure
S	Straight
T	Taper

(Note) "Taper" is available for the motor whose flange size is 90 SQ. mm or 130 SQ. mm.

(4) Encoder

Symbol	Type	Detection method	Resolution
A48	OSA18-100	Absolute position	260,000 p/rev
A51	OSA105S5A		1,000,000 p/rev
A74N	OSA166S5NA		16,000,000 p/rev

(2) Magnetic brakes

Symbol	Magnetic brakes
None	None
B	With magnetic brakes

< HP-H Series >

HP-H (1) (2) (3) - (4)

(1) Rated output · Maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
54	0.5kW	4000r/min	130 SQ.
104	1.0kW	4000r/min	130 SQ.
154	1.5kW	4000r/min	130 SQ.
224	2.2kW	4000r/min	130 SQ.
204	2.0kW	4000r/min	180 SQ.
354	3.5kW	4000r/min	180 SQ.
454	4.5kW	4000r/min	180 SQ.
704	7.0kW	4000r/min	180 SQ.
903	9.0kW	3000r/min	220 SQ.
1103	11.0kW	3000r/min	220 SQ.

(3) Shaft end structure

Symbol	Shaft end structure
S	Straight
T	Taper

(Note) "Taper" is available for the motor whose flange size is 130 SQ. mm.

(4) Encoder

Symbol	Type	Detection method	Resolution
A48	OSA18-100	Absolute position	260,000 p/rev
A51	OSA105S5A		1,000,000 p/rev
A74N	OSA166S5NA		16,000,000 p/rev

(2) Magnetic brakes

Symbol	Magnetic brakes
None	None
B	With magnetic brakes

< HC-H Series >

HC-H (1) S-S10- (2)

(1) Rated output · Maximum rotation speed

Symbol	Rated output	Maximum rotation speed	Flange size (mm)
1502	15.0kW	2500r/min	280 SQ.

Compatible with DH2 Series

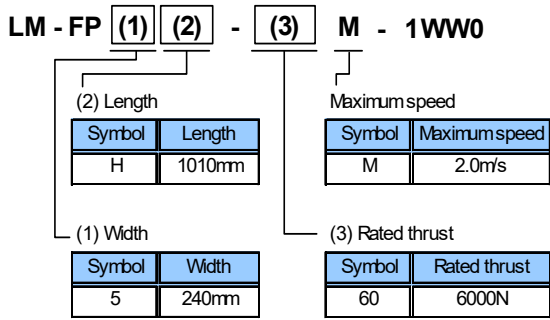
(2) Encoder

Symbol	Type	Detection method	Resolution
A48	OSA18-100	Absolute position	260,000 p/rev
A51	OSA105S5A		1,000,000 p/rev
A74N	OSA166S5NA		16,000,000 p/rev

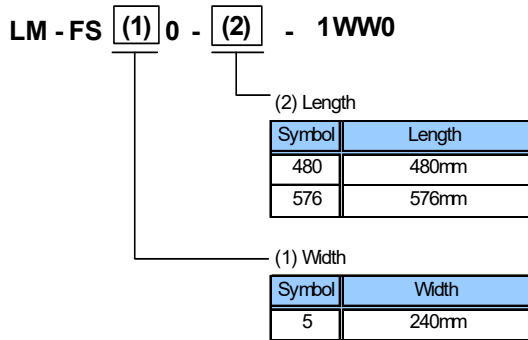
2. Linear servo motor type

LM-F Series

< Primary side: Coil >



< Secondary side: Magnet >



3. Servo drive unit type

< 1-axis servo drive unit >

MDS-DH2- (1)

(1) Unit type MDS-DH2-	Compatible motor type		HF-H□										HP-H□							HC-H□				
			75	105	54	104	154	204	354	453	703	903	54	104	154	224	204	354	454	704	903	1103	1502S-S10	
Unit width	Unit nominal maximum current	Stall torque (N·m)	2.0	3.0	2.9	5.9	9.0	13.7	22.5	37.2	49.0	58.8	3.0	5.9	9.0	12.0	13.7	22.5	31.9	49.0	70.0	110.0	146.0	
V1-10	60mm	10A	●	●																				
V1-20		20A			●	●								●	●									
V1-40		40A					●	●							●	●	●							
V1-80		80A								●	●						●	●						
V1-80W	90mm	80A									●						●	●						
V1-160	120mm	160A										●							●					
V1-160W	150mm	160A											●								●			
V1-200	240mm (Note)	200A																					●	

● Indicates the compatible motor for each servo drive unit.

(Note) DC connection bar is required. Always install a large capacity drive unit (MDS-DH2-V1-200) in the left side of power supply unit, and connect with DC connection bar.

CAUTION

The dynamic brake unit (MDS-D-DBU) is required for the MDS-DH2-V1-160W and MDS-DH2-V1-200.

< 2-axis servo drive unit >

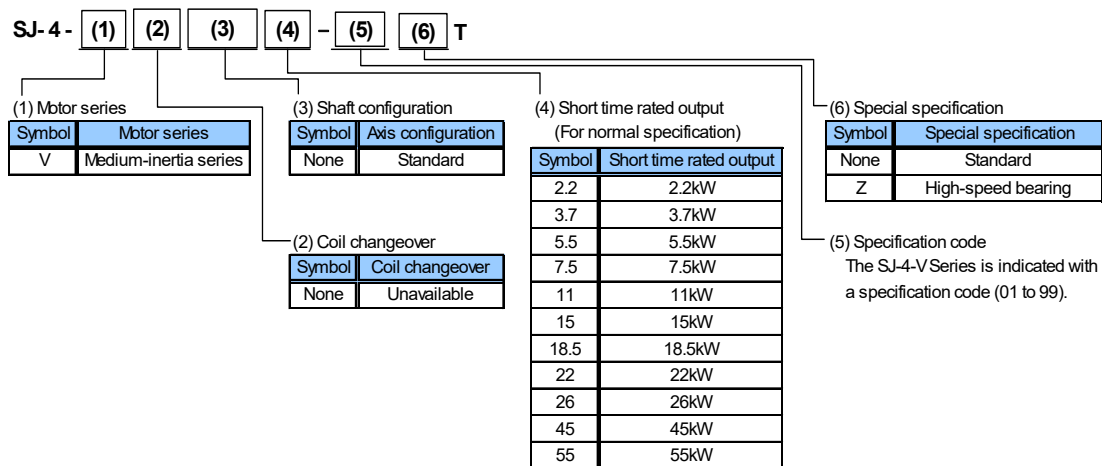
MDS-DH2- (1)

(1) Unit type MDS-DH2-	Compatible motor type		HF-H□										HP-H□											
			75	105	54	104	154	204	354	453	703	903	54	104	154	224	204	354	454	704	903	1103		
Unit width	Unit nominal maximum current	Stall torque (N·m)	2.0	3.0	2.9	5.9	9.0	13.7	22.5	37.2	49.0	58.8	3.0	5.9	9.0	12.0	13.7	22.5	31.9	49.0	70.0	110.0		
V2-1010	60mm	10+10A	LM	●	●																			
V2-2010		20+10A	L			●	●							●	●									
V2-2020		20+20A	M	●	●																			
V2-4020		40+20A	LM			●	●							●	●			●						
V2-4040	90mm	40+40A	L					●	●										●	●				
V2-8040		80+40A	M					●	●										●	●				
V2-8080	120mm	80+80A	LM						●	●									●	●				
V2-8080W		80+80A	LM							●	●	●							●	●	●			

● Indicates the compatible motor for each servo drive unit.

4. Spindle motor type

< SJ-V Series >



(Note) This explains the model name system of spindle motors, but does not mean all the combinations are available.

5. Spindle drive unit type

< 1-axis spindle drive unit >

MDS-DH2- (1)

(1) Capacity

Symbol	Nominal maximum current	Unit width
SP-20	20A	60mm
SP-40	40A	
SP-80	80A	90mm
SP-100	100A	120mm
SP-160	160A	150mm
SP-200	200A	240mm (Note)
SP-320	320A	
SP-480	480A	300mm (Note)

(Note) DC connection bar is required. Always install a large capacity drive unit (MDS-DH2-SP-200,320,480) in the left side of power supply unit, and connect with DC connection bar.

6. Power supply unit type

MDS-DH2- (1)

Power supply unit				Compatible AC reactor	Compatible contactor (Mitsubishi) (Note 1)	Compatible circuit protector (Mitsubishi) (Note 1)
(1) Type MDS-DH2-	30-minute rated output	Continuous rated output	Unit width			
CV-37	3.7kW	2.2kW	90mm	DH-AL-7.5K	S-T12-AC400V	NF63-CW3P-10A
CV-75	7.5kW	5.5kW				NF63-CW3P-20A
CV-110	11.0kW	7.5kW				
CV-185	18.5kW	15.0kW	150mm (Note 2)	DH-AL-18.5K	S-T35-AC400V	NF63-CW3P-40A
CV-300	30.0kW	26.0kW		DH-AL-30K	S-T50-AC400V	NF125-CW3P-75A
CV-370	37.0kW	30.0kW		DH-AL-37K		NF125-CW3P-100A
CV-450	45.0kW	37.0kW		DH-AL-45K		NF125-CW3P-100A
CV-550	55.0kW	45.0kW	300mm (Note 2)	DH-AL-55K	S-T80-AC400V	NF250-CW3P-125A
CV-750	75.0kW	55.0kW		DH-AL-75K	S-N150-AC400V	NF250-CW3P-200A

(Note 1) This is an optional part that is not included with the parts provided in the NC system.

(Note 2) When connecting with a large capacity drive unit, DC connection bar is required.

Always install a large capacity drive unit in the left side of power supply unit, and connect with DC connection bar.

7. AC reactor type

DH-AL- (1)

AC reactor		Compatible power supply unit
(1) Type DH-AL-	Capacity	
7.5K	7.5kW	MDS-DH2-CV-37 MDS-DH2-CV-75
11K	11.0kW	MDS-DH2-CV-110
18.5K	18.5kW	MDS-DH2-CV-185
30K	30.0kW	MDS-DH2-CV-300
37K	37.0kW	MDS-DH2-CV-370
45K	45.0kW	MDS-DH2-CV-450
55K	55.0kW	MDS-DH2-CV-550
75K	75.0kW	MDS-DH2-CV-750

8. Peripheral devices type

MDS-B-HR- (1) (2)

(1) Signal division function class

Symbol	Scale output voltage class
11	Output number 1
12	Output number 2 (with division)

(2) Degree of protection

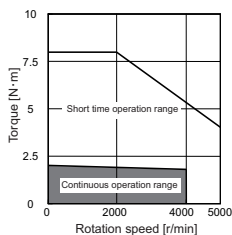
Symbol	Degree of protection
None	IP65
P	IP67

Servo Motor

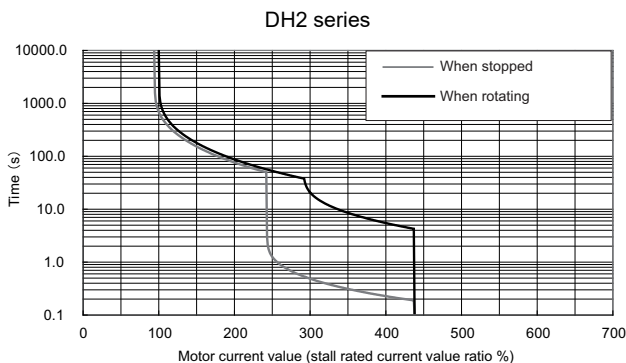
400V System Medium Inertia Servo Motor HF-H Series

Stall torque 2.0N·m	Rated rotation speed 4000r/min	Servo motor type HF-H75 □□-XXX (1)(2) (3)	Explanation of type (1) Magnetic brake: B with brake, None without brake (2) Shaft end: S Straight, T Taper (3) Encoder: XXX Type
-------------------------------	--	--	--

Torque characteristics



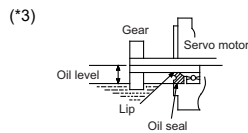
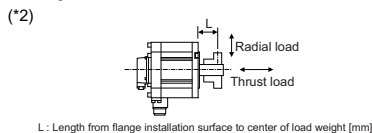
Servo overload protection characteristics



Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type: MDS-DH2-V1-10
	2-axis type: MDS-DH2-V2-1010 (L,M), MDS-DH2-V2-2010 (M)
	Regenerative resistor type: -
Continuous characteristics	Rated output[kW]: 0.75
	Rated current[A]: 1.5
	Rated torque[N·m]: 1.8
	Stall current[A]: 1.6
	Stall torque[N·m]: 2.0
Maximum momentary output (For power supply selection)[kW]: 2.6	
Rated rotation speed[r/min]: 4000	
Maximum rotation speed[r/min]: 5000	
Maximum current[A]: 7.0	
Maximum torque[N·m]: 8.0	
Power rate at continuous rated torque[kW/s]: 12.3	
Max. deceleration torque of dynamic brake(Tdp)[N·m]: 5.11	
Motor inertia[x10 ⁻⁴ kg·m ²]: 2.6	
(Brake inertia)[x10 ⁻⁴ kg·m ²]: 2.8	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[x10 ⁻⁴ kg·m ²]: 7.86
	General machine tool (interpolation axis)[x10 ⁻⁴ kg·m ²]: 13.1
	Non-interpolation axis [x10 ⁻⁴ kg·m ²]: 18.34
Mass	(Without) [kg]: 2.5
	(With brake)[kg]: 3.9
Heat-resistant class: 155(F)	
Degree of protection: IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G)): X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm)): 245 (L=33)
	Thrust load[N]: 147
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm)): 245 (L=33)
	Thrust load[N]: 147
Oil level (*3)[mm]: 15	
Absolute position encoder	16,000,000 p/rev: A74N
	1,000,000 p/rev: A51
	260,000 p/rev: A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.38
Static friction torque[N·m]	2.4
Release delay time (*1)[s]	0.03
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

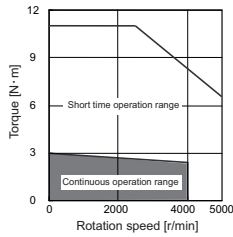
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

400V System Medium Inertia Servo Motor HF-H Series

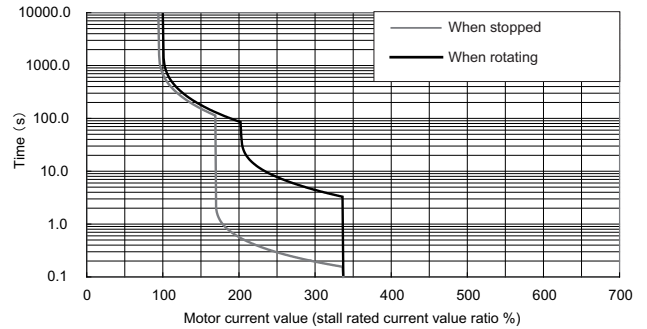
Stall torque 3.0N·m	Rated rotation speed 4000r/min	Servo motor type HF-H105 □□-XXX (1)(2) (3)	Explanation of type (1) Magnetic brake B with brake None without brake (2) Shaft end S Straight T Taper (3) Encoder XXX Type
-------------------------------	--	---	---

Torque characteristics



Servo overload protection characteristics

DH2 series

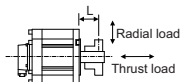


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-10
	2-axis type	MDS-DH2-V2-1010 (L,M) MDS-DH2-V2-2010 (M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	1.0
	Rated current[A]	1.8
	Rated torque[N·m]	2.4
	Stall current[A]	2.3
	Stall torque[N·m]	3.0
Maximum momentary output (For power supply selection)[kW]	3.6	
Rated rotation speed[r/min]	4000	
Maximum rotation speed[r/min]	5000	
Maximum current[A]	7.75	
Maximum torque[N·m]	11.0	
Power rate at continuous rated torque[kW/s]	11.2	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	10.19	
Motor inertia[×10 ⁻⁴ kg·m ²]	5.1	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	5.3	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	15.36
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	25.6
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	35.84
Mass	(Without) [kg]	4.3
	(With brake)[kg]	5.7
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	245 (L=33)
	Thrust load[N]	147
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	245 (L=33)
	Thrust load[N]	147
Oil level (*3)[mm]	15	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

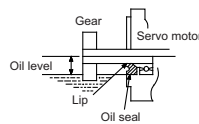
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

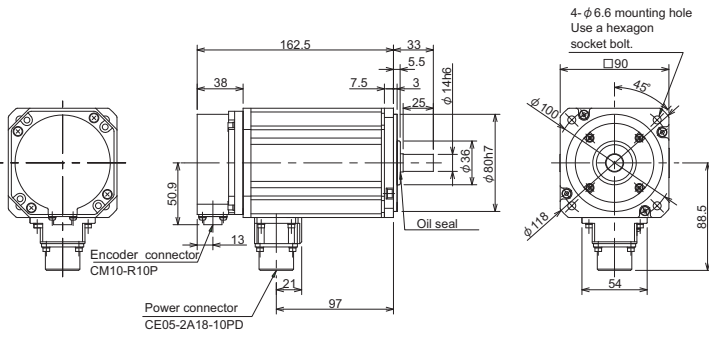
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.38
Static friction torque[N·m]	2.4
Release delay time (*1)[s]	0.03
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

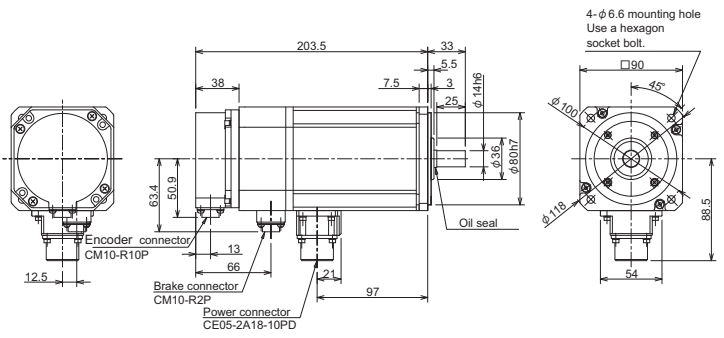
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

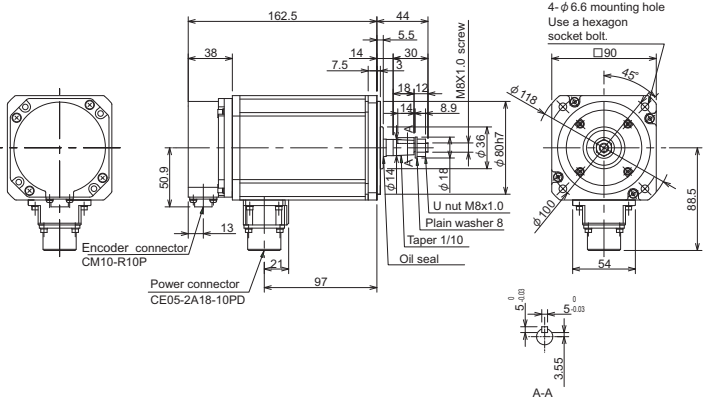
HF-H105S-A48



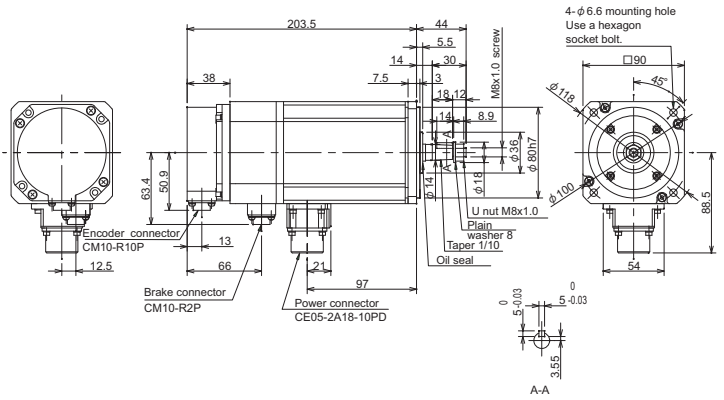
HF-H105BS-A48



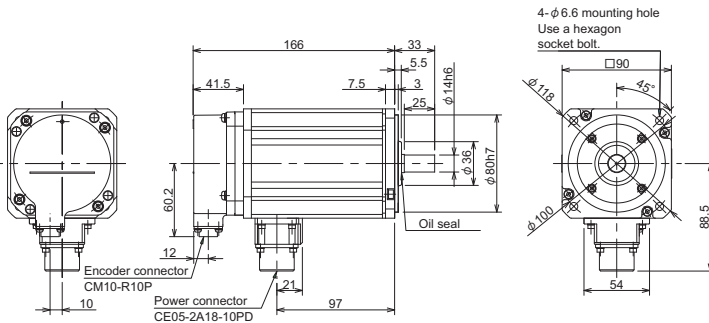
HF-H105T-A48



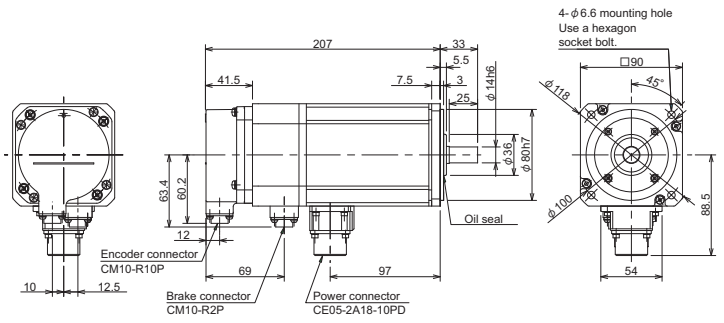
HF-H105BT-A48



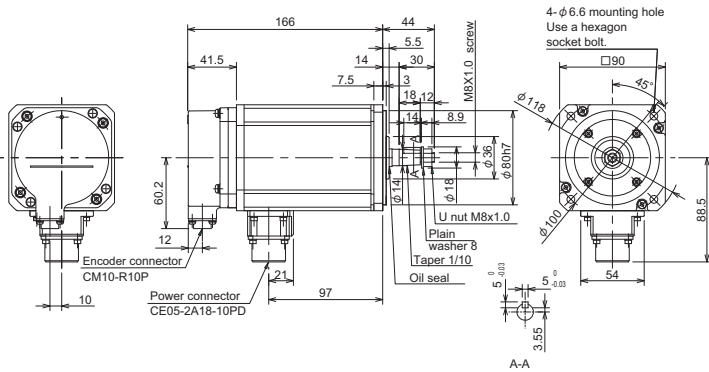
HF-H105S-A51,-A74N



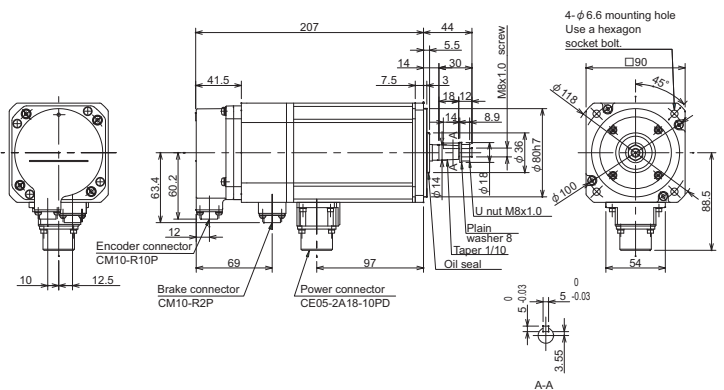
HF-H105BS-A51,-A74N



HF-H105T-A51,-A74N



HF-H105BT-A51,-A74N

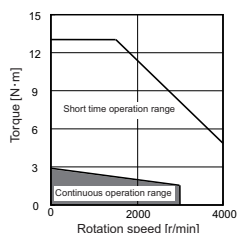


D48				D51/D74			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
162.3±1.5 (84.5)	142.3±1.5 (76)	162.3±1.5 (107)	142.3±1.5 (88.5)	162.3±1.5 (103.8)	142.3±1.5 (86.3)	162.3±1.5 (107)	142.2±1.5 (85.3)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

400V System Medium Inertia Servo Motor HF-H Series

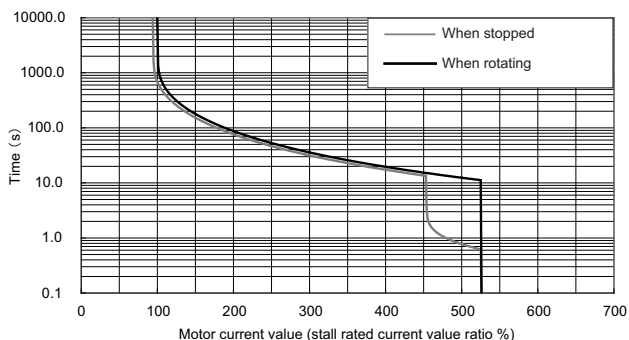
Stall torque 2.9N·m	Rated rotation speed 3000r/min	Servo motor type HF-H54 □□-XXX (1)(2) (3)	Explanation of type (1) Magnetic brake: B with brake, None without brake (2) Shaft end: S Straight, T Taper (3) Encoder: XXX Type
-------------------------------	--	--	--

Torque characteristics



Servo overload protection characteristics

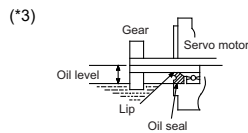
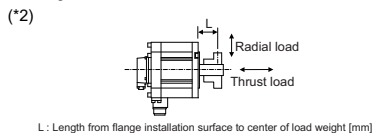
DH2 series



Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type: MDS-DH2-V1-20
	2-axis type: MDS-DH2-V2-2010 (L), MDS-DH2-V2-2020 (L,M), MDS-DH2-V2-4020 (M)
Continuous characteristics	Regenerative resistor type: -
	Rated output[kW]: 0.5
	Rated current[A]: 1.1
	Rated torque[N·m]: 1.6
	Stall current[A]: 1.6, Stall torque[N·m]: 2.9
Maximum momentary output (For power supply selection)[kW]: 2.3	
Rated rotation speed[r/min]: 3000	
Maximum rotation speed[r/min]: 4000	
Maximum current[A]: 8.4	
Maximum torque[N·m]: 13.0	
Power rate at continuous rated torque[kW/s]: 4.1	
Max. deceleration torque of dynamic brake(Tdp)[N·m]: 3.96	
Motor inertia[×10 ⁻⁴ kg·m ²]: 6.1	
(Brake inertia)[×10 ⁻⁴ kg·m ²]: 8.3	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]: 18.39
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]: 30.65
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]: 42.91
Mass	(Without) [kg]: 4.8
	(With brake)[kg]: 6.7
Heat-resistant class: 155(F)	
Degree of protection: IP67	
(The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G)): X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm)): 392 (L=58)
	Thrust load[N]: 490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm)): 980 (L=55)
	Thrust load[N]: 490
Oil level (*3)[mm]: 22.5	
Absolute position encoder	16,000,000 p/rev: A74N
	1,000,000 p/rev: A51
	260,000 p/rev: A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

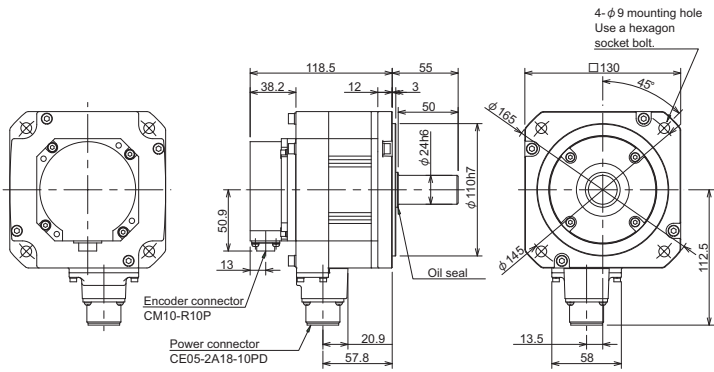
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N·m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

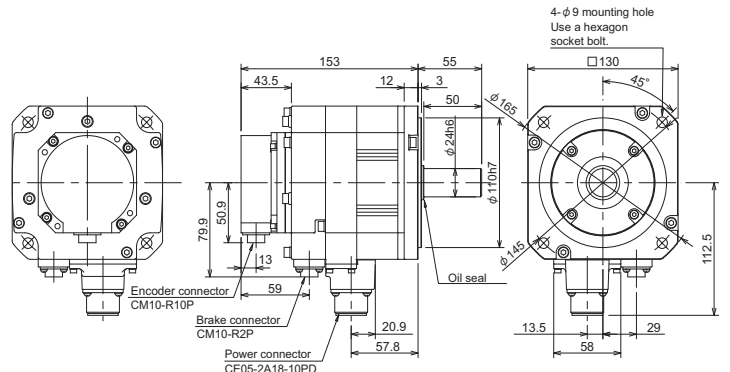
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

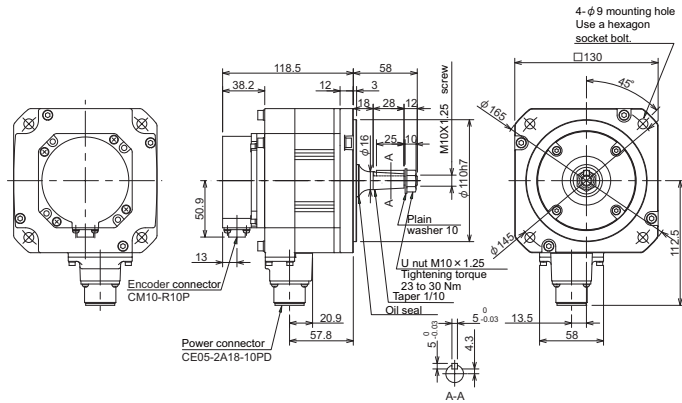
HF-H54S-A48



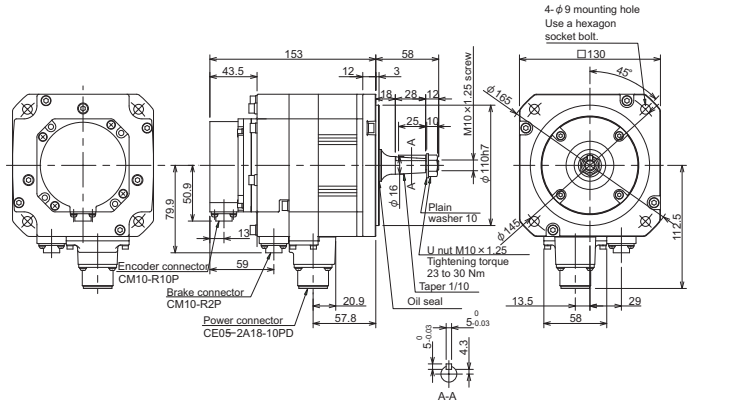
HF-H54BS-A48



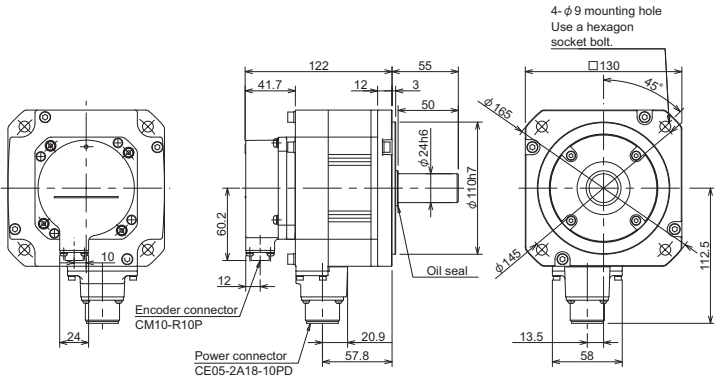
HF-H54T-A48



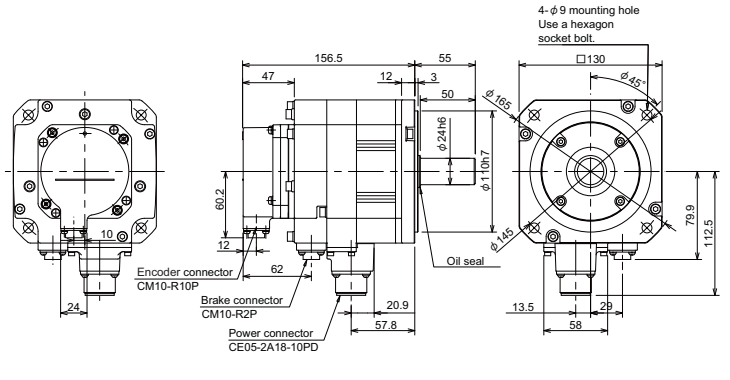
HF-H54BT-A48



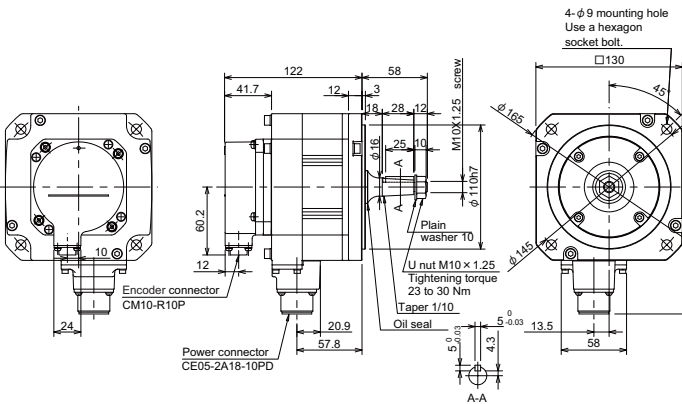
HF-H54S-A51,-A74N



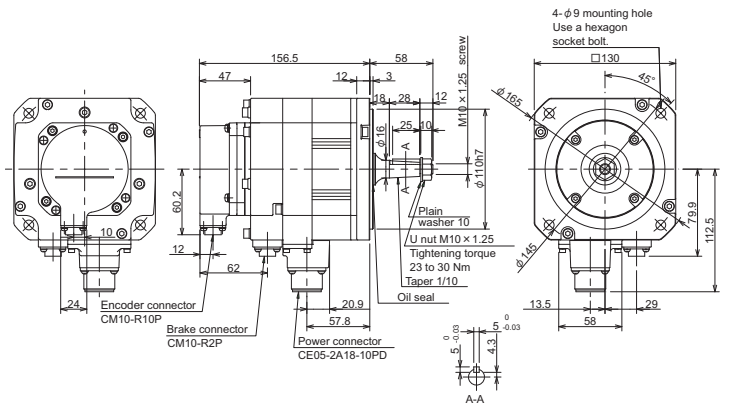
HF-H54BS-A51,-A74N



HF-H54T-A51,-A74N



HF-H54BT-A51,-A74N

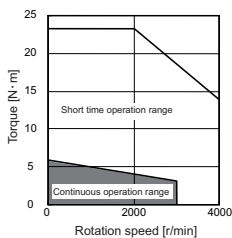


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3 ± 1.5 (94.5)	166.3 ± 1.5 (76) (34)	186.3 ± 1.5 (123.9) (94.5)	186.3 ± 1.5 (105) (76) (34) (34)	186.3 ± 1.5 (103.8)	166.3 ± 1.5 (85.3) (34)	186.3 ± 1.5 (123.9) (103.8)	186.3 ± 1.5 (105) (85.3) (34) (34)
	67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5

400V System Medium Inertia Servo Motor HF-H Series

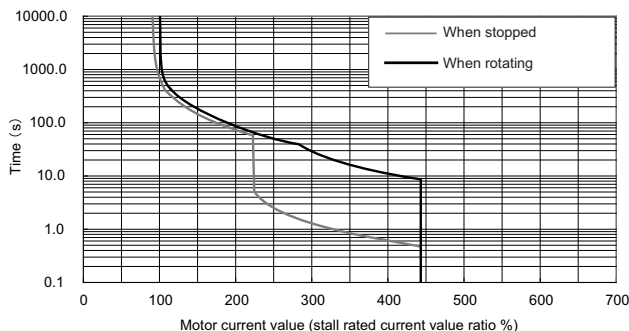
Stall torque	Rated rotation speed	Servo motor type	Explanation of type															
5.9N·m	3000r/min	HF-H104 (1)(2) (3) □□-XXX	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 30%;">(1) Magnetic brake</td> <td style="width: 10%;">B</td> <td style="width: 60%;">with brake</td> </tr> <tr> <td>None</td> <td>without brake</td> </tr> <tr> <td rowspan="3">(2) Shaft end</td> <td>S</td> <td>Straight</td> </tr> <tr> <td>T</td> <td>Taper</td> </tr> <tr> <td>XXX</td> <td>Type</td> </tr> <tr> <td>(3) Encoder</td> <td></td> <td></td> </tr> </table>	(1) Magnetic brake	B	with brake	None	without brake	(2) Shaft end	S	Straight	T	Taper	XXX	Type	(3) Encoder		
(1) Magnetic brake	B	with brake																
	None	without brake																
(2) Shaft end	S	Straight																
	T	Taper																
	XXX	Type																
(3) Encoder																		

Torque characteristics



Servo overload protection characteristics

DH2 series

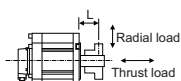


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-20
	2-axis type	MDS-DH2-V2-2010 (L) MDS-DH2-V2-2020 (L,M) MDS-DH2-V2-4020 (M)
	Regenerative resistor type	-
	Continuous characteristics	Rated output[kW] 1.0 Rated current[A] 2.0 Rated torque[N·m] 3.2 Stall current[A] 3.3 Stall torque[N·m] 5.9
Maximum momentary output (For power supply selection)[kW]	5.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	14.5	
Maximum torque[N·m]	23.3	
Power rate at continuous rated torque[kW/s]	8.4	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	10.04	
Motor inertia[×10 ⁻⁴ kg·m ²]	11.9	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	14.1	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	35.7
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	59.5
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	83.3
Mass	(Without) [kg]	6.7
	(With brake)[kg]	8.6
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=58)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=55)
	Thrust load[N]	490
Oil level (*3)[mm]	22.5	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

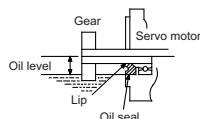
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

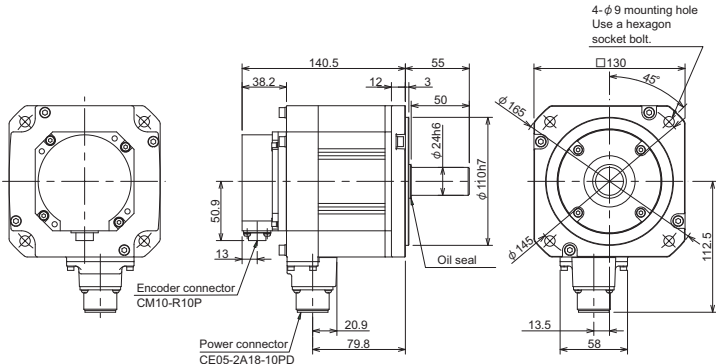
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N·m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

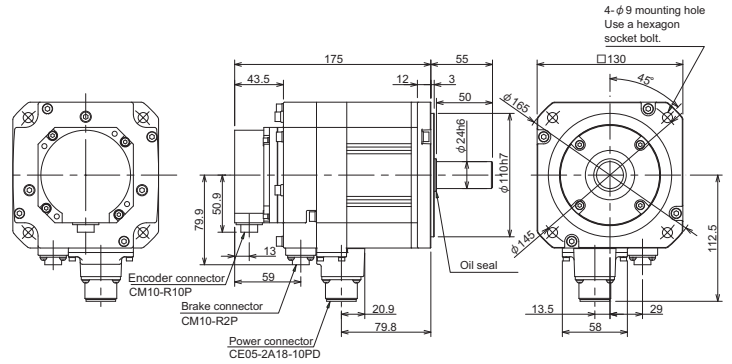
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

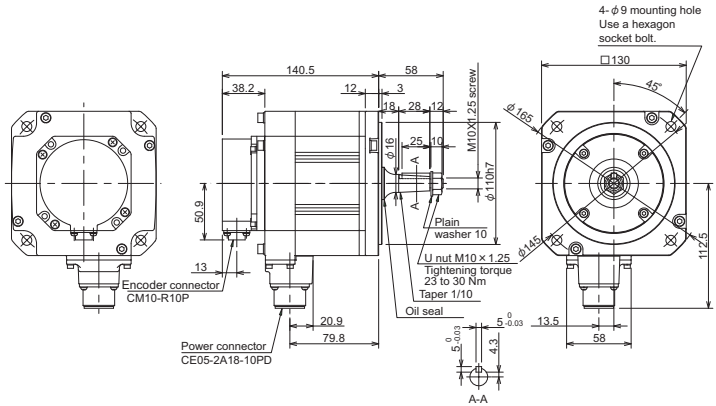
HF-H104S-A48



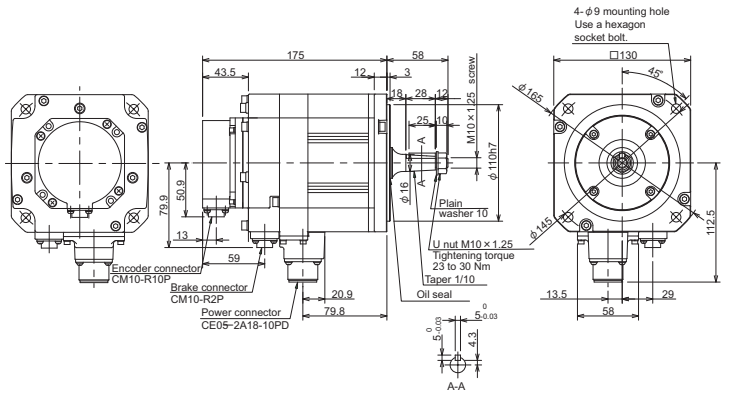
HF-H104BS-A48



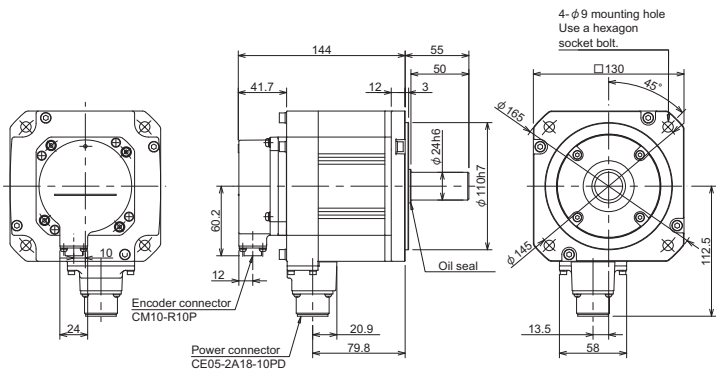
HF-H104T-A48



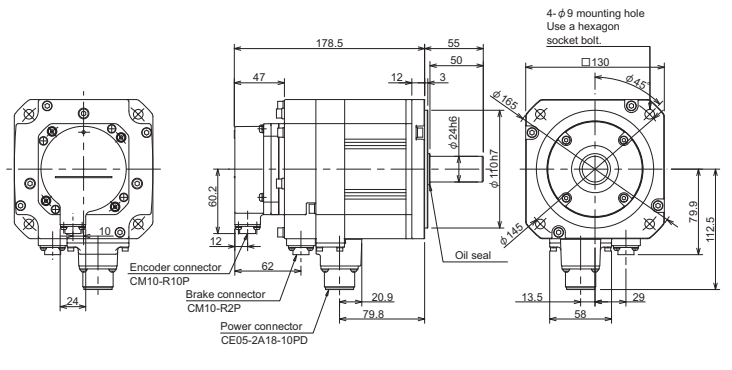
HF-H104BT-A48



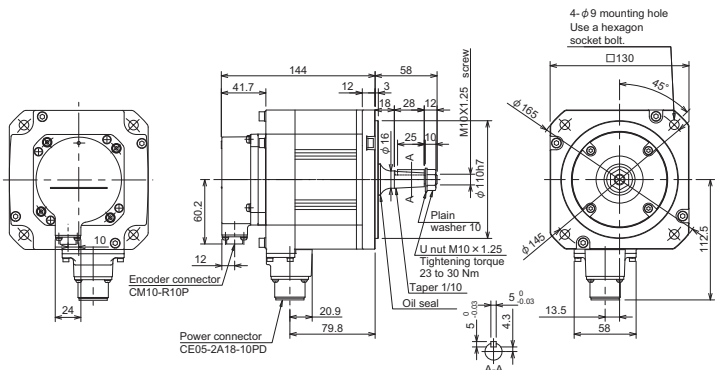
HF-H104S-A51,-A74N



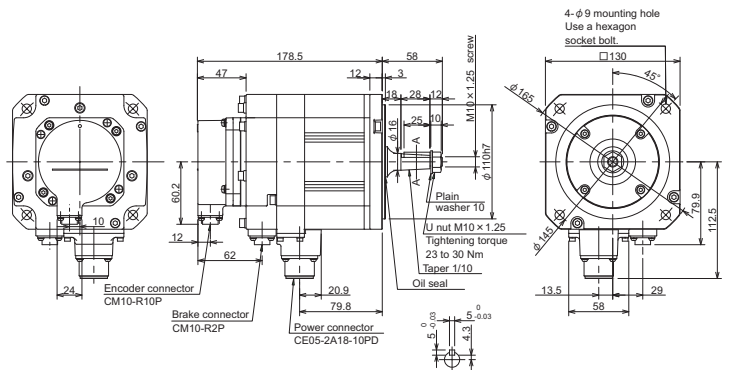
HF-H104BS-A51,-A74N



HF-H104T-A51,-A74N



HF-H104BT-A51,-A74N

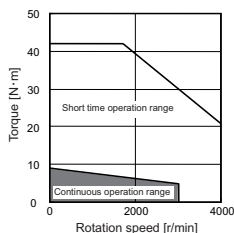


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3 ± 1.5 (94.5)	166.3 ± 1.5 (76)	186.3 ± 1.5 (94.5)	186.3 ± 1.5 (105)	186.3 ± 1.5 (103.8)	186.3 ± 1.5 (85.3)	186.3 ± 1.5 (123.9)	186.3 ± 1.5 (105)
	67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5		67.1 ± 1.5

400V System Medium Inertia Servo Motor HF-H Series

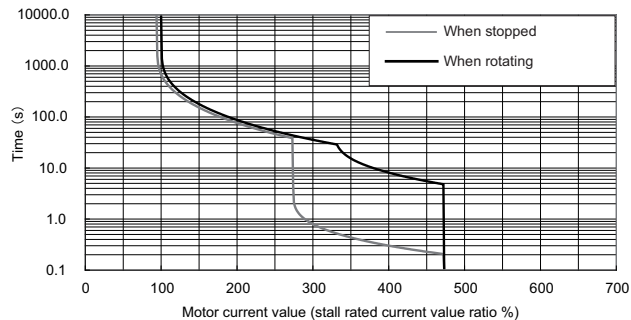
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
9.0N·m	3000r/min	HF-H154 (1)(2) (3) □□-XXX	(1) Magnetic brake	B with brake None without brake
			(2) Shaft end	S Straight T Taper
			(3) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

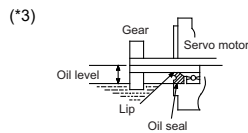
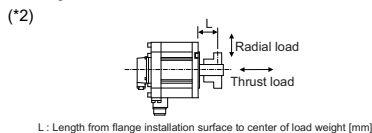
DH2 series



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	
	2-axis type	
Continuous characteristics	Regenerative resistor type	
	Rated output[kW]	
	Rated current[A]	
	Rated torque[N·m]	
	Stall current[A]	
Maximum momentary output (For power supply selection)[kW]	Rated rotation speed[r/min]	
	Maximum rotation speed[r/min]	
	Maximum current[A]	
	Maximum torque[N·m]	
	Power rate at continuous rated torque[kW/s]	
	Max. deceleration torque of dynamic brake(Tdp)[N·m]	
	Motor inertia[×10 ⁻⁴ kg·m ²]	
	(Brake inertia)[×10 ⁻⁴ kg·m ²]	
	Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]
		General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]
Non-interpolation axis [×10 ⁻⁴ kg·m ²]		
Mass	(Without) [kg]	
	(With brake)[kg]	
Heat-resistant class		
Degree of protection		
Quakeproof level[m/s ²] ((G))		
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	
	Thrust load[N]	
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	
	Thrust load[N]	
Oil level (*3)[mm]		
Absolute position encoder	16,000,000 p/rev	
	1,000,000 p/rev	
	260,000 p/rev	

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

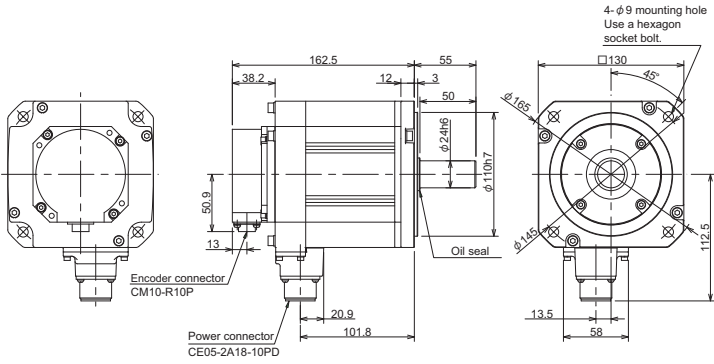
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.8
Static friction torque[N·m]	8.3
Release delay time (*1)[s]	0.04
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

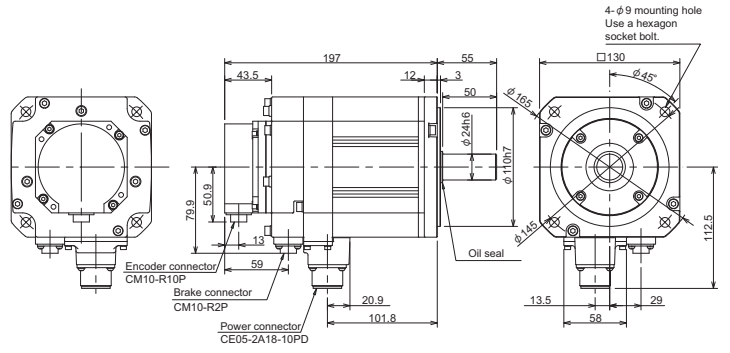
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

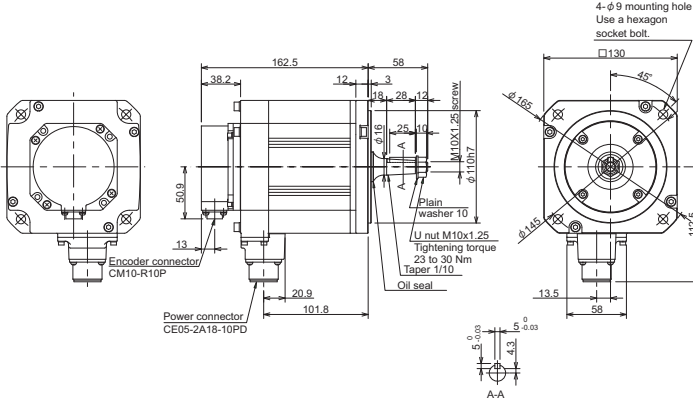
HF-H154S-A48



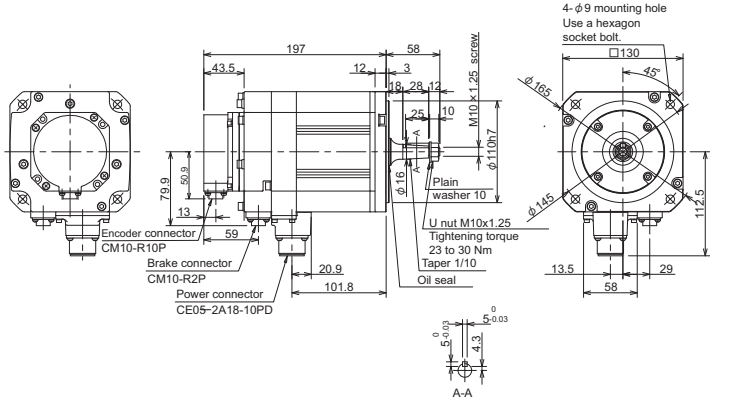
HF-H154BS-A48



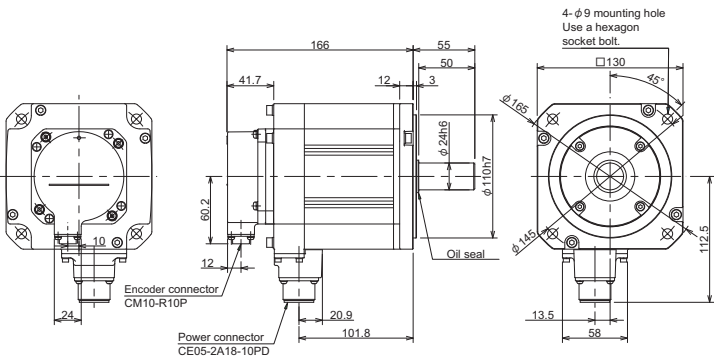
HF-H154T-A48



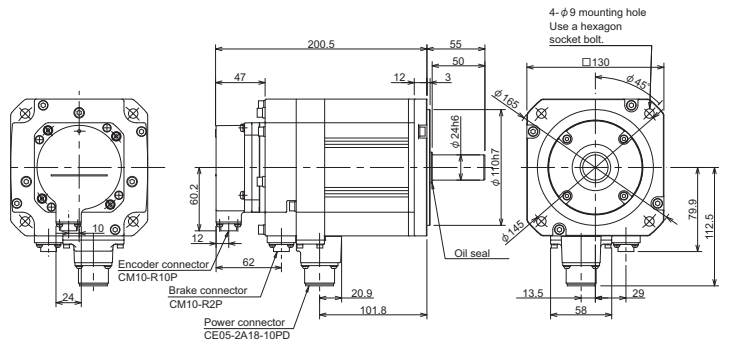
HF-H154BT-A48



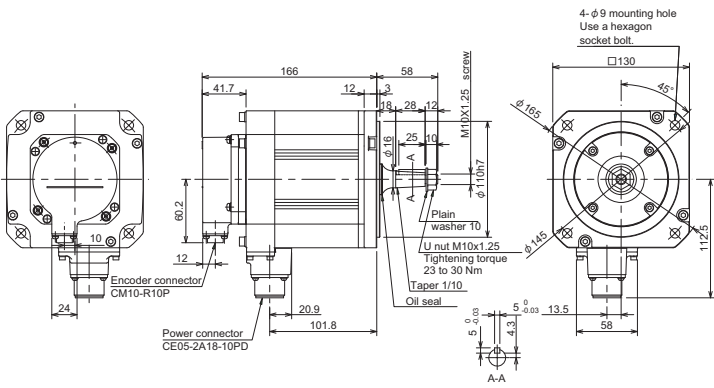
HF-H154S-A51,-A74N



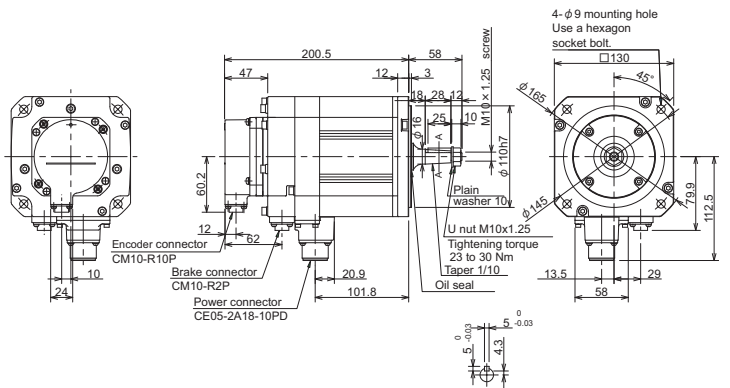
HF-H154BS-A51,-A74N



HF-H154T-A51,-A74N



HF-H154BT-A51,-A74N

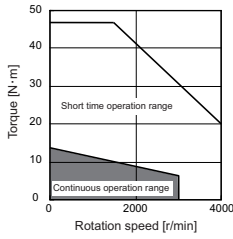


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
186.3±1.5 (84.5)	166.3±1.5 (76)	186.3±1.5 (123.5)	186.3±1.5 (76)	186.3±1.5 (103.8)	166.3±1.5 (85.3)	186.3±1.5 (123.5)	186.3±1.5 (85.3)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

400V System Medium Inertia Servo Motor HF-H Series

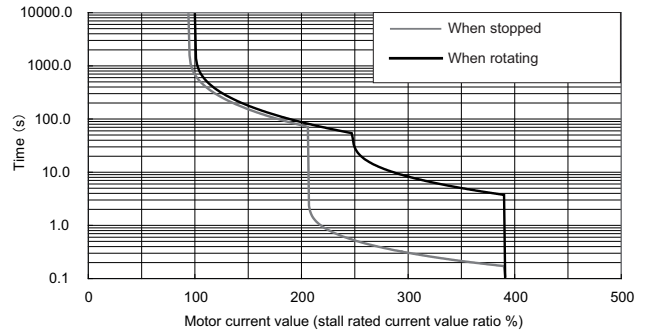
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
13.7N·m	3000r/min	HF-H204 (1) (2) □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

DH2 series

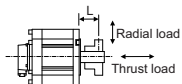


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-40
	2-axis type	MDS-DH2-V2-4020 (L) MDS-DH2-V2-4040 (L,M) MDS-DH2-V2-8040 (M)
	Regenerative resistor type	-
	Continuous characteristics	
	Rated output[kW]	2.0
	Rated current[A]	3.5
	Rated torque[N·m]	6.4
	Stall current[A]	7.3
	Stall torque[N·m]	13.7
Maximum momentary output (For power supply selection)[kW]		8.0
Rated rotation speed[r/min]		3000
Maximum rotation speed[r/min]		4000
Maximum current[A]		28.5
Maximum torque[N·m]		47.0
Power rate at continuous rated torque[kW/s]		10.6
Max. deceleration torque of dynamic brake(Tdp)[N·m]		15.83
Motor inertia[×10 ⁻⁴ kg·m ²]		38.3
(Brake inertia)[×10 ⁻⁴ kg·m ²]		48.0
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	114.9
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	191.5
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	268.1
Mass	(Without) [kg]	13.0
	(With brake)[kg]	19.0
Heat-resistant class		155(F)
Degree of protection		IP67
	(The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))		X:24.5(2.5), Y:29.4(3)
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Oil level (*3)[mm]		30
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

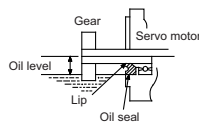
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 80% RH or less (with no dew condensation) Storage: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

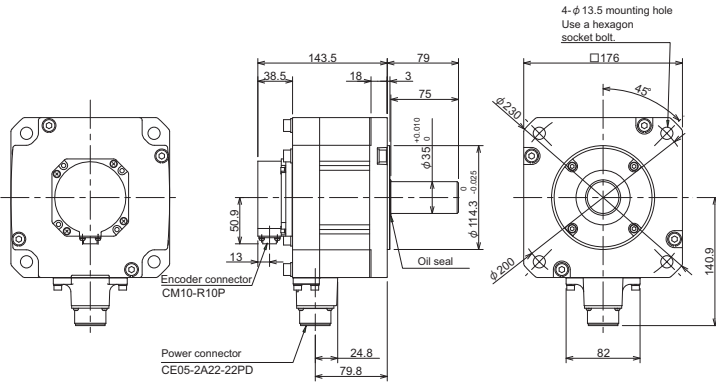
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

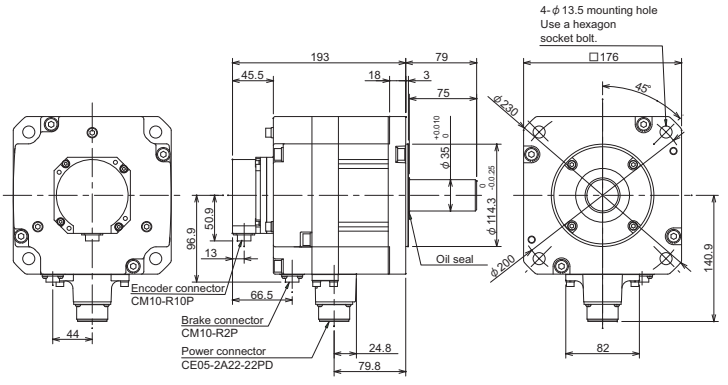
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

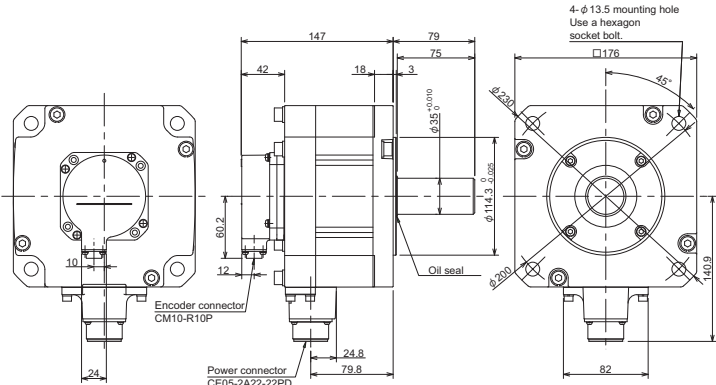
HF-H204S-A48



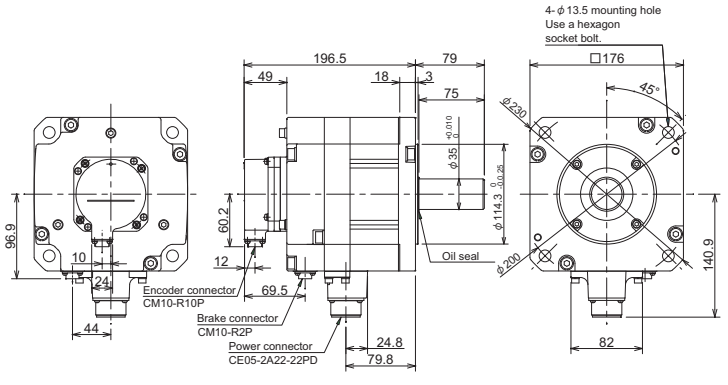
HF-H204BS-A48



HF-H204S-A51,-A74N



HF-H204BS-A51,-A74N

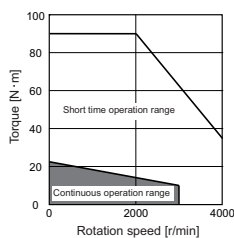


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
218.9±1.5 (84.5)	201.5±1.5 (76)	218.9±1.5 (84.5)	201.5±1.5 (76)	218.9±1.5 (85.3)	201.5±1.5 (76)	218.9±1.5 (84.5)	201.5±1.5 (76)
	69.3±1.5 (34)		69.3±1.5 (34)		69.3±1.5 (34)		69.3±1.5 (34)

400V System Medium Inertia Servo Motor HF-H Series

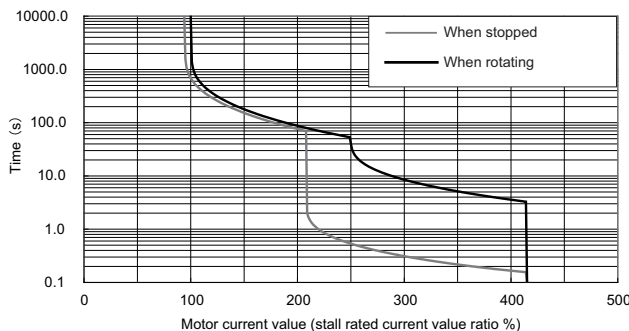
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
22.5N·m	3000r/min	HF-H354 □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

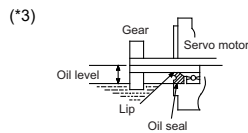
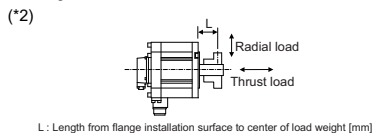
DH2 series



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-80
	2-axis type	MDS-DH2-V2-8040 (L) MDS-DH2-V2-8080 (L,M) MDS-DH2-V2-8080W (L,M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	3.5
	Rated current[A]	7.8
	Rated torque[N·m]	11.1
	Stall current[A]	14
	Stall torque[N·m]	22.5
Maximum momentary output (For power supply selection)[kW]	18.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	58.0	
Maximum torque[N·m]	90.0	
Power rate at continuous rated torque[kW/s]	16.5	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	37.35	
Motor inertia[×10 ⁻⁴ kg·m ²]	75.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	84.7	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	225.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	375.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	525.0
Mass	(Without) [kg]	19.0
	(With brake)[kg]	25
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Oil level (*3)[mm]	30	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

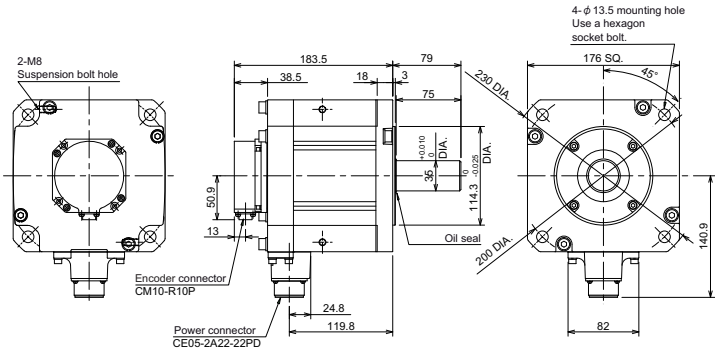
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

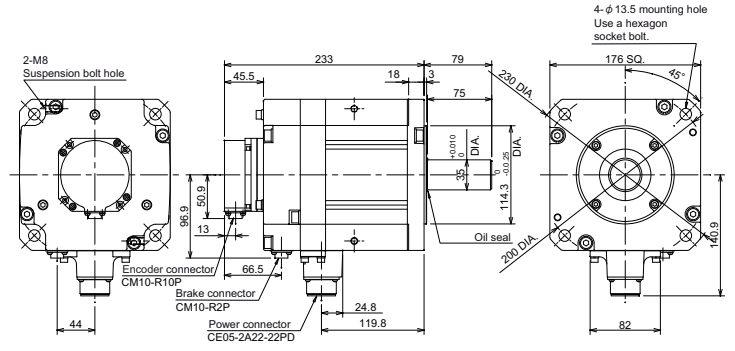
400V System Medium Inertia Servo Motor HF-H Series

Outline dimension drawings [Unit : mm]

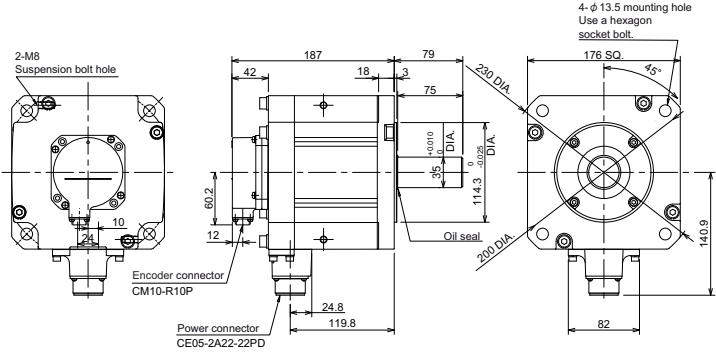
HF-H354S-A48



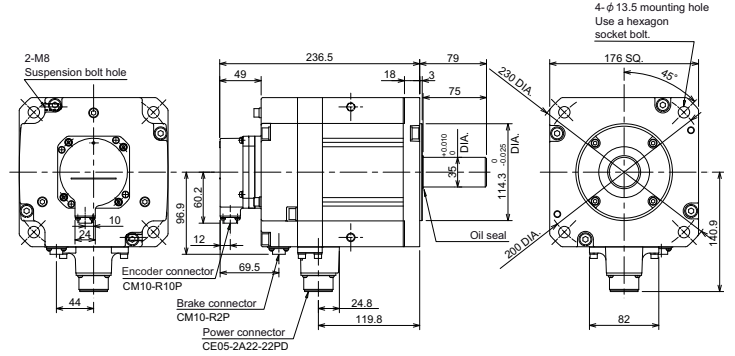
HF-H354BS-A48



HF-H354S-A51,-A74N



HF-H354BS-A51,-A74N

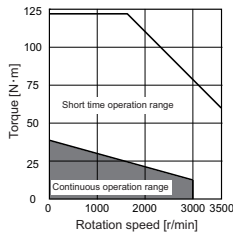


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
218.9±1.5 (84.5)	201.5±1.5 (76) (34) 69.3±1.5	218.9±1.5 (84.5)	201.5±1.5 (122) (76) (34) (34) 69.3±1.5	218.9±1.5 (103.8)	201.5±1.5 (85.3) (34) 69.3±1.5	218.9±1.5 (140.5) (103.8)	201.5±1.5 (122) (85.3) (34) 69.3±1.5

400V System Medium Inertia Servo Motor HF-H Series

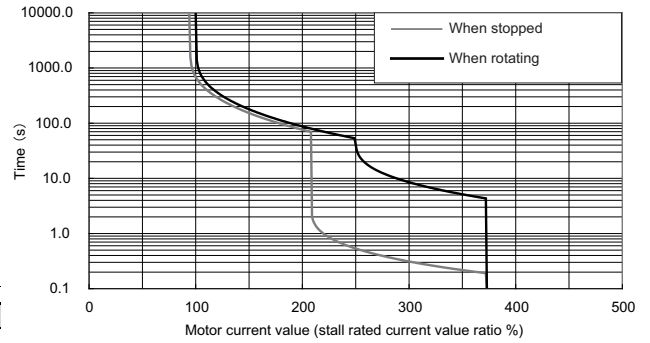
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
37.2N·m	3000r/min	HF-H453 □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

DH2 series

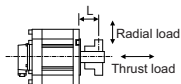


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-80
	2-axis type	MDS-DH2-V2-8040 (L) MDS-DH2-V2-8080 (L,M) MDS-DH2-V2-8080W (L,M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	4.5
	Rated current[A]	9.3
	Rated torque[N·m]	14.3
	Stall current[A]	17
	Stall torque[N·m]	37.2
Maximum momentary output (For power supply selection)[kW]	22.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3500	
Maximum current[A]	52.1	
Maximum torque[N·m]	122.0	
Power rate at continuous rated torque[kW/s]	18.3	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	52.9	
Motor inertia[×10 ⁻⁴ kg·m ²]	112.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	121.7	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	336.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	560.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	784.0
Mass	(Without) [kg]	25.0
	(With brake)[kg]	31.0
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2058 (L=79)
	Thrust load[N]	980
Oil level (*3)[mm]	30	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

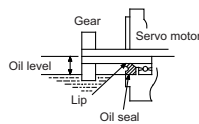
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

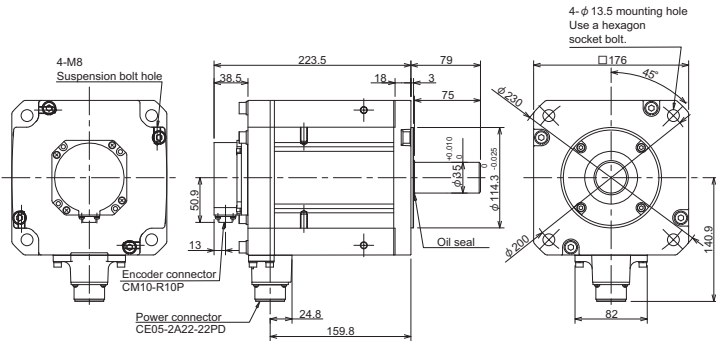
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

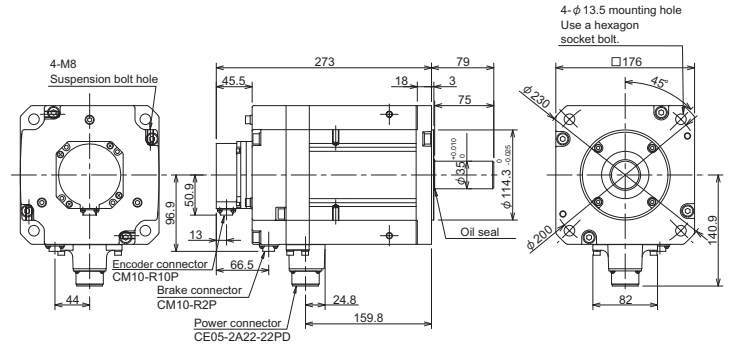
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

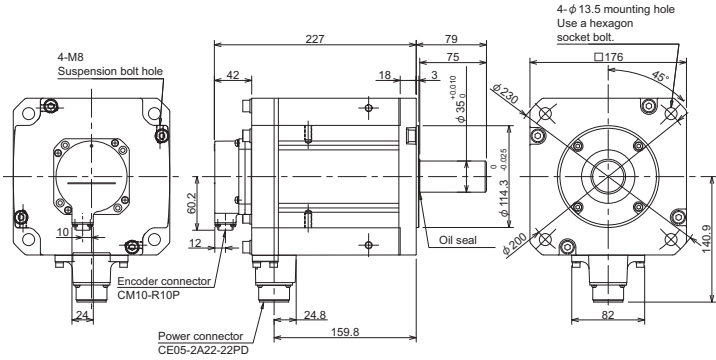
HF-H453S-A48



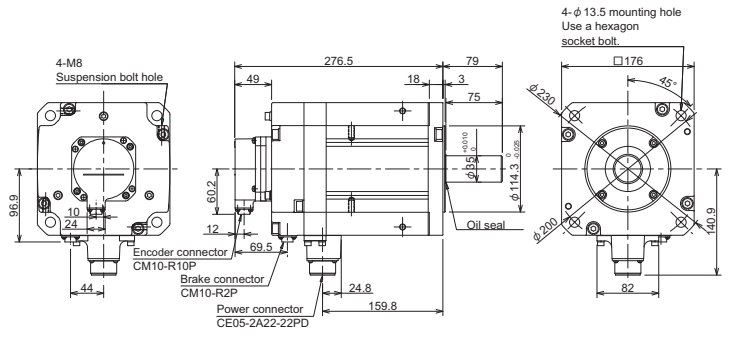
HF-H453BS-A48



HF-H453S-A51,-A74N



HF-H453BS-A51,-A74N

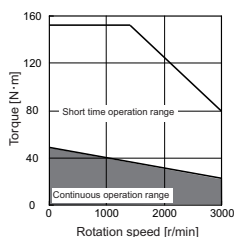


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
218.9±1.5 (84.5)	201.5±1.5 (76) 69.3±1.5 (34)	218.9±1.5 (84.5)	201.5±1.5 (122) (76) (34) 69.3±1.5	218.9±1.5 (103.8)	201.5±1.5 (85.3) (34) 69.3±1.5	218.9±1.5 (140.5) (103.8)	201.5±1.5 (122) (85.3) (34) 69.3±1.5

400V System Medium Inertia Servo Motor HF-H Series

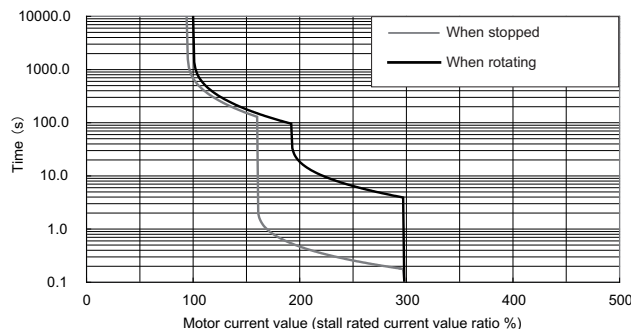
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
49.0N·m	3000r/min	HF-H703 (1) (2) □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

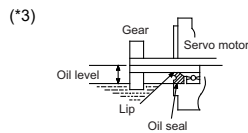
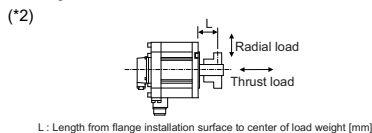
DH2 series



Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type MDS-DH2-V1-80W
	2-axis type MDS-DH2-V2-8080W (L,M)
	Regenerative resistor type -
Continuous characteristics	Rated output[kW] 7.0
	Rated current[A] 16
	Rated torque[N·m] 22.3
	Stall current[A] 19
	Stall torque[N·m] 49.0
Maximum momentary output (For power supply selection)[kW]	28.0
Rated rotation speed[r/min]	3000
Maximum rotation speed[r/min]	3000
Maximum current[A]	54.2
Maximum torque[N·m]	152.0
Power rate at continuous rated torque[kW/s]	32.2
Max. deceleration torque of dynamic brake(Tdp)[N·m]	71.79
Motor inertia[×10 ⁻⁴ kg·m ²]	154.0
(Brake inertia)[×10 ⁻⁴ kg·m ²]	163.7
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²] 462.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²] 770.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²] 1078.0
	(Without) [kg] 32.0
Mass	(With brake)[kg] 38
Heat-resistant class	155(F)
Degree of protection	IP67 (The shaft-through portion is excluded.)
Quakeproof level[m/s ²] ((G))	X:24.5(2.5),Y:29.4(3)
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm)) -
	Thrust load[N] -
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm)) 2058 (L=79)
	Thrust load[N] 980
Oil level (*3)[mm]	30
Absolute position encoder	16,000,000 p/rev A74N
	1,000,000 p/rev A51
	260,000 p/rev A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

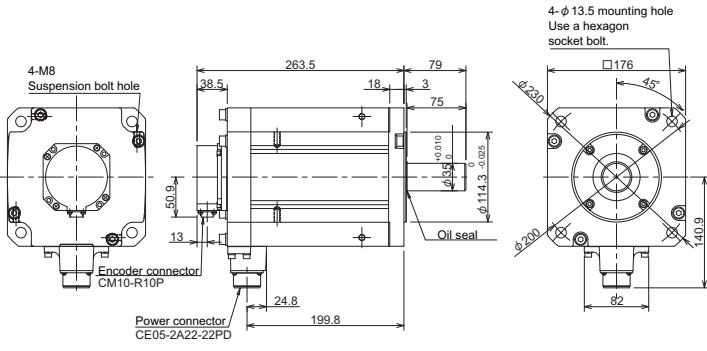
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

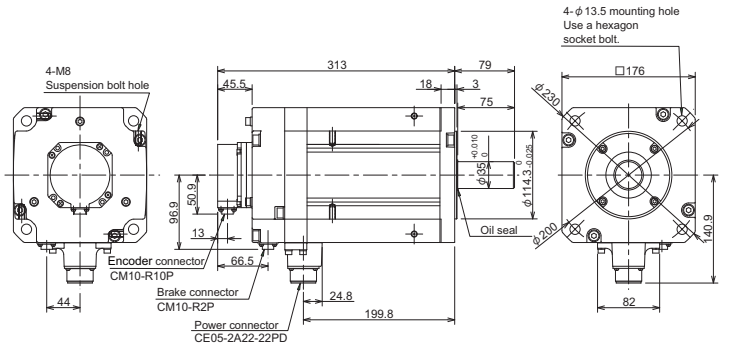
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

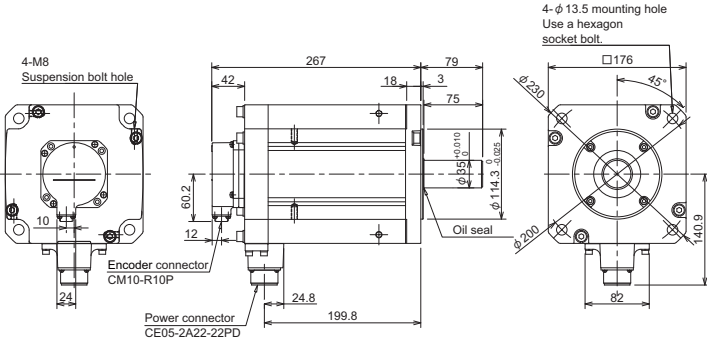
HF-H703S-A48



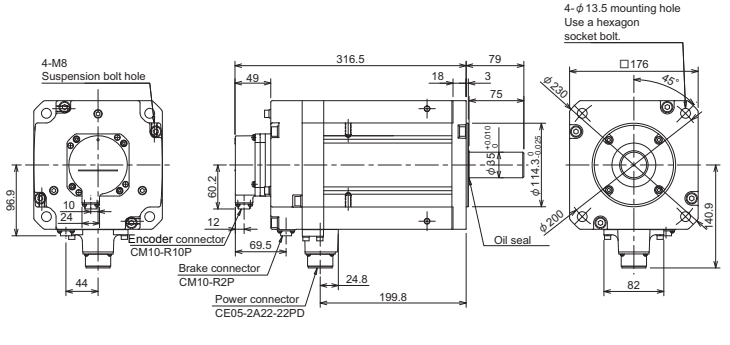
HF-H703BS-A48



HF-H703S-A51,-A74N



HF-H703BS-A51,-A74N

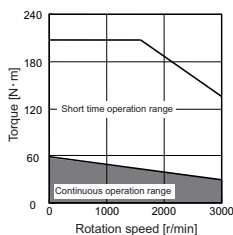


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
218.9±1.5 (84.5)	201.5±1.5 (76) 69.3±1.5 (34)	218.9±1.5 (84.5)	201.5±1.5 (122) (76) (34) 69.3±1.5 (34)	218.9±1.5 (103.8)	201.5±1.5 (85.3) 69.3±1.5 (34)	218.9±1.5 (140.5) (103.8)	201.5±1.5 (122) (85.3) (34) 69.3±1.5 (34)

400V System Medium Inertia Servo Motor HF-H Series

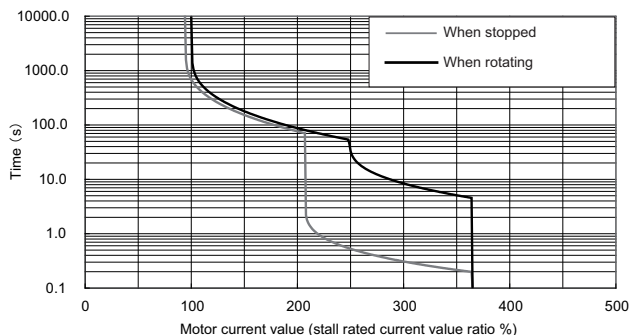
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
58.8N·m	3000r/min	HF-H903 (1) (2) □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

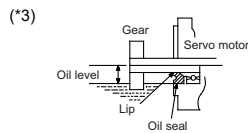
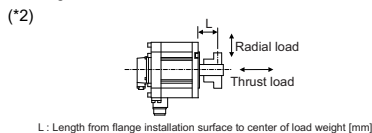
DH2 series



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-160
	2-axis type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	9.0
	Rated current[A]	17
	Rated torque[N·m]	28.6
	Stall current[A]	28
	Stall torque[N·m]	58.8
Maximum momentary output (For power supply selection)[kW]	41.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	102.0	
Maximum torque[N·m]	208.0	
Power rate at continuous rated torque[kW/s]	42.1	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	89.57	
Motor inertia[×10 ⁻⁴ kg·m ²]	196.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	205.7	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	588.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	980.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	1372.0
Mass	(Without) [kg]	43.0
	(With brake)[kg]	49.0
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] (G)	X:9.8(1), Y:9.8(1)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2450 (L=85)
	Thrust load[N]	980
Oil level (*3)[mm]	34	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	43.1
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.03
Brake life (*2)[times]	20,000

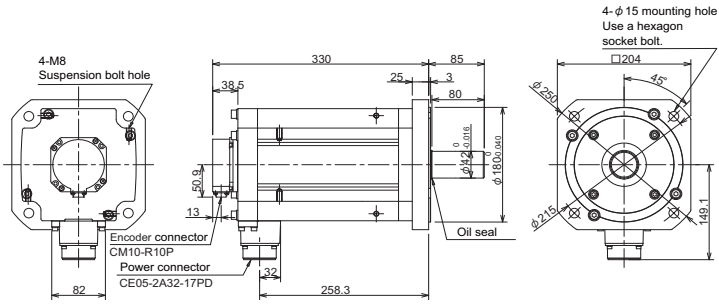
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

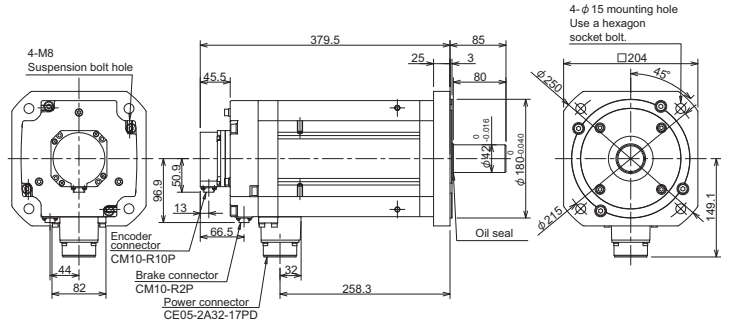
400V System Medium Inertia Servo Motor HF-H Series

Outline dimension drawings [Unit : mm]

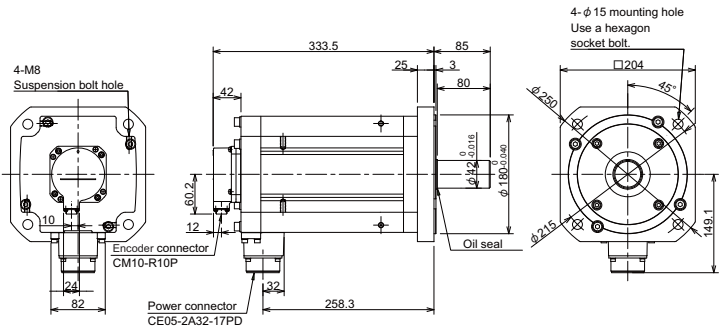
HF-H903S-A48



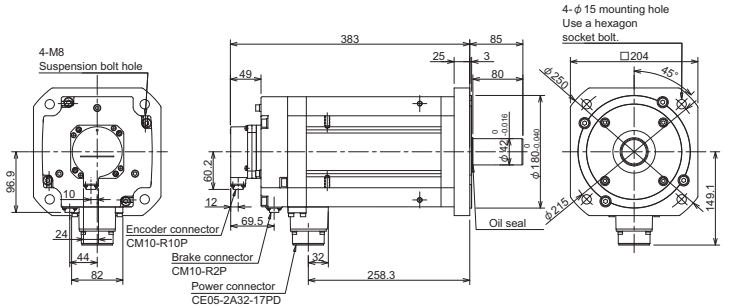
HF-H903BS-A48



HF-H903S-A51,-A74N



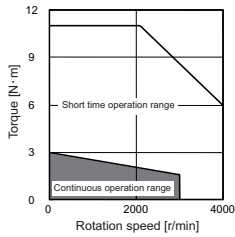
HF-H903BS-A51,-A74N



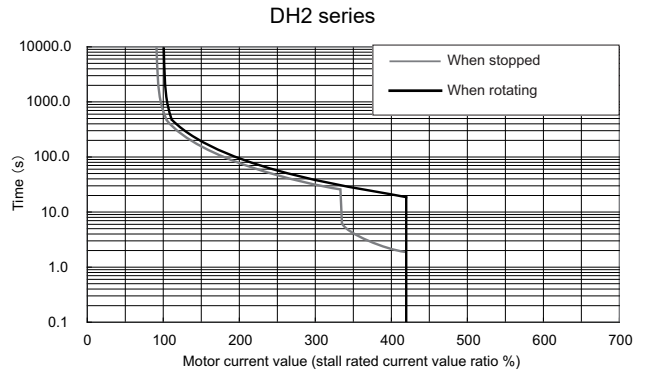
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
242±1.5	226±1.5	242±1.5	226±1.5	242±1.5	226±1.5	242±1.5	226±1.5
(94.5)	(76)	(140.5)	(122)	(103.8)	(86.3)	(140.5)	(122)
	(34)		(34)		(34)		(34)
	84.9±1.5		84.9±1.5		84.9±1.5		84.9±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
3.0N·m	3000r/min	HP-H54 □□-XXX	(1) Magnetic brake	B with brake None without brake
			(2) Shaft end	S Straight T Taper
			(3) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

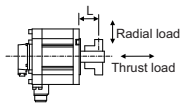


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-20
	2-axis type	MDS-DH2-V2-2010 (L) MDS-DH2-V2-2020 (L,M) MDS-DH2-V2-4020 (M)
Continuous characteristics	Regenerative resistor type	-
	Rated output[kW]	0.5
	Rated current[A]	0.9
	Rated torque[N·m]	1.6
	Stall current[A]	2.2
Maximum momentary output (For power supply selection)[kW]	Stall torque[N·m]	3.0
	Rated rotation speed[r/min]	3000
	Maximum rotation speed[r/min]	4000
	Maximum current[A]	8.4
	Maximum torque[N·m]	11.0
	Power rate at continuous rated torque[kW/s]	5.5
	Max. deceleration torque of dynamic brake(Tdp)[N·m]	6.32
	Motor inertia[×10 ⁻⁴ kg·m ²]	4.6
	(Brake inertia)[×10 ⁻⁴ kg·m ²]	5.1
	Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]
General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]		23.0
Non-interpolation axis [×10 ⁻⁴ kg·m ²]		46.0
Mass	(Without) [kg]	6.0
	(With brake)[kg]	7.3
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=52.7)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	20	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

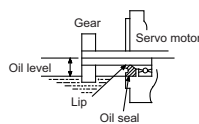
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

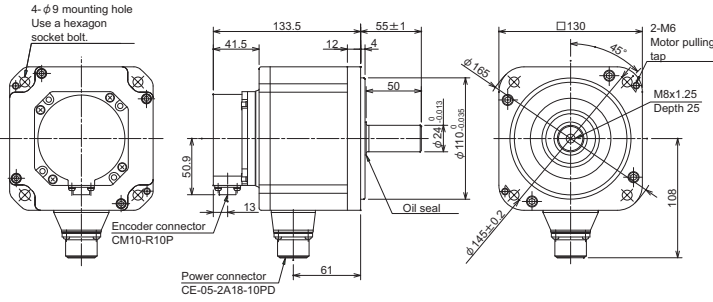
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.91
Static friction torque[N·m]	3.5
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

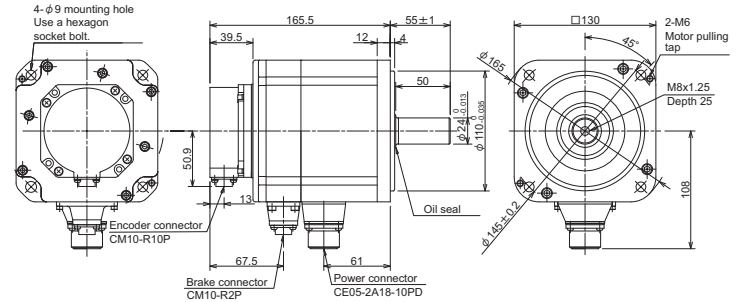
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

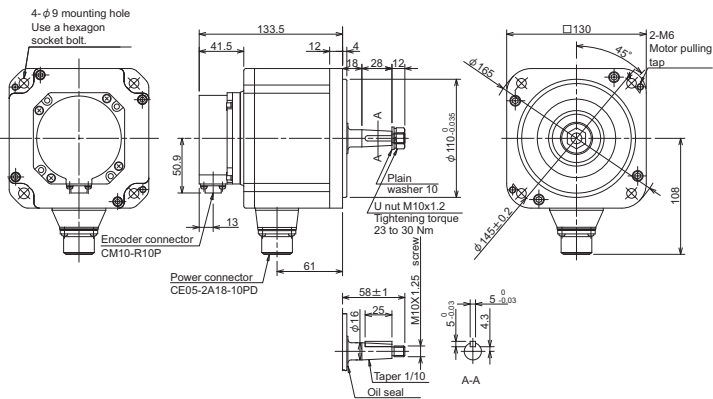
HP-H54S-A48



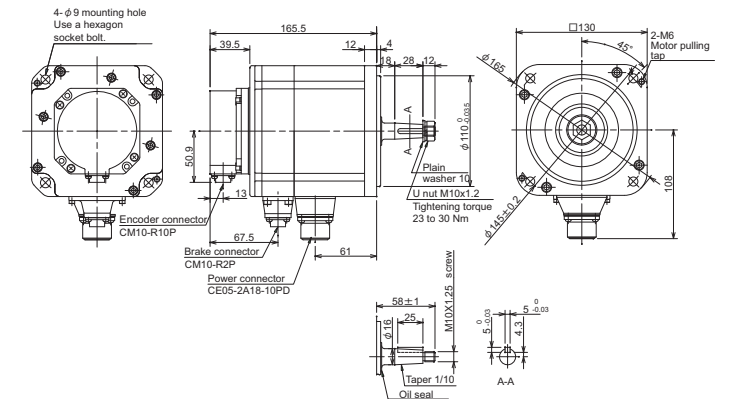
HP-H54BS-A48



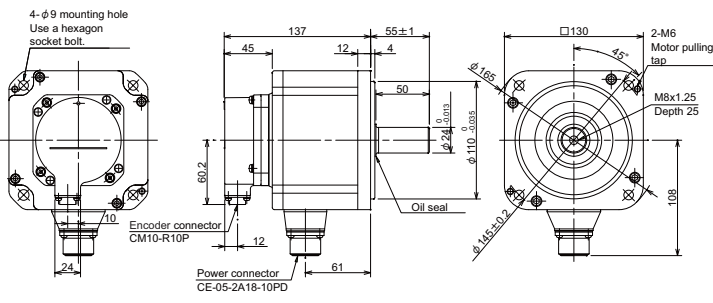
HP-H54T-A48



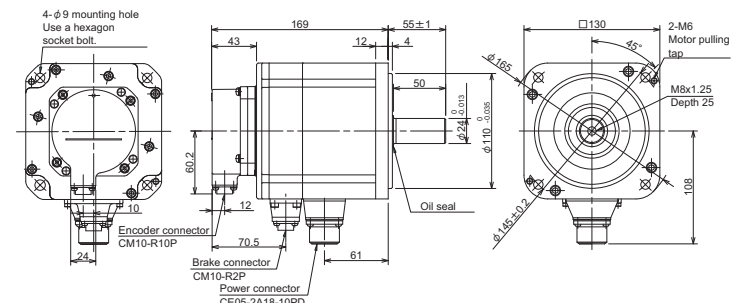
HP-H54BT-A48



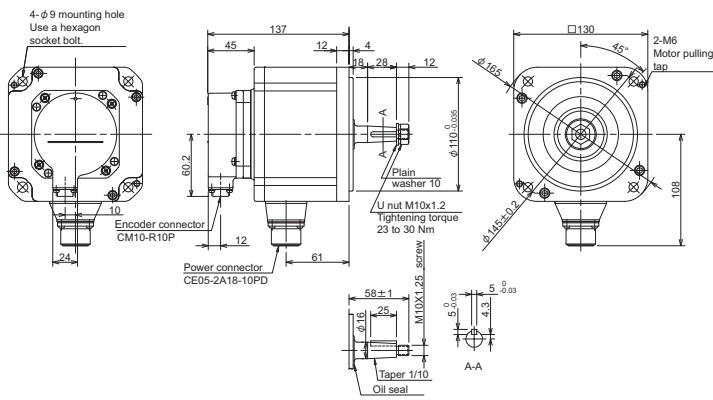
HP-H54S-A51,-A74N



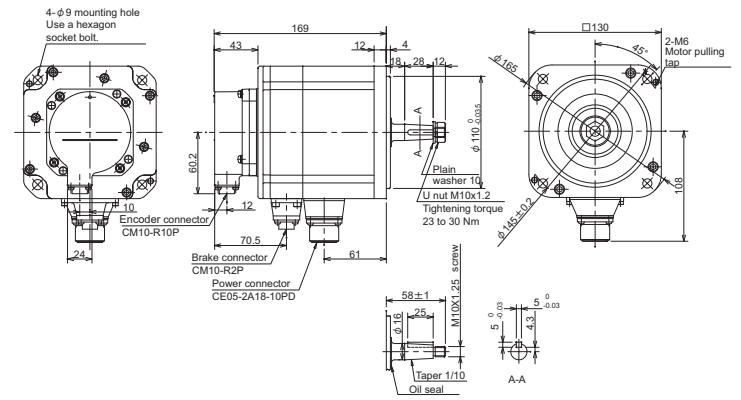
HP-H54BS-A51,-A74N



HP-H54T-A51,-A74N



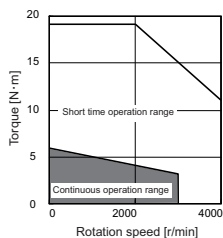
HP-H54BT-A51,-A74N



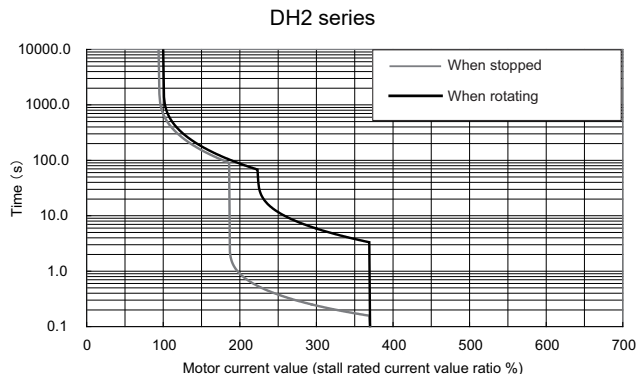
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
181.8±1.5 (84.5)	181.8±1.5 (76)	181.8±1.5 (108.6)	181.8±1.5 (120.1)	181.8±1.5 (103.9)	181.8±1.5 (85.3)	181.8±1.5 (103.8)	181.8±1.5 (85.3)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
5.9N·m	3000r/min	HP-H104 □□-XXX (1)(2) (3)	(1) Magnetic brake	B with brake
				None without brake
			(2) Shaft end	S Straight
			T Taper	
			(3) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

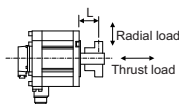


Specifications

Item	Specifications		
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-20	
	2-axis type	MDS-DH2-V2-2010 (L) MDS-DH2-V2-2020 (L,M) MDS-DH2-V2-4020 (M)	
Continuous characteristics	Regenerative resistor type	-	
	Rated output[kW]	1.0	
	Rated current[A]	1.8	
	Rated torque[N·m]	3.2	
	Stall current[A]	3.9	
Maximum momentary output (For power supply selection)[kW]	Stall torque[N·m]	5.9	
	Rated rotation speed[r/min]	3000	
	Maximum rotation speed[r/min]	4000	
	Maximum current[A]	12.8	
	Maximum torque[N·m]	19.2	
	Power rate at continuous rated torque[kW/s]	13.0	
	Max. deceleration torque of dynamic brake(Tdp)[N·m]	11.10	
	Motor inertia[×10 ⁻⁴ kg·m ²]	7.7	
	(Brake inertia)[×10 ⁻⁴ kg·m ²]	8.2	
	Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	23.1
		General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	38.5
		Non-interpolation axis [×10 ⁻⁴ kg·m ²]	77.0
	Mass	(Without) [kg]	7.0
		(With brake)[kg]	8.5
	Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)		
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)		
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=52.7)	
	Thrust load[N]	490	
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=52.7)	
	Thrust load[N]	490	
Oil level (*3)[mm]	20		
Absolute position encoder	16,000,000 p/rev	A74N	
	1,000,000 p/rev	A51	
	260,000 p/rev	A48	

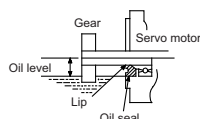
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.86
Static friction torque[N·m]	9
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

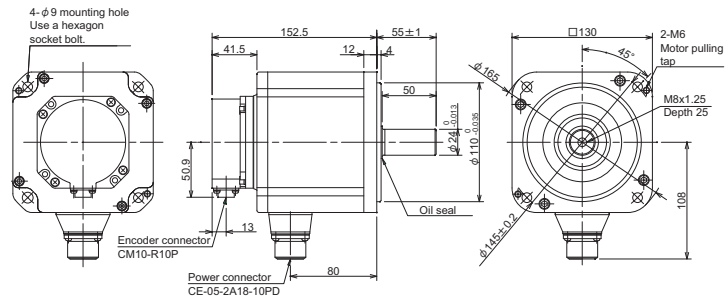
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

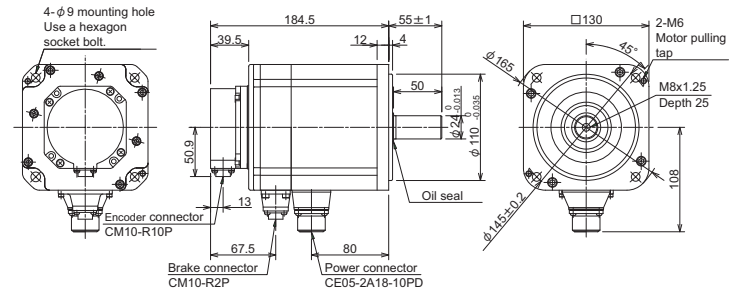
400V System Low Inertia Servo Motor HP-H Series

Outline dimension drawings [Unit : mm]

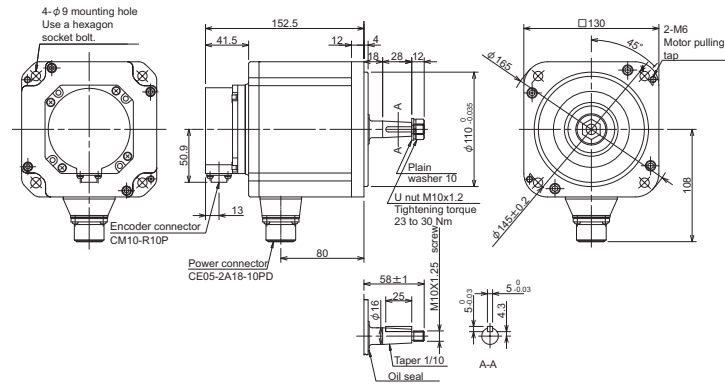
HP-H104S-A48



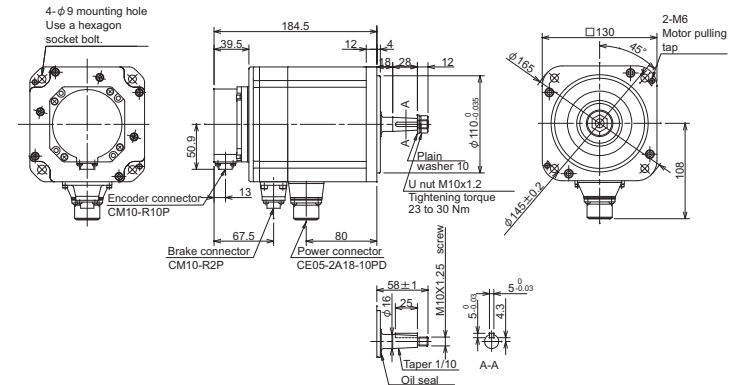
HP-H104BS-A48



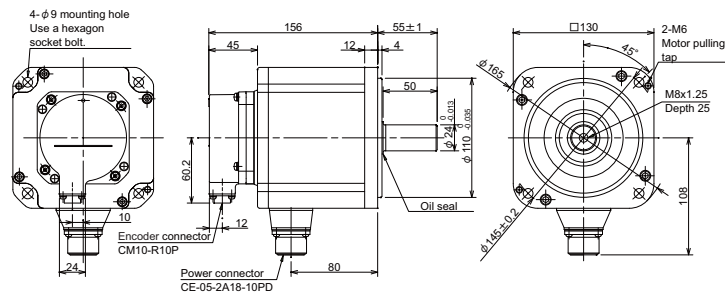
HP-H104T-A48



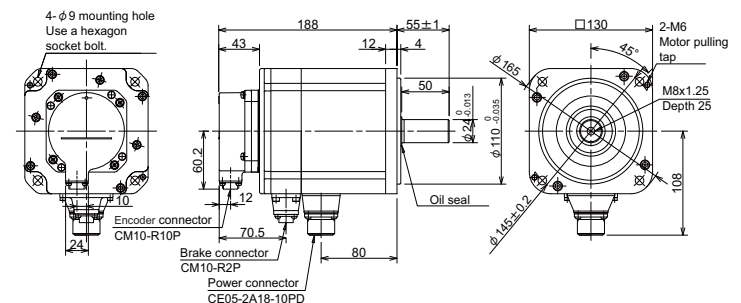
HP-H104BT-A48



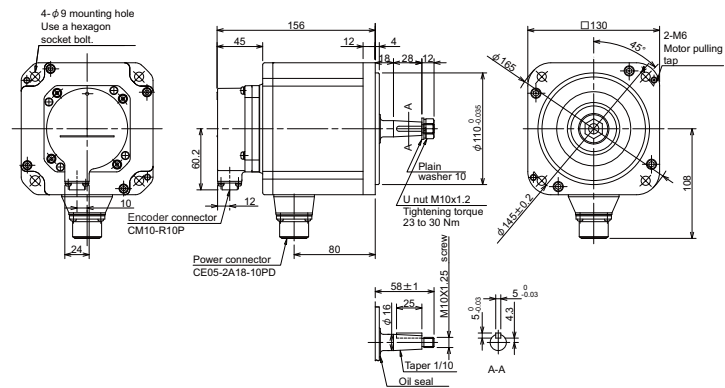
HP-H104S-A51,-A74N



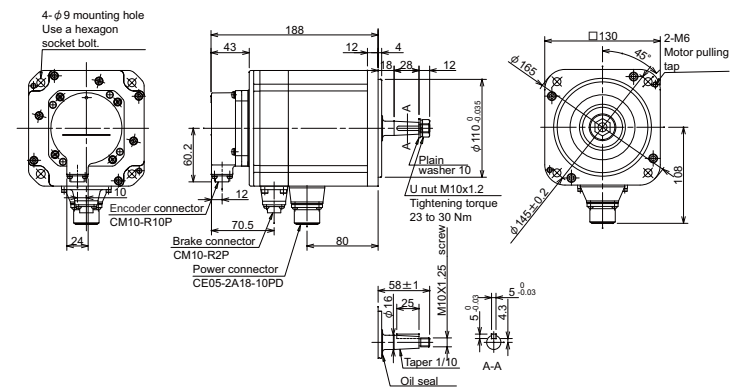
HP-H104BS-A51,-A74N



HP-H104T-A51,-A74N



HP-H104BT-A51,-A74N

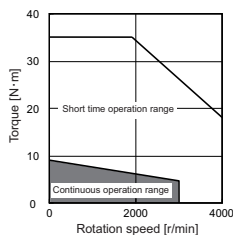


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
181.8±1.5 (94.5)	161.8±1.5 (76) (34)	181.8±1.5 (138.6)	161.8±1.5 (120.7) (34)	181.8±1.5 (103.9)	161.8±1.5 (85.3) (34)	181.8±1.5 (138.6)	161.8±1.5 (120.7) (34)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

400V System Low Inertia Servo Motor HP-H Series

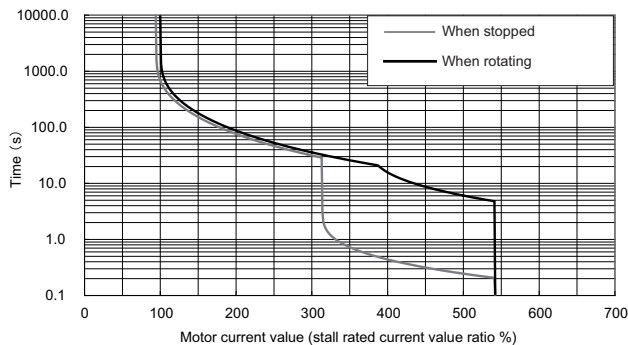
Stall torque 9.0N·m	Rated rotation speed 3000r/min	Servo motor type HP-H154 □□-XXX (1)(2) (3)	Explanation of type (1) Magnetic brake: B with brake, None without brake (2) Shaft end: S Straight, T Taper (3) Encoder: XXX Type
-------------------------------	--	---	--

Torque characteristics



Servo overload protection characteristics

DH2 series

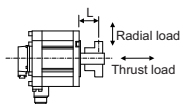


Specifications

Item	Specifications
Compatible drive unit (*1)	1-axis type: MDS-DH2-V1-40
	2-axis type: MDS-DH2-V2-4020 (L), MDS-DH2-V2-4040 (L,M), MDS-DH2-V2-8040 (M)
Continuous characteristics	Regenerative resistor type: -
	Rated output[kW]: 1.5
	Rated current[A]: 3.1
	Rated torque[N·m]: 4.8
	Stall current[A]: 4.8
Maximum momentary output (For power supply selection)[kW]	8.0
	Rated rotation speed[r/min]: 3000
	Maximum rotation speed[r/min]: 4000
	Maximum current[A]: 26.0
	Maximum torque[N·m]: 36.5
	Power rate at continuous rated torque[kW/s]: 19.0
	Max. deceleration torque of dynamic brake(Tdp)[N·m]: 18.08
	Motor inertia[×10 ⁻⁴ kg·m ²]: 12.0
	(Brake inertia)[×10 ⁻⁴ kg·m ²]: 12.5
	Maximum motor shaft conversion load inertia ratio
General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]: 60.0	
Non-interpolation axis [×10 ⁻⁴ kg·m ²]: 120.0	
Mass	(Without) [kg]: 8.0
	(With brake)[kg]: 9.5
Heat-resistant class	155(F)
Degree of protection	IP67 (The shaft-through portion is excluded.)
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm)): 392 (L=52.7)
	Thrust load[N]: 490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm)): 980 (L=52.7)
	Thrust load[N]: 490
Oil level (*3)[mm]	20
Absolute position encoder	16,000,000 p/rev: A74N
	1,000,000 p/rev: A51
	260,000 p/rev: A48

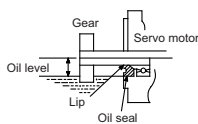
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	0.86
Static friction torque[N·m]	9
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

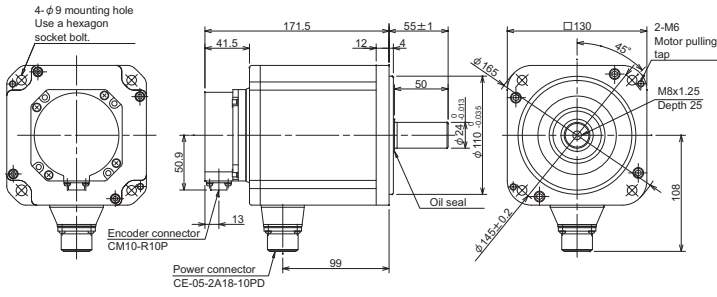
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

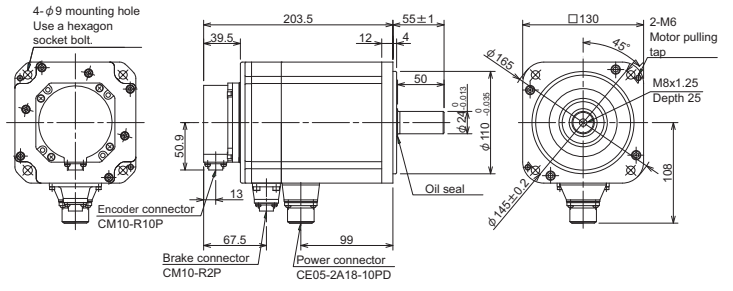
400V System Low Inertia Servo Motor HP-H Series

Outline dimension drawings [Unit : mm]

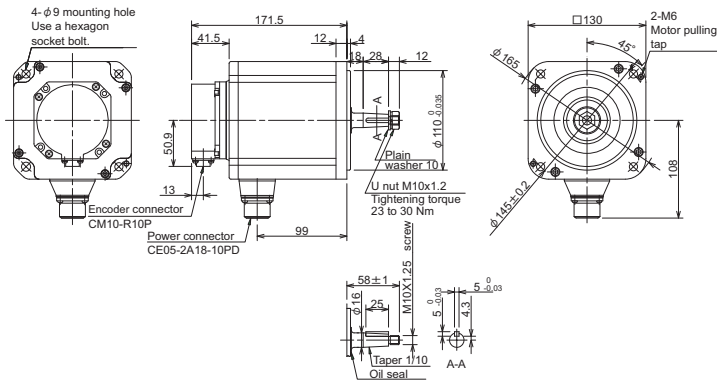
HP-H154S-A48



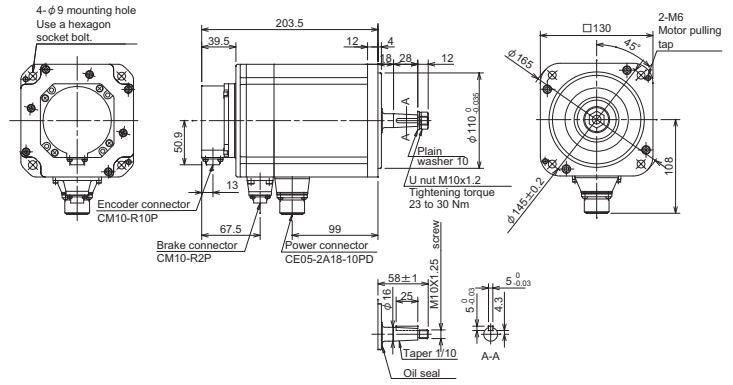
HP-H154BS-A48



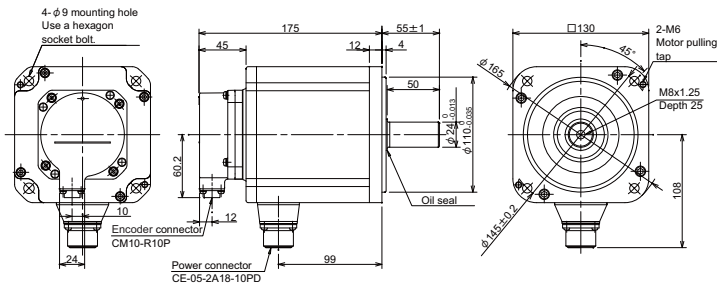
HP-H154T-A48



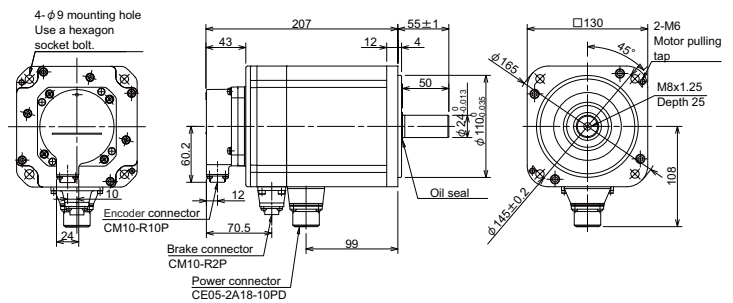
HP-H154BT-A48



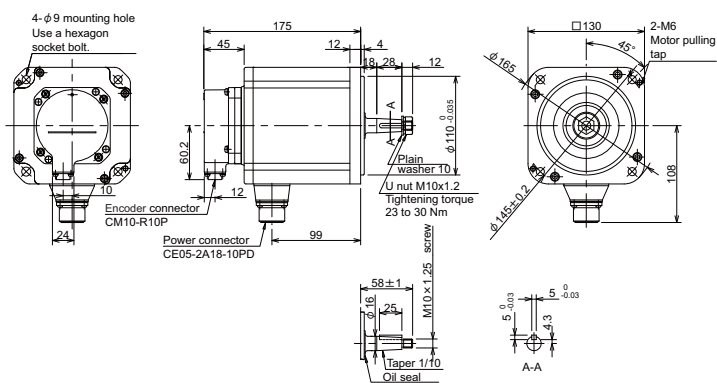
HP-H154S-A51,-A74N



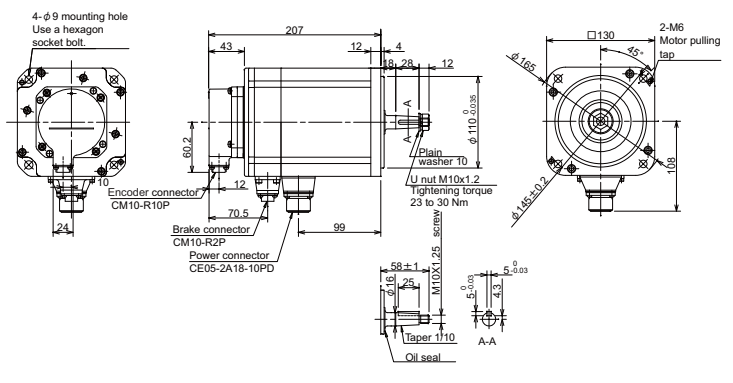
HP-H154BS-A51,-A74N



HP-H154T-A51,-A74N



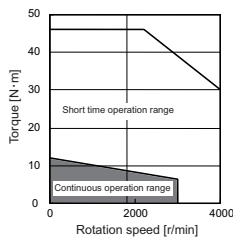
HP-H154BT-A51,-A74N



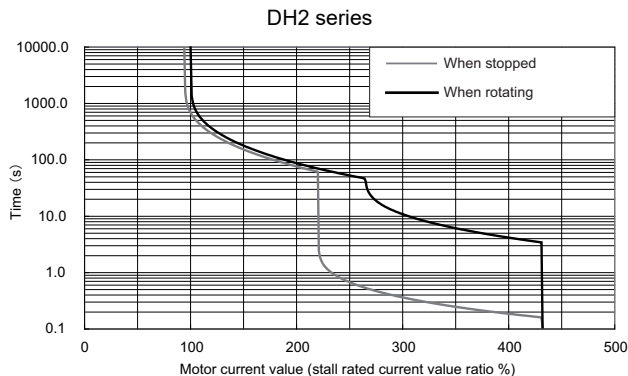
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
181.8±1.5 (94.5)	161.8±1.5 (76) (34)	181.8±1.5 (138.6)	161.8±1.5 (120.1) (76) (34)	181.8±1.5 (103.8)	161.8±1.5 (85.3) (34)	181.8±1.5 (138.6)	161.8±1.5 (120.1) (85.3) (34)
67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5	67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
12.0N·m	3000r/min	HP-H224 □□-XXX (1)(2) (3)	(1) Magnetic brake	B with brake
				None without brake
			(2) Shaft end	S Straight
			T Taper	
			(3) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

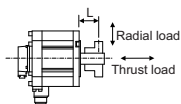


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-40
	2-axis type	MDS-DH2-V2-4020 (L) MDS-DH2-V2-4040 (L,M) MDS-DH2-V2-8040 (M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	2.2
	Rated current[A]	4.0
	Rated torque[N·m]	6.4
	Stall current[A]	7.0
	Stall torque[N·m]	12.0
Maximum momentary output (For power supply selection)[kW]	11.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	28.5	
Maximum torque[N·m]	46.0	
Power rate at continuous rated torque[kW/s]	20.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	28.65	
Motor inertia[×10 ⁻⁴ kg·m ²]	20.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	20.5	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	60.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	100.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	200.0
Mass	(Without) [kg]	12.0
	(With brake)[kg]	13.9
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:24.5(2.5)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	392 (L=52.7)
	Thrust load[N]	490
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	980 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	20	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

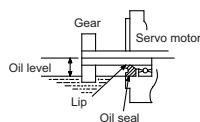
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.0
Static friction torque[N·m]	12
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

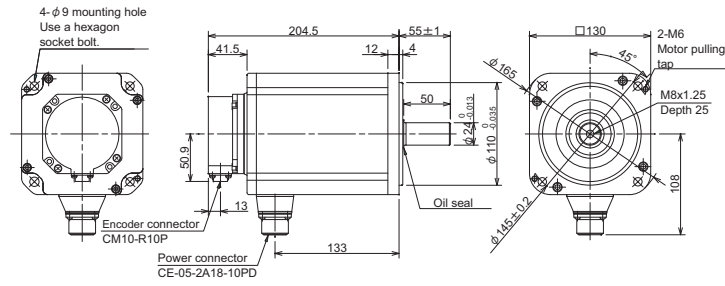
(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

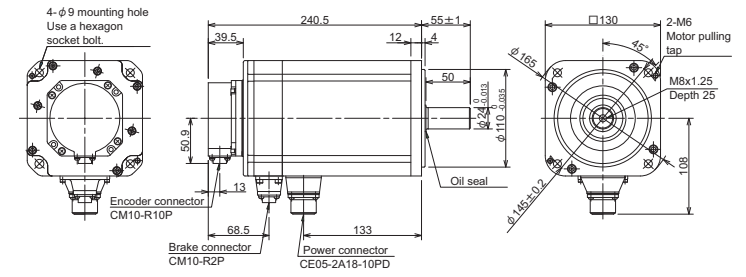
400V System Low Inertia Servo Motor HP-H Series

Outline dimension drawings [Unit : mm]

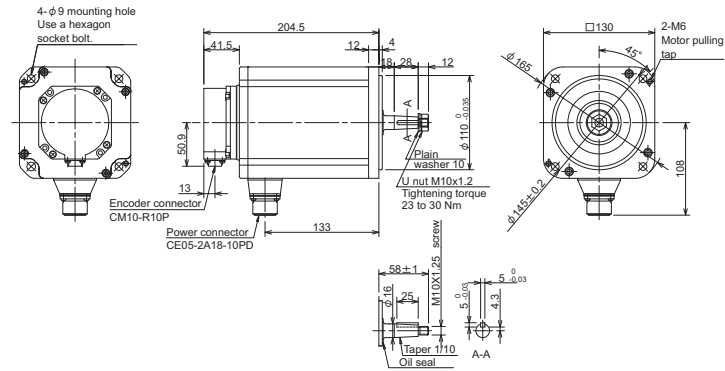
HP-H224S-A48



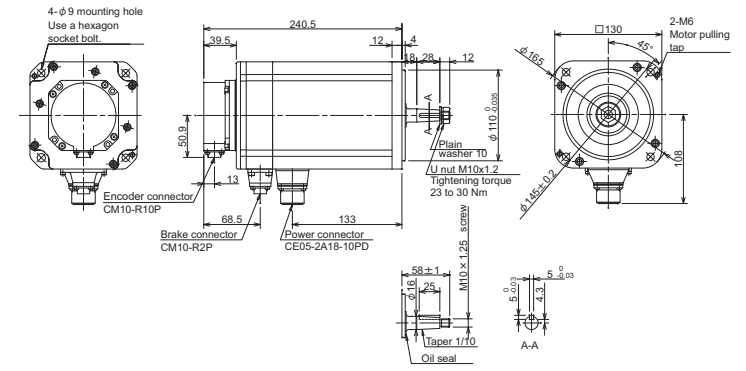
HP-H224BS-A48



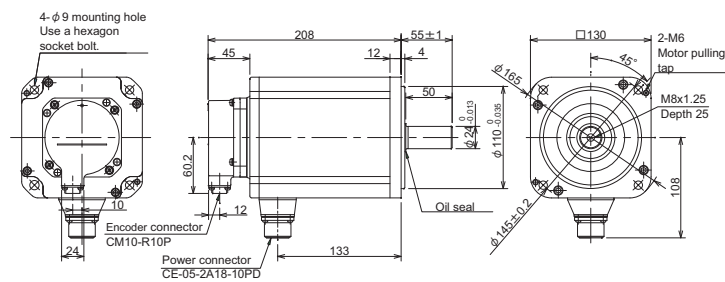
HP-H224T-A48



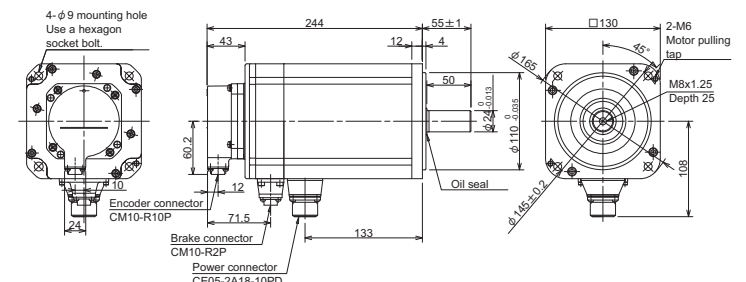
HP-H224BT-A48



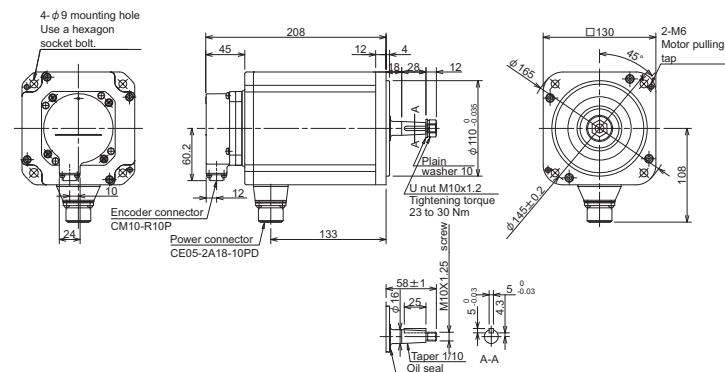
HP-H224S-A51,-A74N



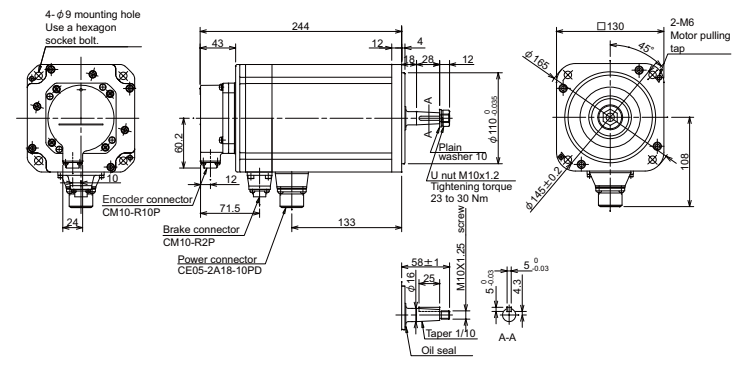
HP-H224BS-A51,-A74N



HP-H224T-A51,-A74N



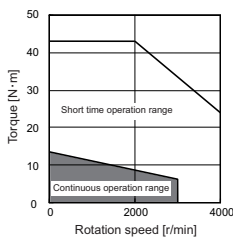
HP-H224BT-A51,-A74N



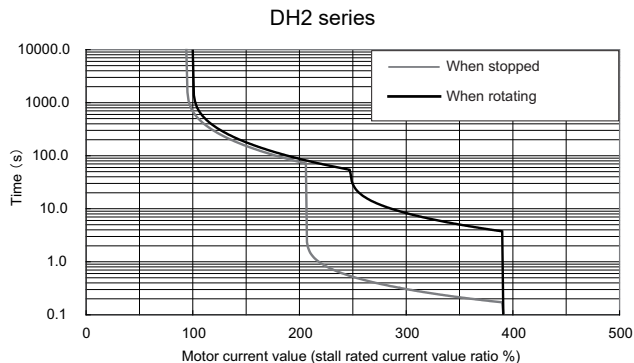
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
181.8±1.5 (94.5)	161.8±1.5 (76) (34) (69.5)	181.8±1.5 (138.6)	161.8±1.5 (120.1) (76) (34)	181.8±1.5 (103.8)	161.8±1.5 (85.3) (34)	181.8±1.5 (138.6)	161.8±1.5 (120.1) (85.3) (34)
	67.1±1.5		67.1±1.5		67.1±1.5		67.1±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
13.7N·m	3000r/min	HP-H204 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

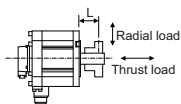


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-40
	2-axis type	MDS-DH2-V2-4020 (L) MDS-DH2-V2-4040 (L,M) MDS-DH2-V2-8040 (M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	2.0
	Rated current[A]	4.1
	Rated torque[N·m]	6.4
	Stall current[A]	7.3
	Stall torque[N·m]	13.7
Maximum momentary output (For power supply selection)[kW]	11.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	28.5	
Maximum torque[N·m]	43.0	
Power rate at continuous rated torque[kW/s]	14.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	28.04	
Motor inertia[×10 ⁻⁴ kg·m ²]	29.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	34.5	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	87.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	145.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	290.0
Mass	(Without) [kg]	14.0
	(With brake)[kg]	15.9
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	1500 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	25	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

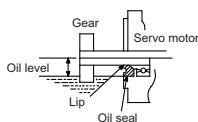
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

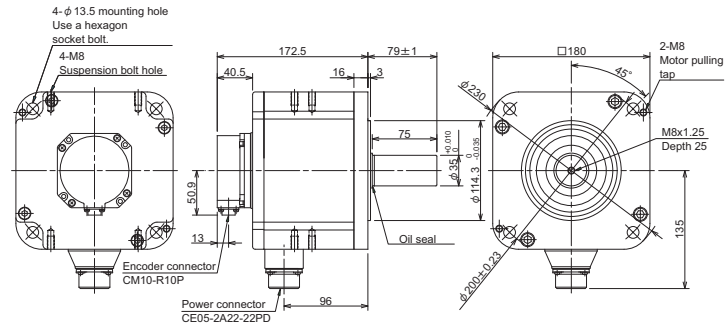
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.0
Static friction torque[N·m]	12
Release delay time (*1)[s]	0.1
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

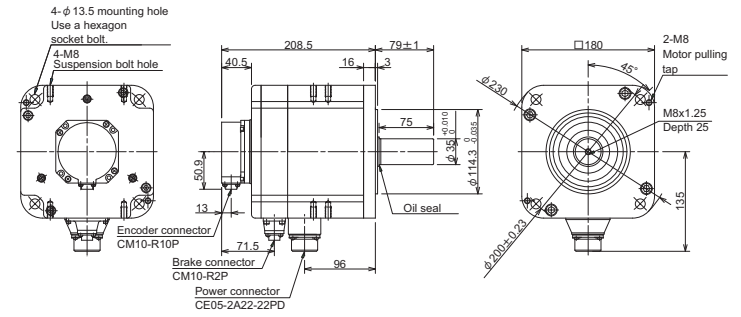
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

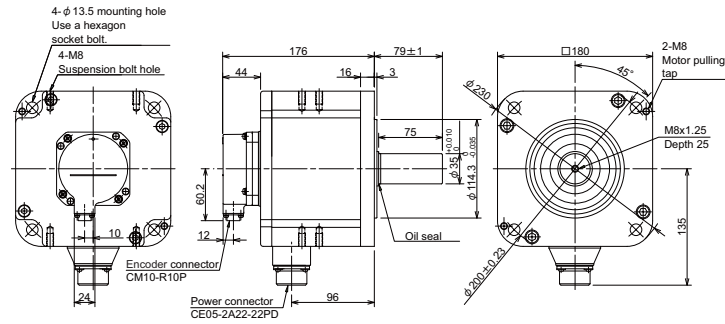
HP-H204S-A48



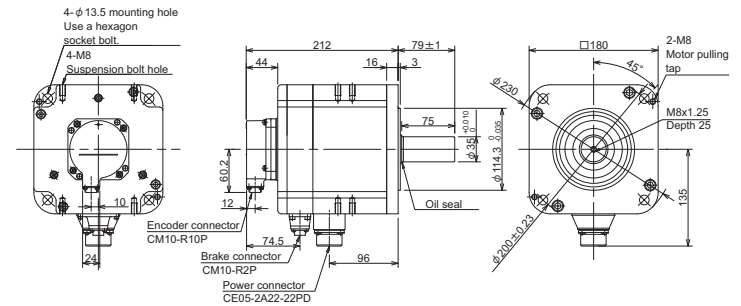
HP-H204BS-A48



HP-H204S-A51,-A74N



HP-H204BS-A51,-A74N

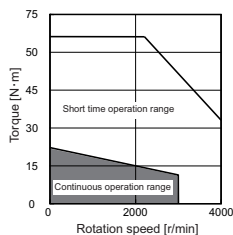


A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
213±1.5 (84.5)	195.6±1.5 (76) (34) 69.3±1.5	213±1.5 (163.6) (84.5)	195.6±1.5 (145.1) (76) (34) 69.3±1.5	213±1.5 (103.8)	195.6±1.5 (65.3) (34) 69.3±1.5	213±1.5 (163.6) (103.8)	195.6±1.5 (145.1) (65.3) (34) 69.3±1.5

400V System Low Inertia Servo Motor HP-H Series

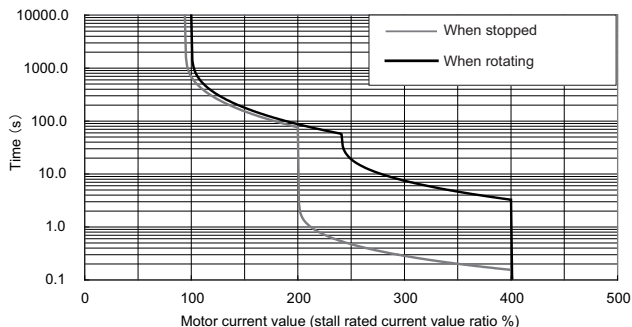
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
22.5N·m	3000r/min	HP-H354 □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

DH2 series

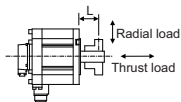


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-80
	2-axis type	MDS-DH2-V2-8040 (L) MDS-DH2-V2-8080 (L,M) MDS-DH2-V2-8080W (L,M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	3.5
	Rated current[A]	7.4
	Rated torque[N·m]	11.1
	Stall current[A]	14.5
	Stall torque[N·m]	22.5
Maximum momentary output (For power supply selection)[kW]	15.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	58.0	
Maximum torque[N·m]	66.0	
Power rate at continuous rated torque[kW/s]	33.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	37.93	
Motor inertia[×10 ⁻⁴ kg·m ²]	37.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	42.5	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	111.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	185.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	370.0
Mass	(Without) [kg]	17.0
	(With brake)[kg]	22
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	1500 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	25	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

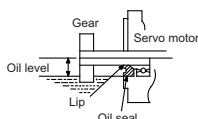
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

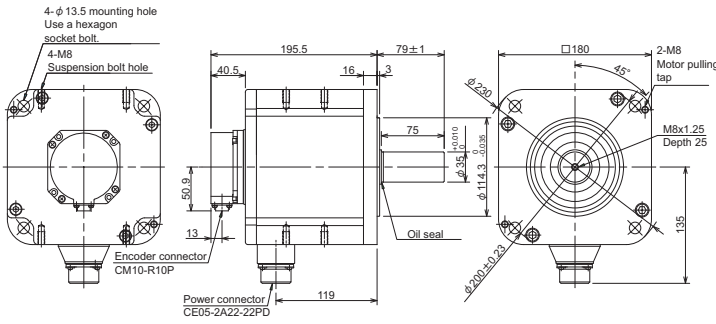
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	32
Release delay time (*1)[s]	0.12
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

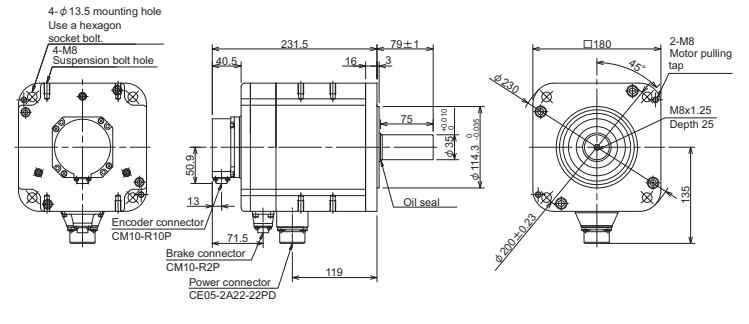
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

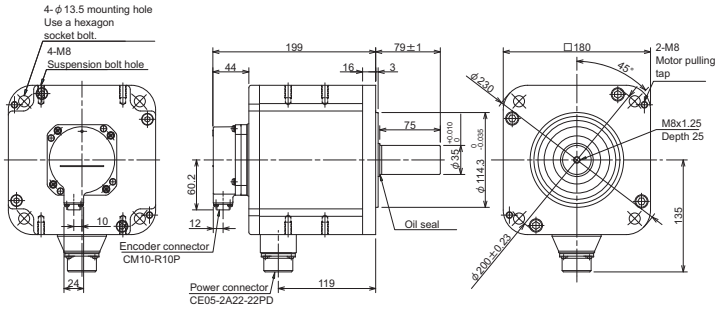
HP-H354S-A48



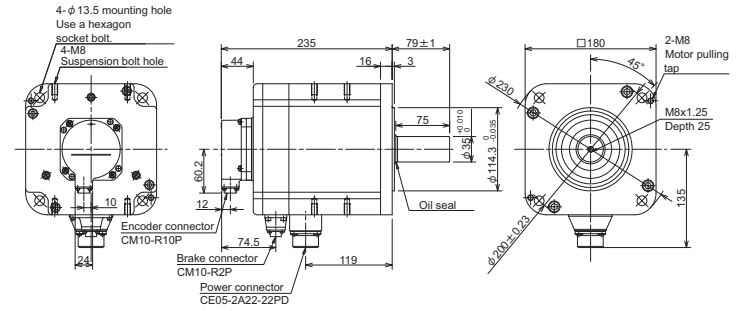
HP-H354BS-A48



HP-H354S-A51,-A74N



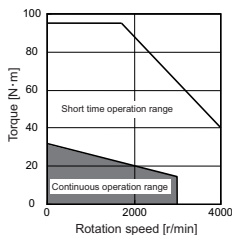
HP-H354BS-A51,-A74N



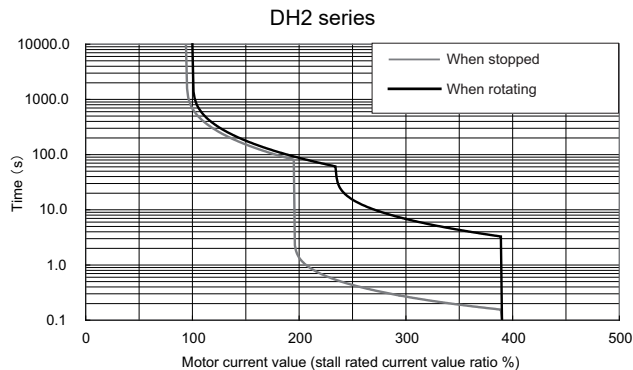
A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
213±1.5 (84.5)	195.6±1.5 (76) (34) 69.3±1.5	213±1.5 (163.6) (84.5)	195.6±1.5 (145.1) (76) (34) 69.3±1.5	213±1.5 (103.8)	195.6±1.5 (85.3) (34) 69.3±1.5	213±1.5 (163.6) (103.8)	195.6±1.5 (145.1) (85.3) (34) 69.3±1.5

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
31.9N·m	3000r/min	HP-H454 □S-xxx	(1) Magnetic brake	B with brake None without brake
			(2) Encoder	XXX Type

Torque characteristics



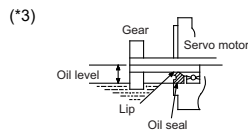
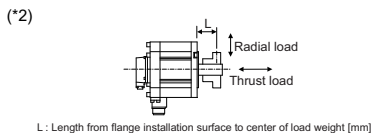
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-80
	2-axis type	MDS-DH2-V2-8040 (L) MDS-DH2-V2-8080 (L,M) MDS-DH2-V2-8080W (L,M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	4.5
	Rated current[A]	7.6
	Rated torque[N·m]	14.3
	Stall current[A]	14.9
	Stall torque[N·m]	31.9
Maximum momentary output (For power supply selection)[kW]	21.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	58.0	
Maximum torque[N·m]	95.0	
Power rate at continuous rated torque[kW/s]	36.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	60.58	
Motor inertia[×10 ⁻⁴ kg·m ²]	55.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	60.5	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	165.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	275.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	550.0
Mass	(Without) [kg]	21.0
	(With brake)[kg]	26
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	1500 (L=52.7)
	Thrust load[N]	490
Oil level (*3)[mm]	25	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

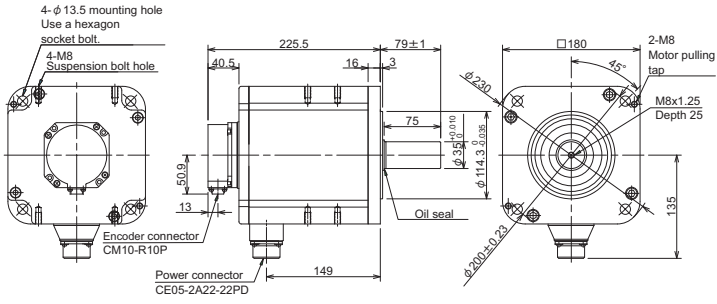
Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	32
Release delay time (*1)[s]	0.12
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

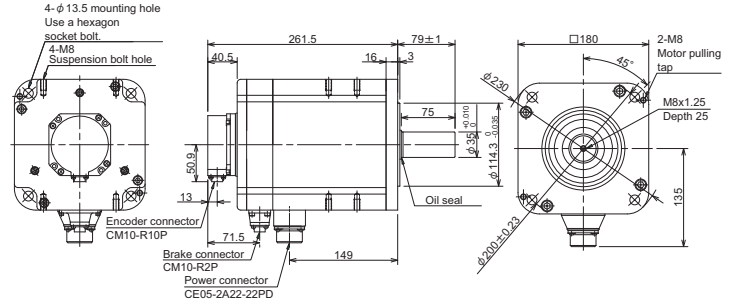
(*1) This is the representative value for the initial attraction gap at 20°C.
 (*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

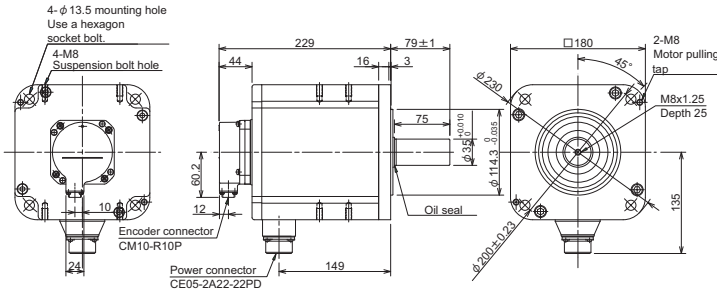
HP-H454S-A48



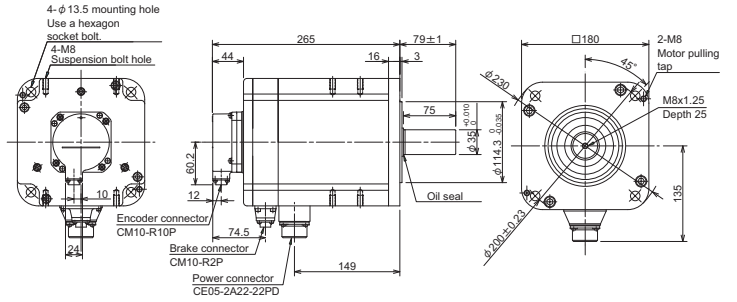
HP-H454BS-A48



HP-H454S-A51,-A74N



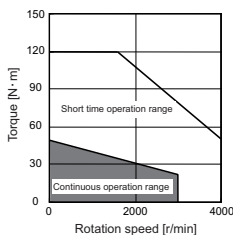
HP-H454BS-A51,-A74N



A48				A51/A74N			
Without brake		With brake		Without brake		With brake	
Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug	Straight plug	Right angle plug
213±1.5 (94.5)	195.6±1.5 (76) (34)	213±1.5 (83.6) (94.5)	195.6±1.5 (145.1) (76) (34)	213±1.5 (103.8)	195.6±1.5 (85.3) (34)	213±1.5 (83.6) (103.8)	195.6±1.5 (145.1) (85.3) (34)
69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5	69.3±1.5

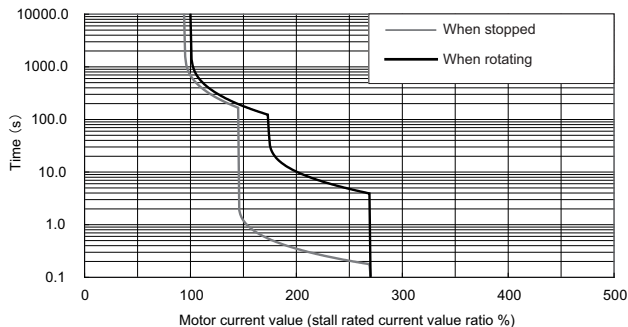
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
49.0N·m	3000r/min	HP-H704 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

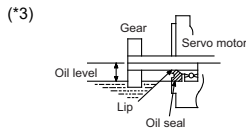
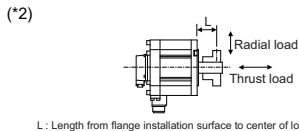
DH2 series



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-80W
	2-axis type	MDS-DH2-V2-8080W (L,M)
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	7.0
	Rated current[A]	10.6
	Rated torque[N·m]	22.3
	Stall current[A]	20.1
	Stall torque[N·m]	49.0
Maximum momentary output (For power supply selection)[kW]	27.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	4000	
Maximum current[A]	58.0	
Maximum torque[N·m]	120.0	
Power rate at continuous rated torque[kW/s]	59.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	95.47	
Motor inertia[×10 ⁻⁴ kg·m ²]	82.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	87.5	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	246.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	410.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	820.0
Mass	(Without) [kg]	37.0
	(With brake)[kg]	43
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:24.5(2.5), Y:29.4(3)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	1300 (L=52.7)
	Thrust load[N]	590
Oil level (*3)[mm]	25	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

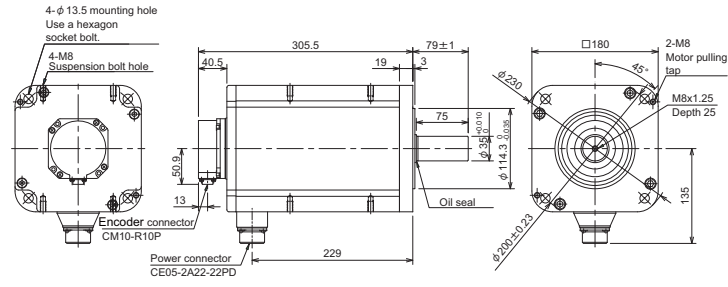
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.4
Static friction torque[N·m]	54.9
Release delay time (*1)[s]	0.3
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

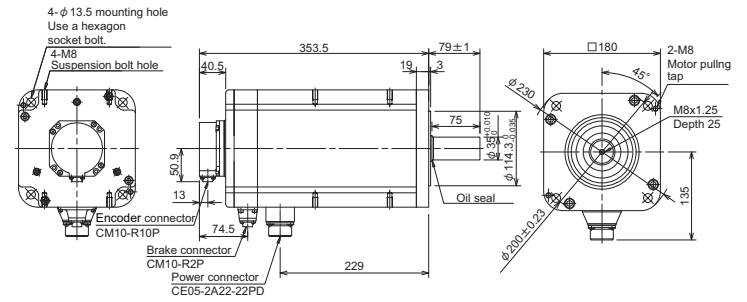
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

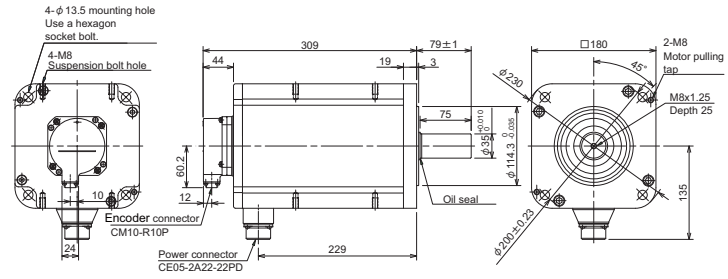
HP-H704S-A48



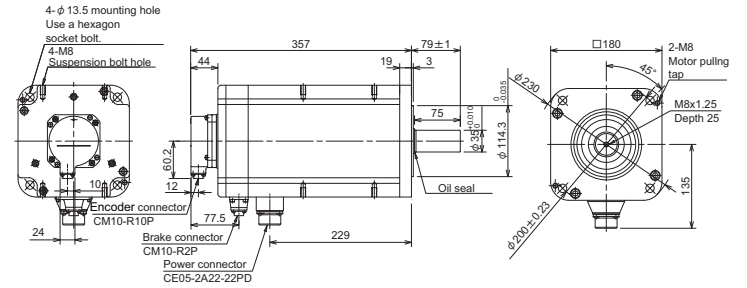
HP-H704BS-A48



HP-H704S-A51,-A74N



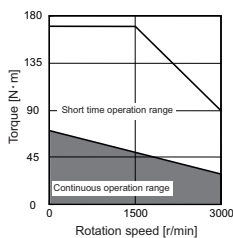
HP-H704BS-A51,-A74N



A48		A51/A74N	
Without brake	With brake	Without brake	With brake
Straight plug	Right angle plug	Straight plug	Right angle plug

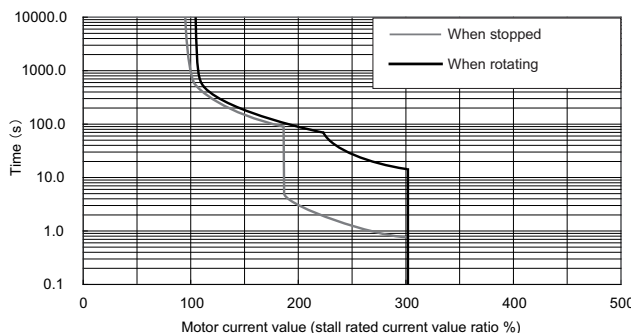
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
70.0N·m	3000r/min	HP-H903 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

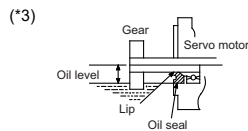
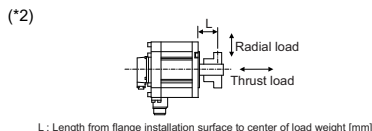
DH2 series



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-160
	2-axis type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	9.0
	Rated current[A]	12.9
	Rated torque[N·m]	28.7
	Stall current[A]	32.0
	Stall torque[N·m]	70.0
Maximum momentary output (For power supply selection)[kW]	33.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	86.0	
Maximum torque[N·m]	170.0	
Power rate at continuous rated torque[kW/s]	52.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	100.47	
Motor inertia[×10 ⁻⁴ kg·m ²]	163.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	187.0	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	675.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	1125.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	2250.0
Mass	(Without) [kg]	51.0
	(With brake)[kg]	61.4
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:9.8(1), Y:9.8(1)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2500 (L=52.7)
	Thrust load[N]	1100
Oil level (*3)[mm]	30	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation:80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

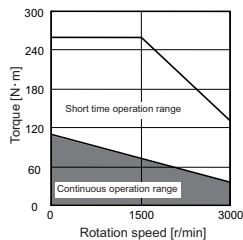
Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.7
Static friction torque[N·m]	90
Release delay time (*1)[s]	0.3
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

(*1) This is the representative value for the initial attraction gap at 20°C.

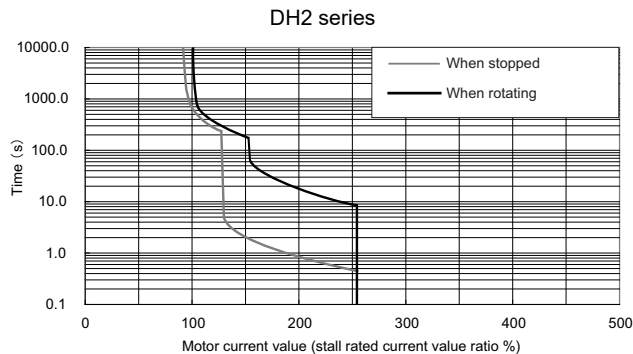
(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
110.0N·m	3000r/min	HP-H1103 □S-xxx	(1) Magnetic brake	B with brake
				None without brake
			(2) Encoder	XXX Type

Torque characteristics



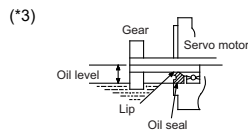
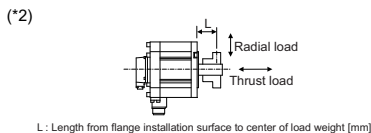
Servo overload protection characteristics



Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-160W
	2-axis type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	11.0
	Rated current[A]	15.0
	Rated torque[N·m]	35.0
	Stall current[A]	46.0
	Stall torque[N·m]	110.0
Maximum momentary output (For power supply selection)[kW]	50.0	
Rated rotation speed[r/min]	3000	
Maximum rotation speed[r/min]	3000	
Maximum current[A]	106.0	
Maximum torque[N·m]	260.0	
Power rate at continuous rated torque[kW/s]	48.0	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	170.39	
Motor inertia[×10 ⁻⁴ kg·m ²]	255.0	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	279.0	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	900.0
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	1500.0
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	3000.0
Mass	(Without) [kg]	74.0
	(With brake)[kg]	84.4
Heat-resistant class	155(F)	
Degree of protection	IP67 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] (G)	X:9.8(1), Y:9.8(1)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	2700 (L=52.7)
	Thrust load[N]	1500
Oil level (*3)[mm]	30	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

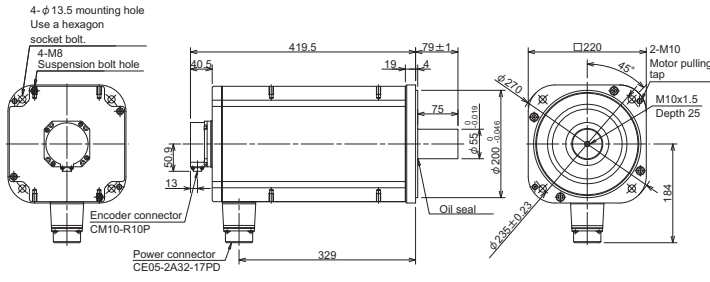
Magnetic brake characteristics

Item	Specifications
Rated voltage	24VDC
Rated current at 20°C[A]	1.7
Static friction torque[N·m]	90
Release delay time (*1)[s]	0.3
Braking delay time (DC OFF) (*1)[s]	0.1
Brake life (*2)[times]	20,000

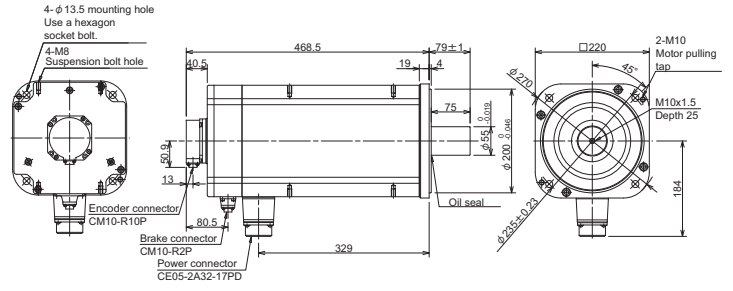
(*1) This is the representative value for the initial attraction gap at 20°C.
 (*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

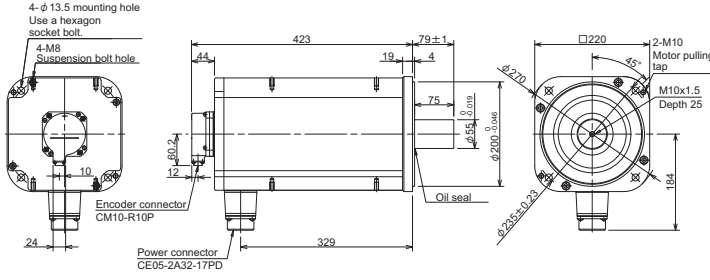
HP-H1103S-A48



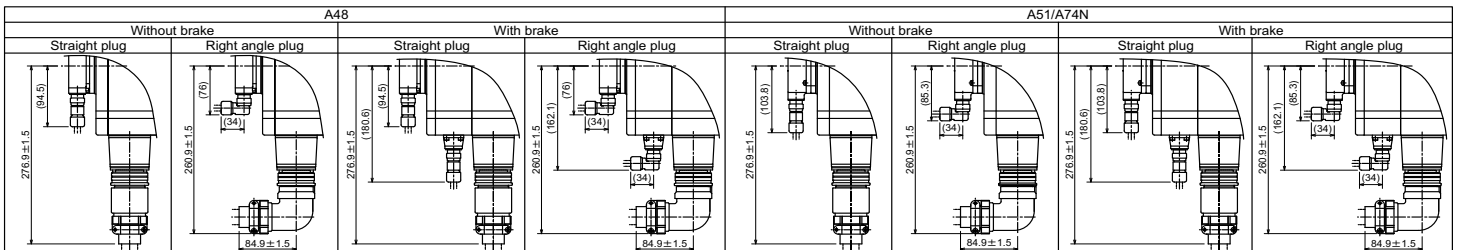
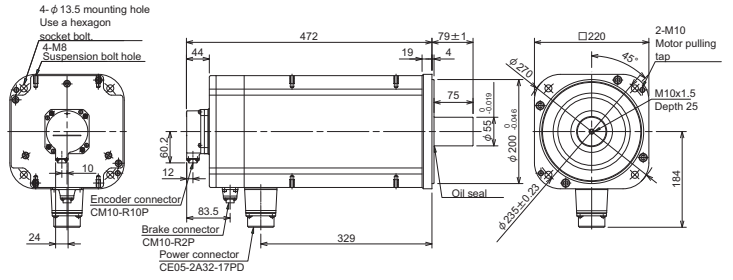
HP-H1103BS-A48



HP-H1103S-A51,-A74N



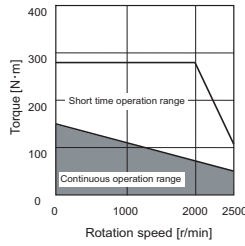
HP-H1103BS-A51,-A74N



400V System Medium Inertia Servo Motor HC-H Series

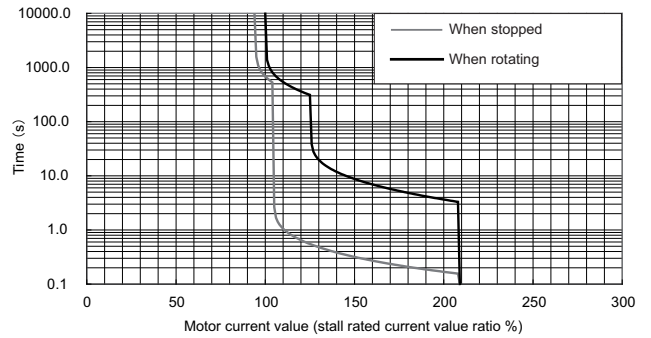
Stall torque	Rated rotation speed	Servo motor type	Explanation of type	
146.0N·m	2000r/min	HC-H1502S-S10 -xxx	(1) Encoder	XXX Type

Torque characteristics



Servo overload protection characteristics

DH2 series

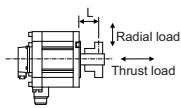


Specifications

Item	Specifications	
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-200
	2-axis type	-
	Regenerative resistor type	-
Continuous characteristics	Rated output[kW]	15.0
	Rated current[A]	39
	Rated torque[N·m]	71.6
	Stall current[A]	77
	Stall torque[N·m]	146.0
Maximum momentary output (For power supply selection)[kW]	59.0	
Rated rotation speed[r/min]	2000	
Maximum rotation speed[r/min]	2500	
Maximum current[A]	160.0	
Maximum torque[N·m]	280.0	
Power rate at continuous rated torque[kW/s]	104.5	
Max. deceleration torque of dynamic brake(Tdp)[N·m]	237.67	
Motor inertia[×10 ⁻⁴ kg·m ²]	550	
(Brake inertia)[×10 ⁻⁴ kg·m ²]	-	
Maximum motor shaft conversion load inertia ratio	High-speed, high-accuracy machine[×10 ⁻⁴ kg·m ²]	1650
	General machine tool (interpolation axis)[×10 ⁻⁴ kg·m ²]	2750
	Non-interpolation axis [×10 ⁻⁴ kg·m ²]	5500
Mass	(Without) [kg]	160
	(With brake)[kg]	-
Heat-resistant class	155(F)	
Degree of protection	IP44 (The shaft-through portion is excluded.)	
Quakeproof level[m/s ²] ((G))	X:9.8(1), Y:9.8(1)	
Axis tolerable load (Taper shaft)	Radial load (*2)[N] ((mm))	-
	Thrust load[N]	-
Axis tolerable load (Straight shaft)	Radial load (*2)[N] ((mm))	3234 (L=140)
	Thrust load[N]	1470
Oil level (*3)[mm]	45	
Absolute position encoder	16,000,000 p/rev	A74N
	1,000,000 p/rev	A51
	260,000 p/rev	A48

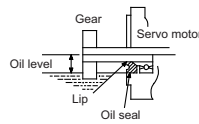
(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2)



L: Length from flange installation surface to center of load weight [mm]

(*3)



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 80% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation: 1000m or less above sea level Storage: 10000m or less above sea level

Magnetic brake characteristics

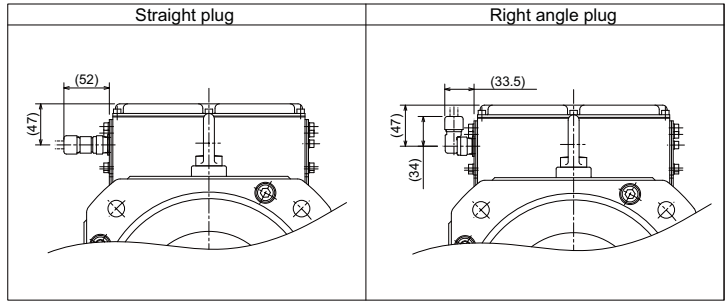
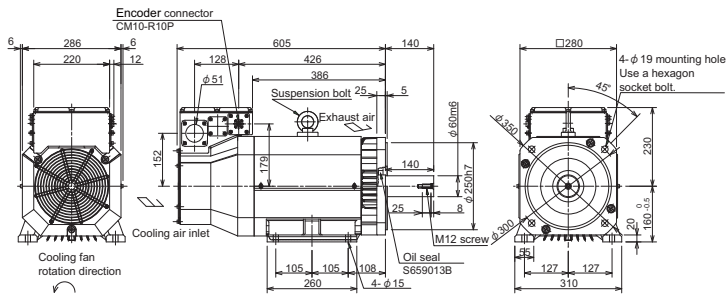
Item	Specifications
Rated voltage	-
Rated current at 20°C[A]	-
Static friction torque[N·m]	-
Release delay time (*1)[s]	-
Braking delay time (DC OFF) (*1)[s]	-
Brake life (*2)[times]	-

(*1) This is the representative value for the initial attraction gap at 20°C.

(*2) The brake gap will widen through brake lining wear caused by braking. However, the gap cannot be adjusted. Thus, the brake life is considered to be reached when adjustments are required.

Outline dimension drawings [Unit : mm]

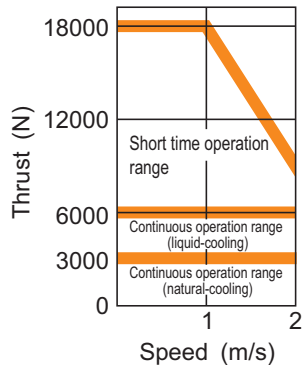
HC-H1502S-S10-A48,-A51,-A74N



Linear Motor

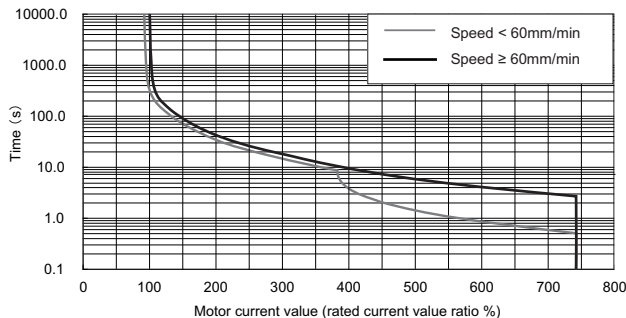
Thrust		Linear servo motor type		Explanation of type	
Rated (natural-cooling)	3000N	Primary side (coil)	LM-FP5H-60M -1WW0	(1) Length [mm]	480
Rated (liquid-cooling)	6000N	Secondary side (magnet)			
Maximum	18000N				
		LM-FS50 -□-1WW0			

Thrust Characteristics

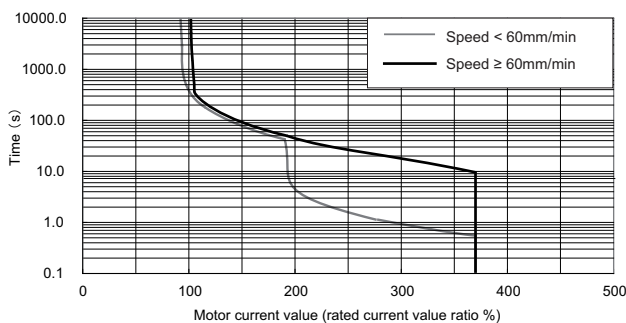


Servo overload protection characteristics

DH2 series (For natural-cooling)



DH2 series (For liquid-cooling)



Specifications

Item		Specifications
		Standard
Compatible drive unit (*1)	1-axis type	MDS-DH2-V1-200
	2-axis type	-
	3-axis type	-
	Regenerative resistor type	-
Power facility capacity [kVA]		22
Current	Rated (natural-cooling) [Arms]	21.1
	Rated (liquid-cooling) [Arms]	42.2
	Maximum [Arms]	142.0
Cooling method		Natural-cooling, liquid-cooling
Thrust	Rated (natural-cooling) [N]	3000
	Rated (liquid-cooling) [N]	6000
	Maximum [N]	18000
Maximum speed [m/s] (*2)		2.0
Magnetic attraction force [N]		45000
Mass	Primary side [kg]	67
	Secondary side [kg]	20.0 (480mm) 26.0 (576mm)
Recommended load mass ratio		15 times linear servo motor primary side mass maximum
Structure		Open (Degree of protection IP00)

(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

(*2) The above value may be limited by the maximum speed of the linear scale.

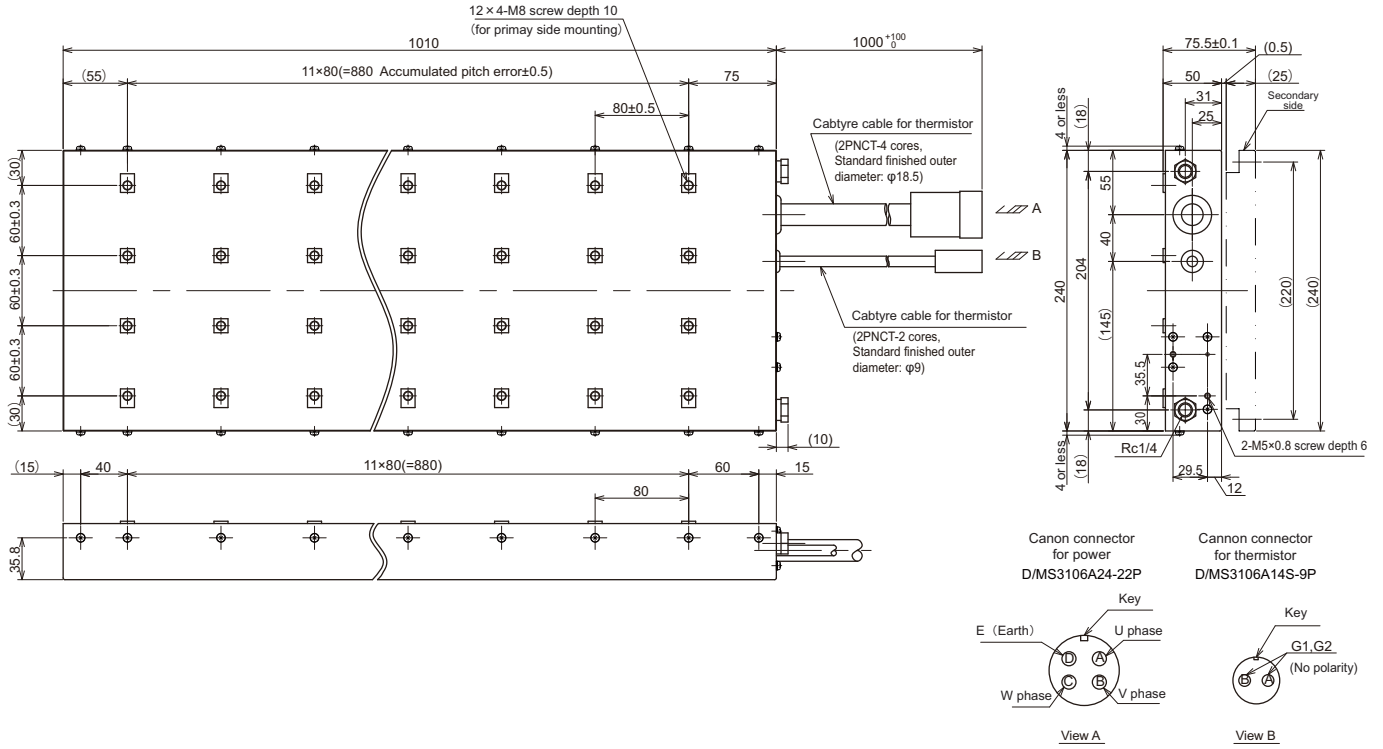
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C (with no freezing) Storage: -15°C to 55°C (with no freezing)
Ambient humidity	Operation: 80%RH or less (with no dew condensation) Storage: 90%RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, or dust
Vibration	49m/s ² or less
Altitude	1000 meters or less above sea level

Outline dimension drawings [Unit : mm]

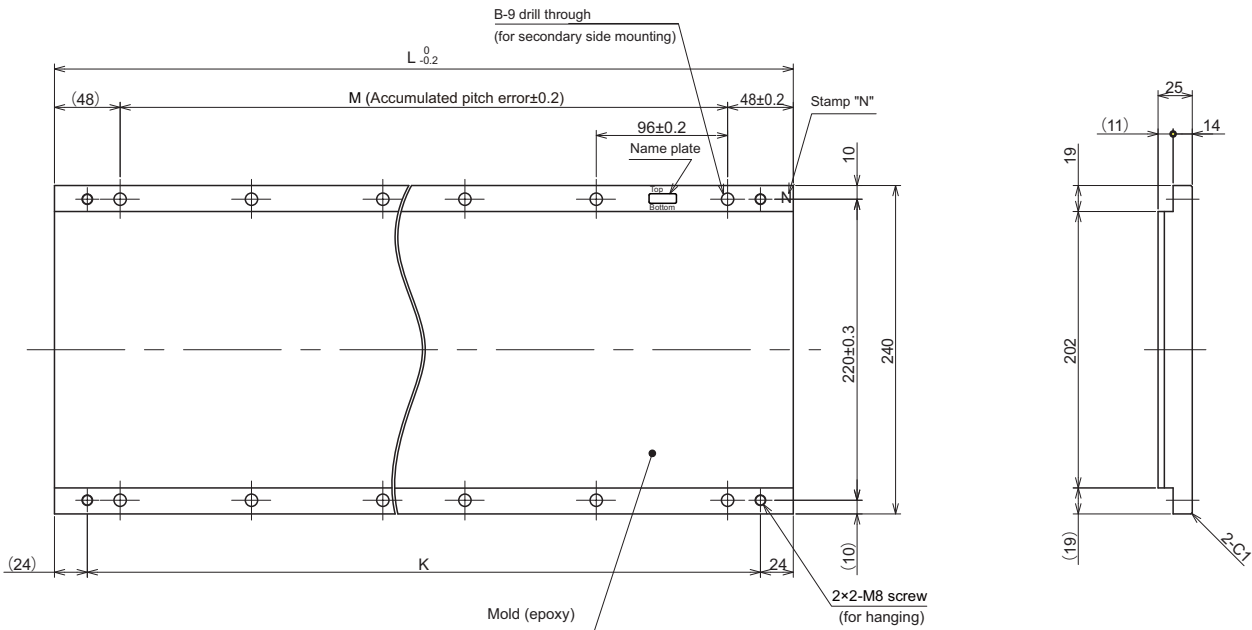
< Primary side >

LM-FP5H-60M-1WW0



< Secondary side >

LM-FS50-□-1WW0



Model	Variable dimensions			
	L	M	K	B
LM-FS50-480-1WW0	480	4X96(=384)	432	5x2
LM-FS50-576-1WW0	576	5X96(=480)	528	6x2

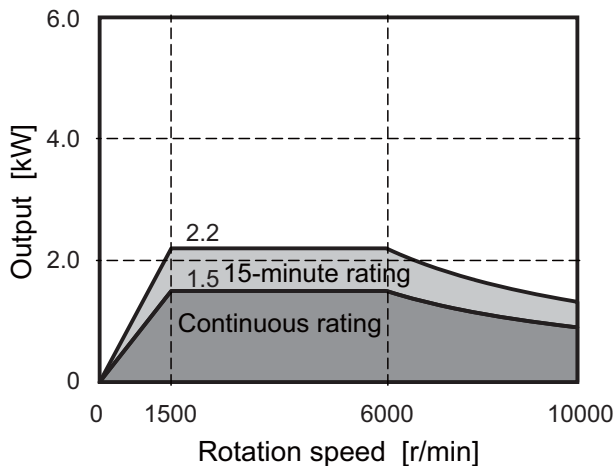
Spindle Motor

Base rotation speed 1500r/min series
SJ-4-V2.2-03T

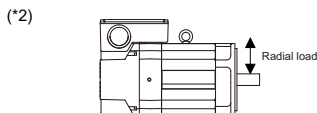
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-20	
Output capacity[kW]	Continuous rated output	1.5
	Short time rated output	2.2 (15-minute rating)
	Standard output during acceleration/deceleration	2.2
	Actual acceleration/deceleration output(*3)	2.64
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	10000	
Frame No.	A90	
Continuous rated torque[N·m]	9.5	
GD ² [kg·m ²]	0.027	
Inertia[kg·m ²]	0.00675	
Tolerable radial load(*2) [N]	980	
Cooling fan	Input voltage	Single-phase 400V
Degree of protection		IP44
Mass[kg]		25
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

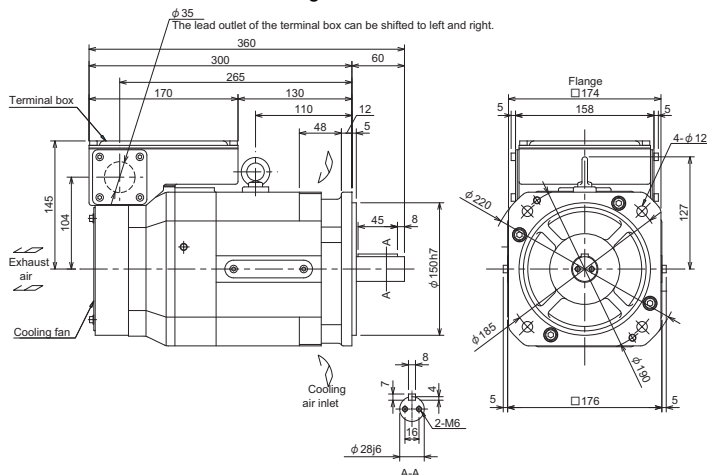
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

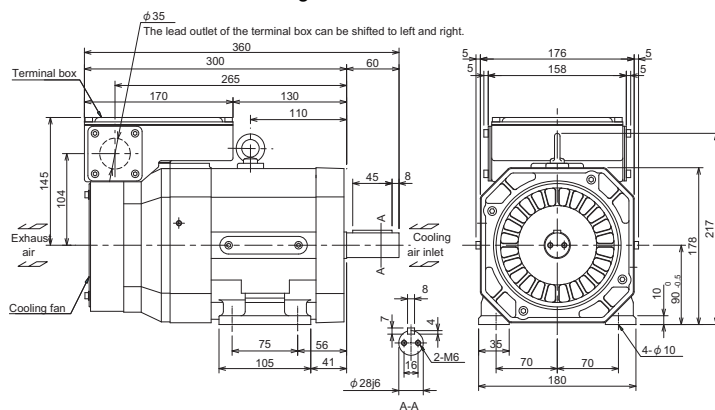
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V2.2-03T with standard flange



SJ-4-V2.2-03T with standard legs

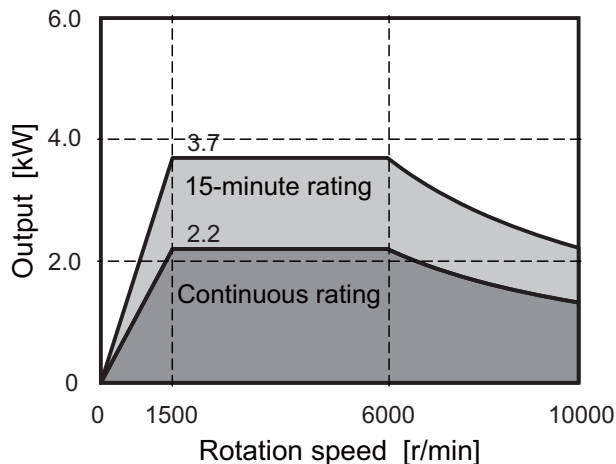


Base rotation speed 1500r/min series
SJ-4-V3.7-03T

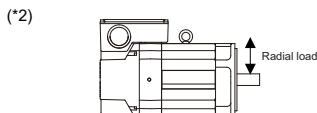
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-20	
Output capacity[kW]	Continuous rated output	2.2
	Short time rated output	3.7 (15-minute rating)
	Standard output during acceleration/deceleration	3.7
	Actual acceleration/deceleration output(*3)	4.44
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	10000	
Frame No.	B90	
Continuous rated torque[N·m]	14.0	
GD ² [kg·m ²]	0.035	
Inertia[kg·m ²]	0.00875	
Tolerable radial load(*2) [N]	980	
Cooling fan	Input voltage	Single-phase 400V
Degree of protection	IP44	
Mass[kg]	30	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

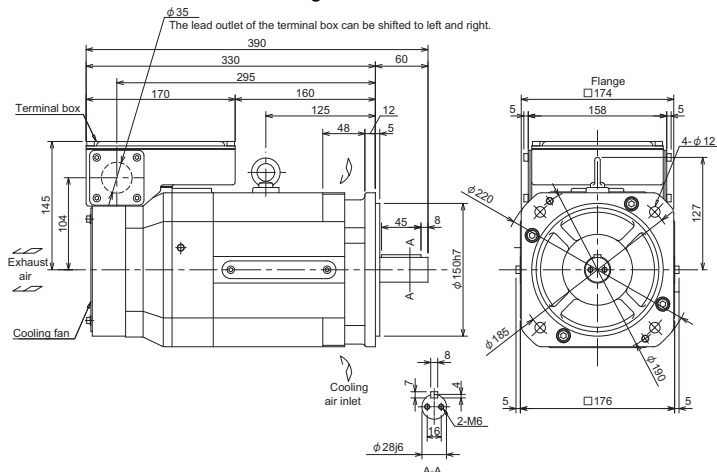
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

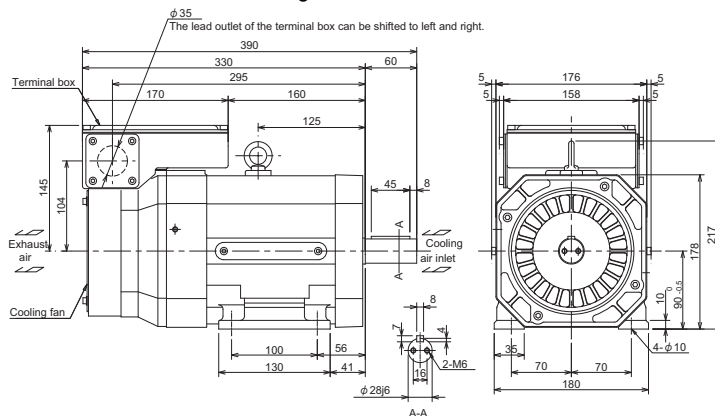
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V3.7-03T with standard flange



SJ-4-V3.7-03T with standard legs

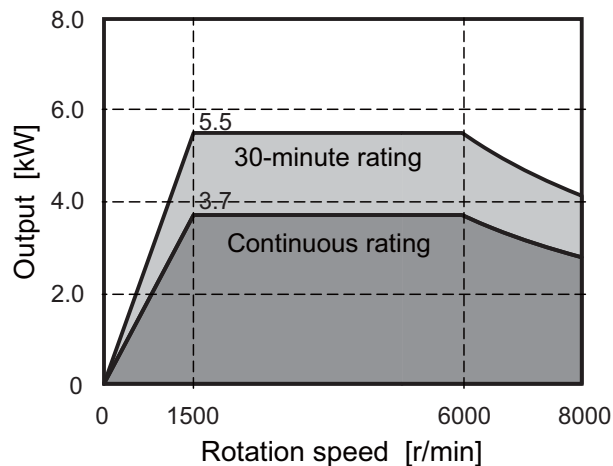


Base rotation speed 1500r/min series
SJ-4-V5.5-07T

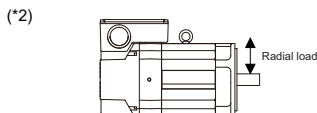
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-40	
Output capacity[kW]	Continuous rated output	3.7
	Short time rated output	5.5 (30-minute rating)
	Standard output during acceleration/deceleration	5.5
	Actual acceleration/deceleration output(*3)	6.6
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	8000	
Frame No.	D90	
Continuous rated torque[N·m]	23.6	
GD ² [kg·m ²]	0.059	
Inertia[kg·m ²]	0.0148	
Tolerable radial load(*2) [N]	1470	
Cooling fan	Input voltage	Single-phase 400V
Degree of protection	IP44	
Mass[kg]	49	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

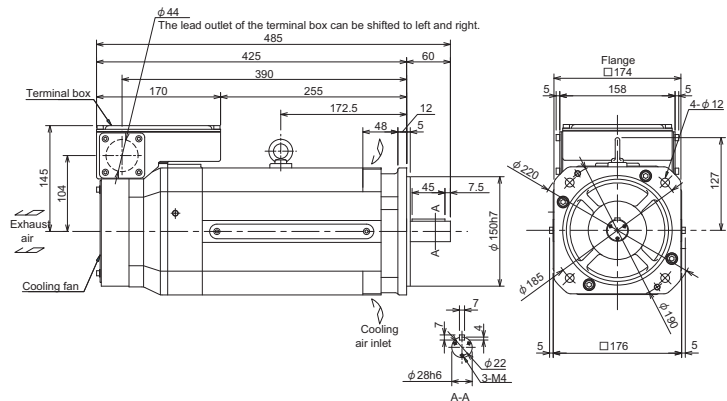
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

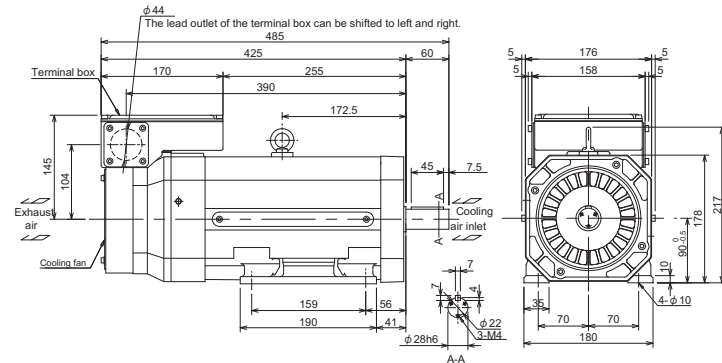
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V5.5-07T with standard flange



SJ-4-V5.5-07T with standard legs

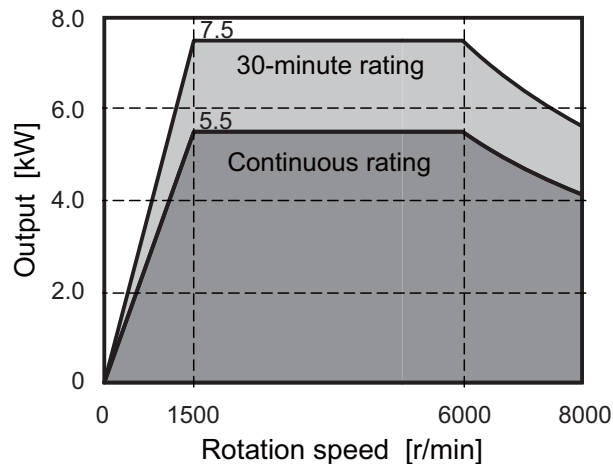


Base rotation speed 1500r/min series
SJ-4-V7.5-12T

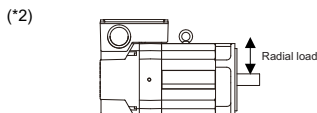
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-40	
Output capacity[kW]	Continuous rated output	5.5
	Short time rated output	7.5 (30-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	8000	
Frame No.	A112	
Continuous rated torque[N·m]	35.0	
GD ² [kg·m ²]	0.098	
Inertia[kg·m ²]	0.0245	
Tolerable radial load(*2) [N]	1960	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		60
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

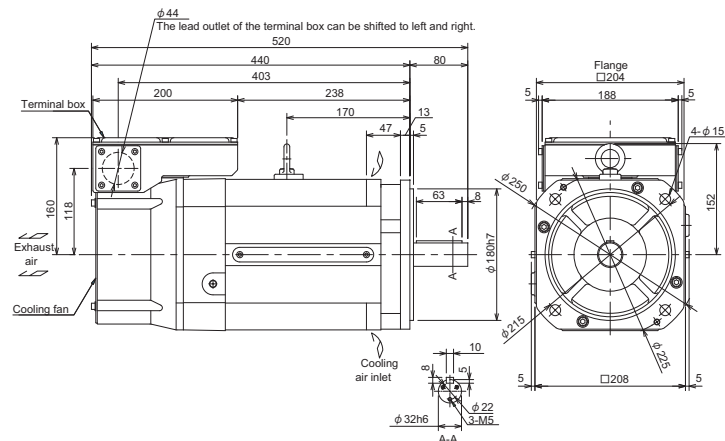
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

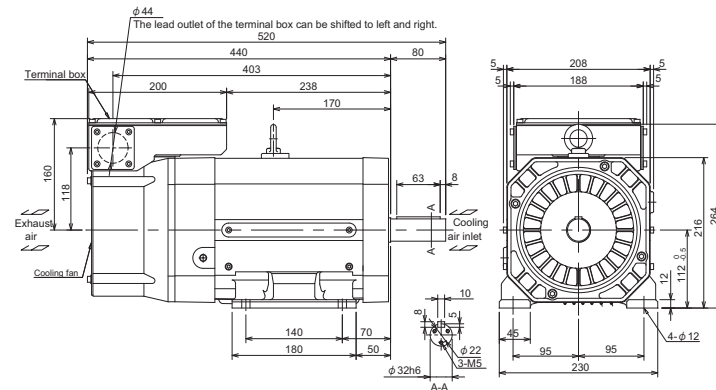
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V7.5-12T with standard flange



SJ-4-V7.5-12T with standard legs

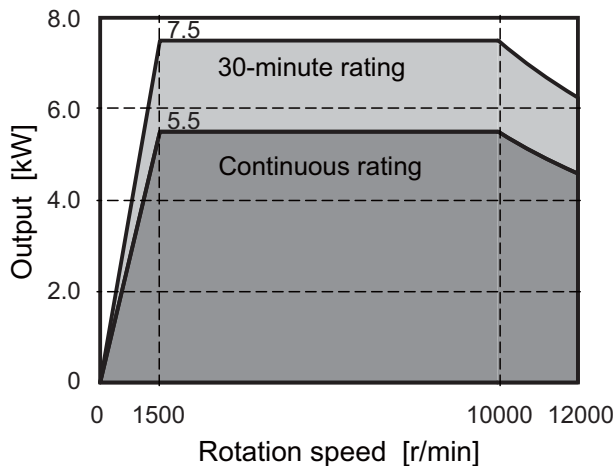


Base rotation speed 1500r/min series
SJ-4-V7.5-13ZT

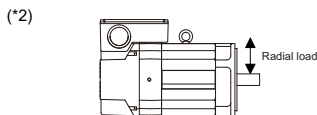
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-80	
Output capacity[kW]	Continuous rated output	5.5
	Short time rated output	7.5 (30-minute rating)
	Standard output during acceleration/deceleration	7.5
	Actual acceleration/deceleration output(*3)	9
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	12000	
Frame No.	A112	
Continuous rated torque[N·m]	35.0	
GD ² [kg·m ²]	0.098	
Inertia[kg·m ²]	0.0245	
Tolerable radial load(*2) [N]	980	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		60
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

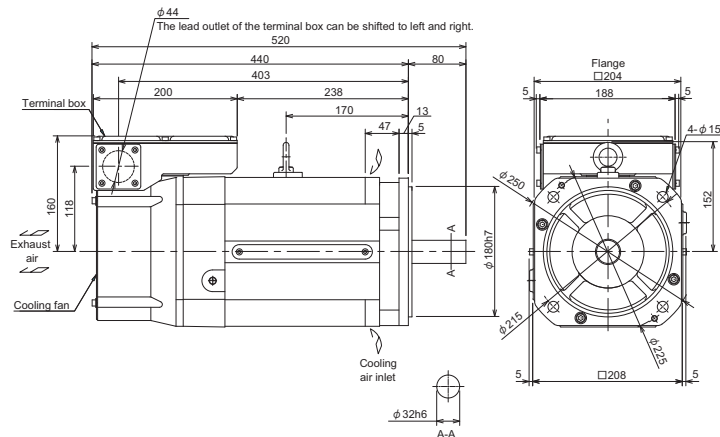
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V7.5-13ZT with standard flange



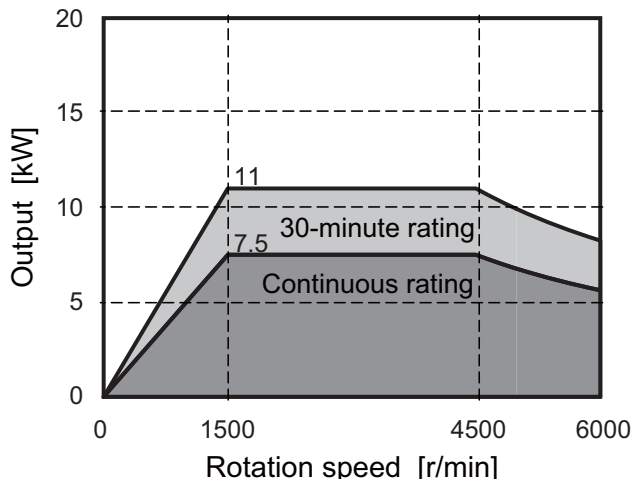
Base rotation speed 1500r/min series

SJ-4-V11-18T

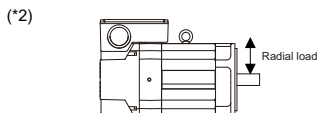
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-80	
Output capacity[kW]	Continuous rated output	7.5
	Short time rated output	11 (30-minute rating)
	Standard output during acceleration/deceleration	11
	Actual acceleration/deceleration output(*3)	13.2
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	6000	
Frame No.	B112	
Continuous rated torque[N·m]	47.7	
GD ² [kg·m ²]	0.12	
Inertia[kg·m ²]	0.03	
Tolerable radial load(*2) [N]	1960	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		70
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

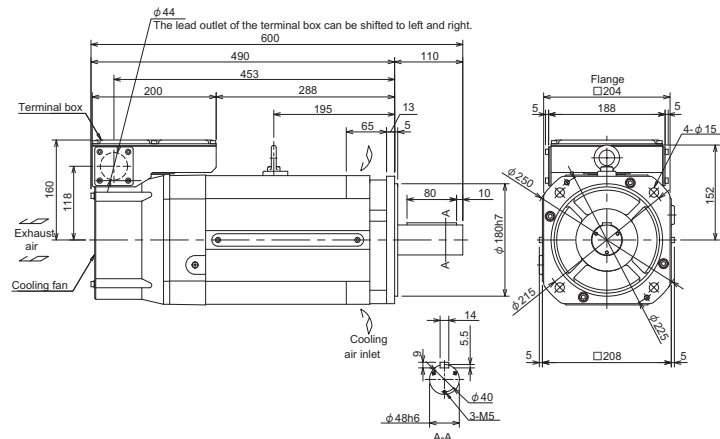
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

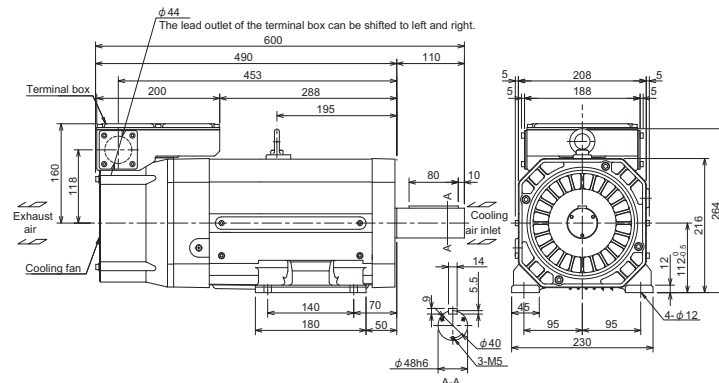
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V11-18T with standard flange



SJ-4-V11-18T with standard legs

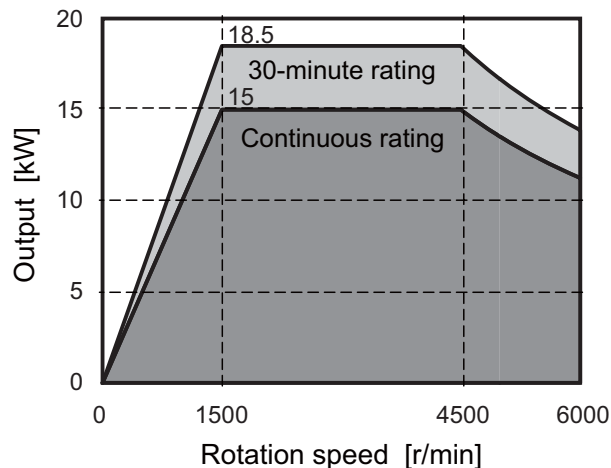


Base rotation speed 1500r/min series
SJ-4-V18.5-14T

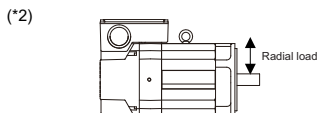
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-100	
Output capacity[kW]	Continuous rated output	15
	Short time rated output	18.5 (30-minute rating)
	Standard output during acceleration/deceleration	18.5
	Actual acceleration/deceleration output(*3)	22.2
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	6000	
Frame No.	A160	
Continuous rated torque[N·m]	95.5	
GD ² [kg·m ²]	0.23	
Inertia[kg·m ²]	0.0575	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		110
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

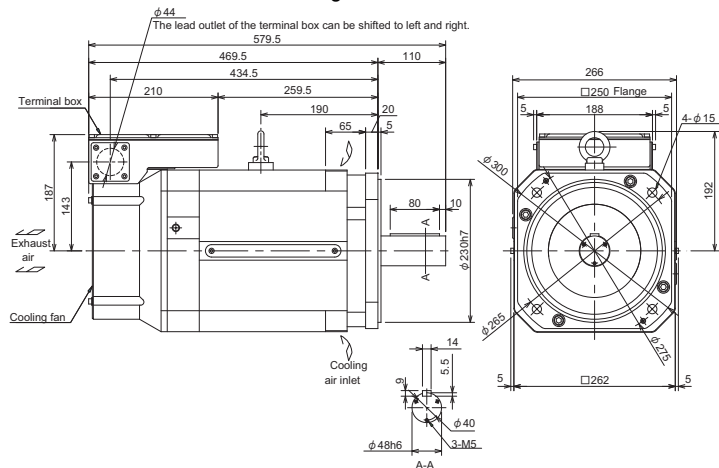
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

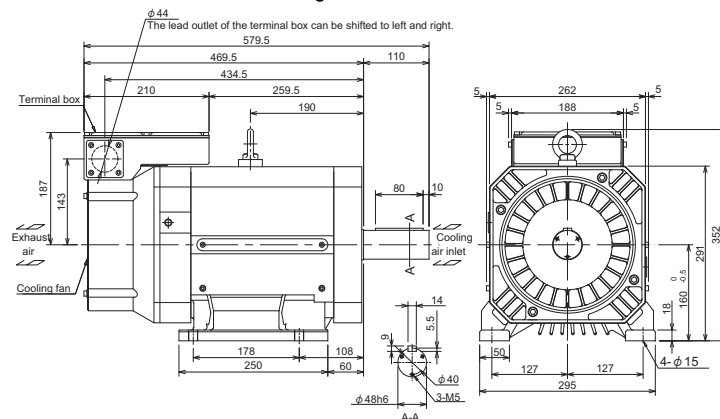
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V18.5-14T with standard flange



SJ-4-V18.5-14T with standard legs

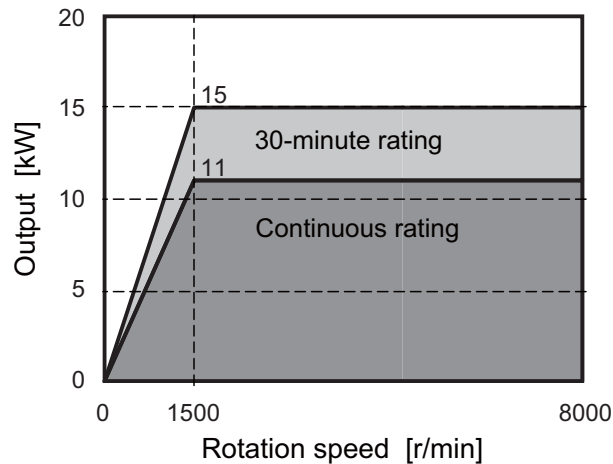


Base rotation speed 1500r/min series
SJ-4-V22-18ZT

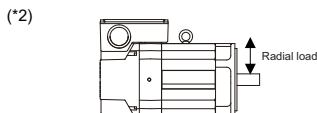
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-160	
Output capacity[kW]	Continuous rated output	11
	Short time rated output	15 (30-minute rating)
	Standard output during acceleration/deceleration	15
	Actual acceleration/deceleration output(*3)	18
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	8000	
Frame No.	A160	
Continuous rated torque[N·m]	70.0	
GD ² [kg·m ²]	0.23	
Inertia[kg·m ²]	0.0575	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		110
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

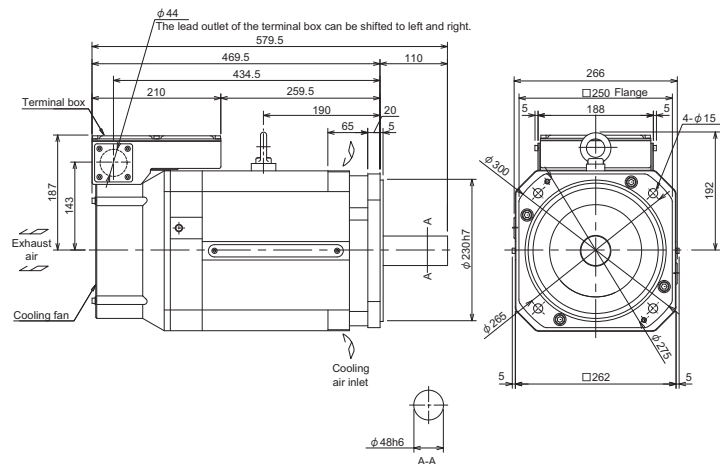
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V22-18ZT with standard flange

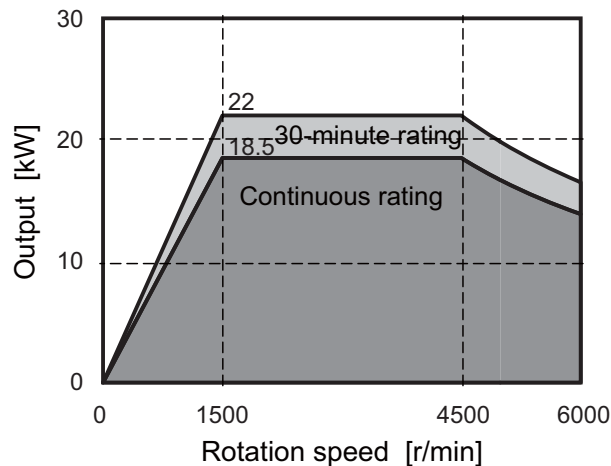


Base rotation speed 1500r/min series
SJ-4-V22-15T

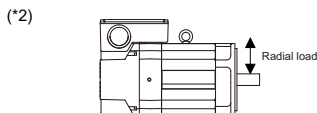
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-160	
Output capacity[kW]	Continuous rated output	18.5
	Short time rated output	22 (30-minute rating)
	Standard output during acceleration/deceleration	22
	Actual acceleration/deceleration output(*3)	26.4
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	6000	
Frame No.	B160	
Continuous rated torque[N·m]	118	
GD ² [kg·m ²]	0.32	
Inertia[kg·m ²]	0.08	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage	3-phase 400V
	Maximum power consumption	72W
Degree of protection	IP44	
Mass[kg]	135	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

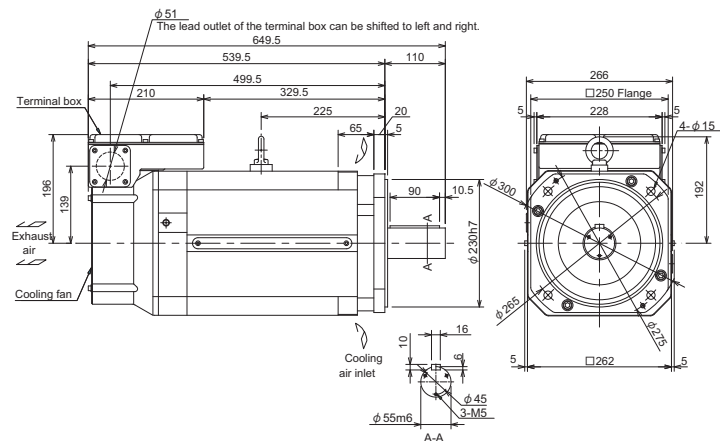
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

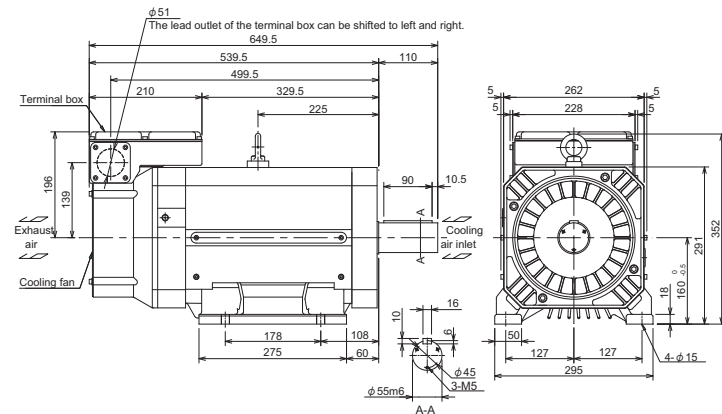
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V22-15T with standard flange



SJ-4-V22-15T with standard legs

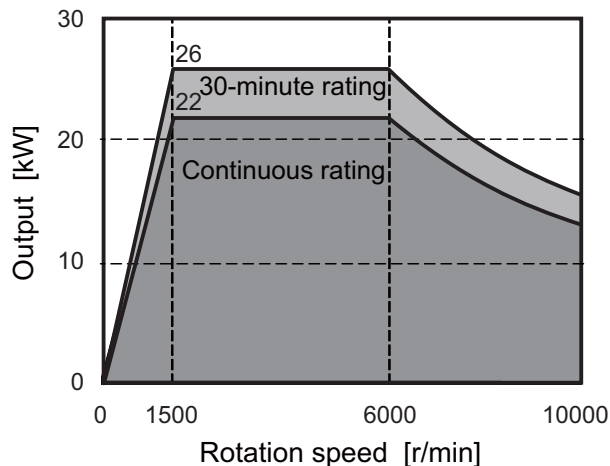


Base rotation speed 1500r/min series
SJ-4-V26-08ZT

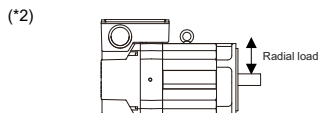
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-160	
Output capacity[kW]	Continuous rated output	22
	Short time rated output	26 (30-minute rating)
	Standard output during acceleration/deceleration	26
	Actual acceleration/deceleration output(*3)	31.2
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	10000	
Frame No.	C160	
Continuous rated torque[N·m]	140	
GD ² [kg·m ²]	0.37	
Inertia[kg·m ²]	0.0925	
Tolerable radial load(*2) [N]	2450	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		155
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

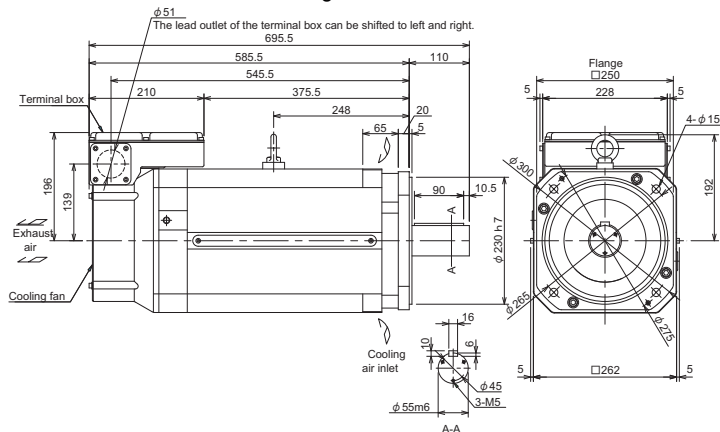
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

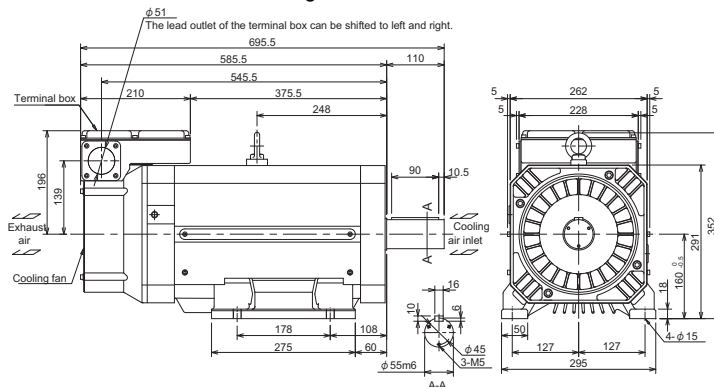
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V26-08ZT with standard flange



SJ-4-V26-08ZT with standard legs

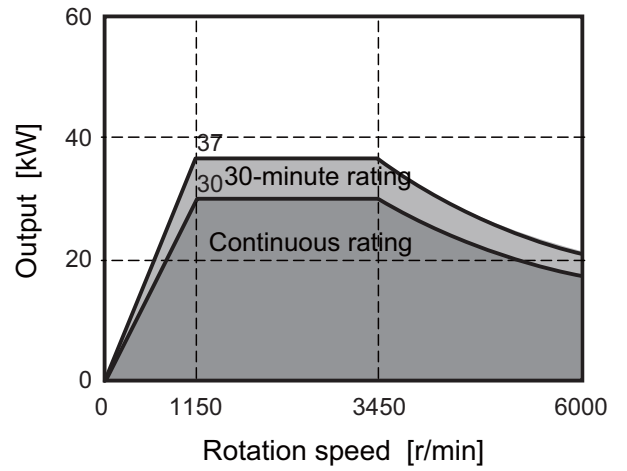


Base rotation speed 1150r/min series
SJ-4-V37-04ZT

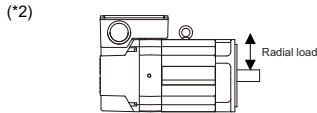
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-200	
Output capacity[kW]	Continuous rated output	30
	Short time rated output	37 (30-minute rating)
	Standard output during acceleration/deceleration	37
	Actual acceleration/deceleration output(*3)	44.4
Base rotation speed[r/min]	1150	
Maximum rotation speed[r/min]	6000	
Frame No.	B180	
Continuous rated torque[N·m]	249	
GD ² [kg·m ²]	1.36	
Inertia[kg·m ²]	0.34	
Tolerable radial load(*2) [N]	3920	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		300
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

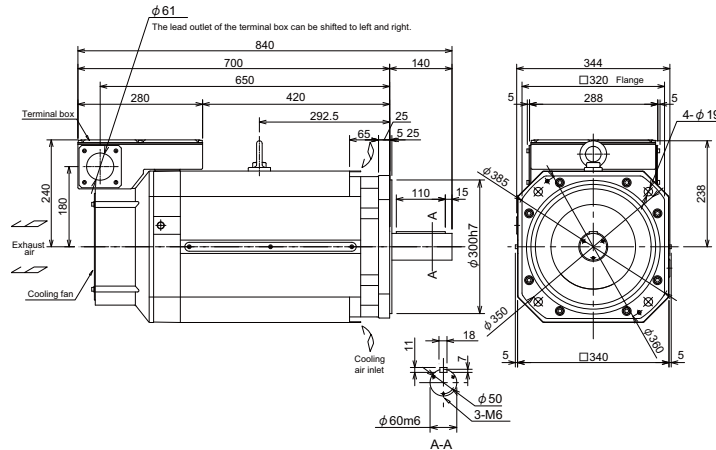
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

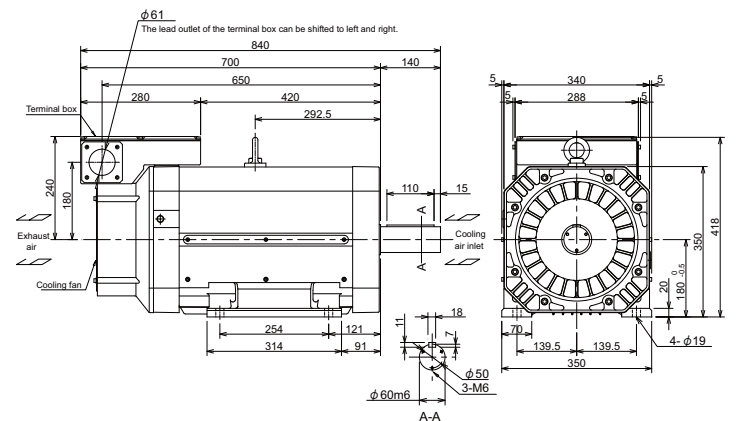
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V37-04ZT with standard flange



SJ-4-V37-04ZT with standard legs

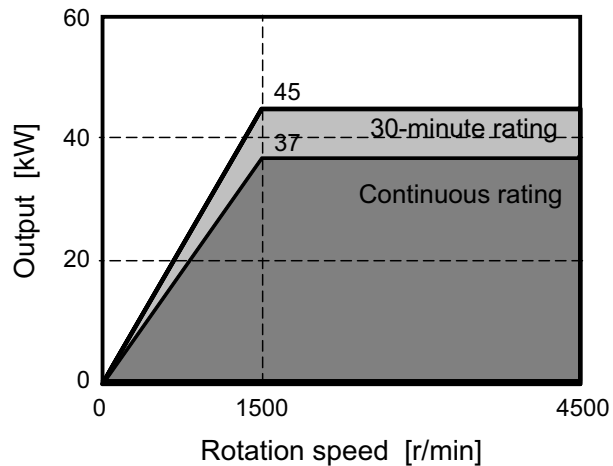


Base rotation speed 1500r/min series
SJ-4-V45-02T

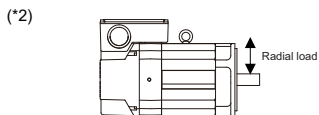
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-320	
Output capacity[kW]	Continuous rated output	37
	Short time rated output	45 (30-minute rating)
	Standard output during acceleration/deceleration	45
	Actual acceleration/deceleration output(*3)	54
Base rotation speed[r/min]	1500	
Maximum rotation speed[r/min]	4500	
Frame No.	B180	
Continuous rated torque[N·m]	236	
GD ² [kg·m ²]	1.36	
Inertia[kg·m ²]	0.34	
Tolerable radial load(*2) [N]	3920	
Cooling fan	Input voltage	3-phase 400V
	Degree of protection	IP44
Mass[kg]	300	
Heat-resistant class	155(F)	

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

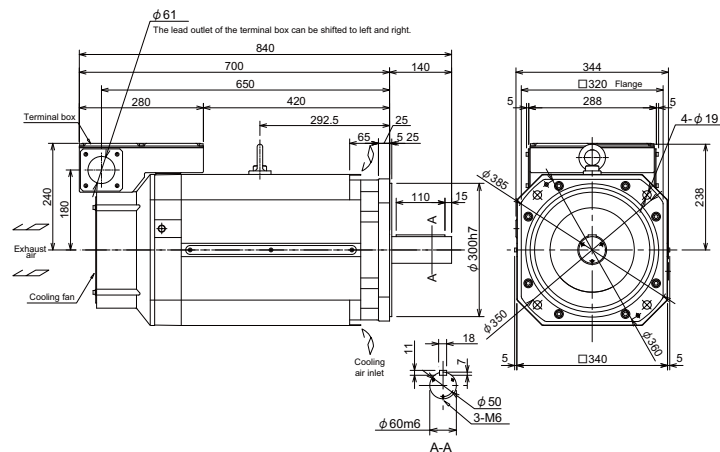
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

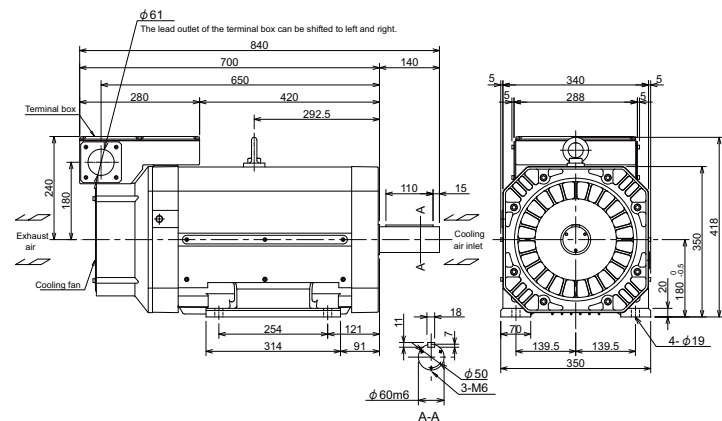
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V45-02T with standard flange



SJ-4-V45-02T with standard legs

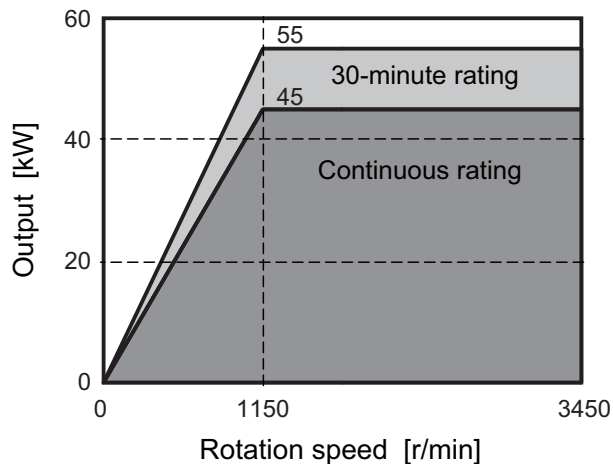


Base rotation speed 1150r/min series
SJ-4-V55-03T

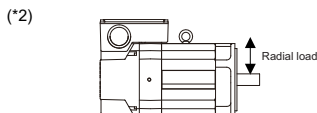
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-320	
Output capacity[kW]	Continuous rated output	45
	Short time rated output	55 (30-minute rating)
	Standard output during acceleration/deceleration	55
	Actual acceleration/deceleration output(*3)	66
Base rotation speed[r/min]	1150	
Maximum rotation speed[r/min]	3450	
Frame No.	A225	
Continuous rated torque[N·m]	374	
GD ² [kg·m ²]	3.39	
Inertia[kg·m ²]	0.85	
Tolerable radial load(*2) [N]	5880	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		450
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

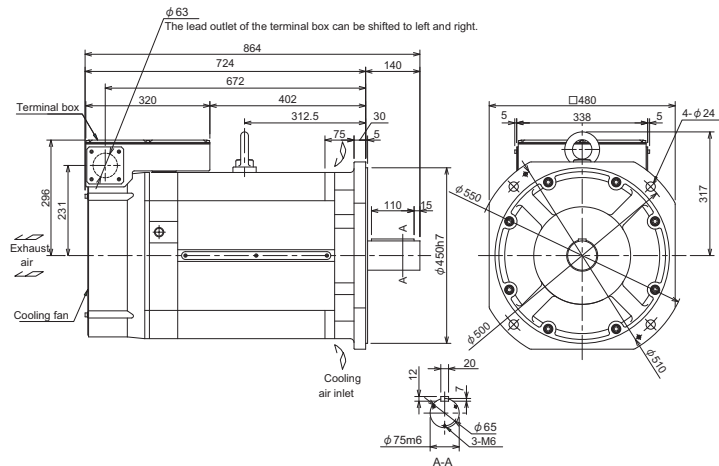
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

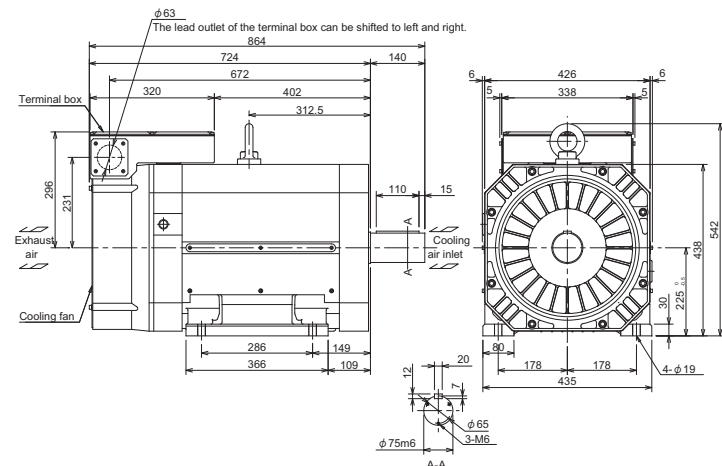
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V55-03T with standard flange



SJ-4-V55-03T with standard legs



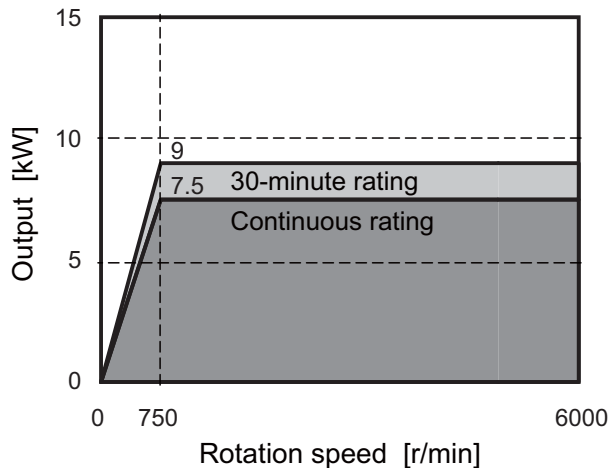
Wide range constant output series

SJ-4-V15-20T

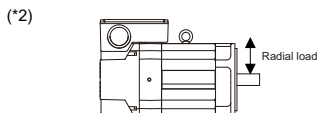
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-100	
Output capacity[kW]	Continuous rated output	7.5
	Short time rated output	9 (30-minute rating)
	Standard output during acceleration/deceleration	9
	Actual acceleration/deceleration output(*3)	10.8
Base rotation speed[r/min]	750	
Maximum rotation speed[r/min]	6000	
Frame No.	A160	
Continuous rated torque[N·m]	95.5	
GD ² [kg·m ²]	0.23	
Inertia[kg·m ²]	0.06	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		110
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

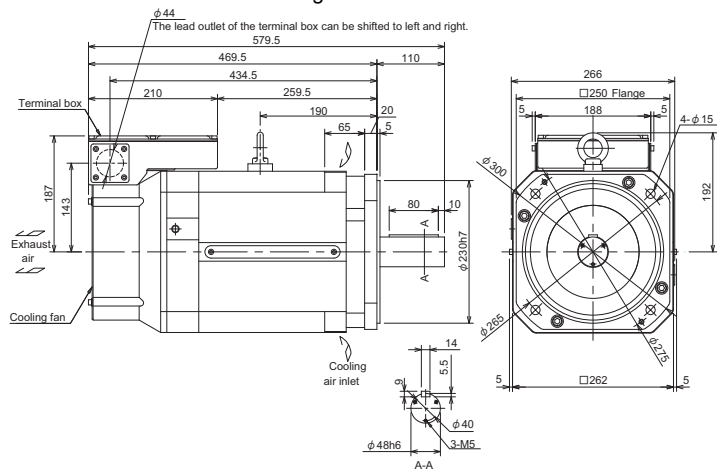
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

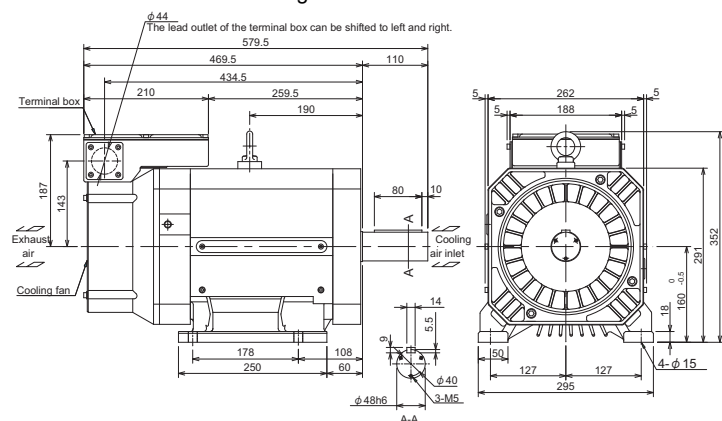
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V15-20T with standard flange



SJ-4-V15-20T with standard legs



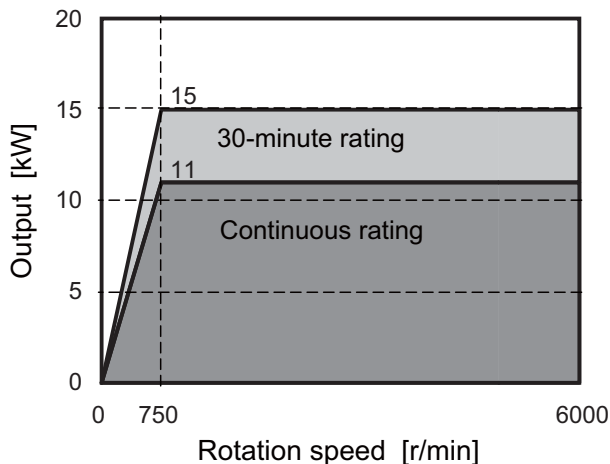
Wide range constant output series

SJ-4-V22-16T

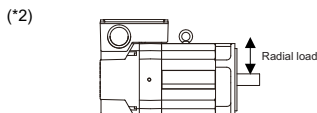
Specifications

Item	Specifications	
Compatible drive unit (*1)	MDS-DH2-SP-160	
Output capacity[kW]	Continuous rated output	11
	Short time rated output	15 (30-minute rating)
	Standard output during acceleration/deceleration	15
	Actual acceleration/deceleration output(*3)	18
Base rotation speed[r/min]	750	
Maximum rotation speed[r/min]	6000	
Frame No.	B160	
Continuous rated torque[N·m]	140	
GD ² [kg·m ²]	0.32	
Inertia[kg·m ²]	0.08	
Tolerable radial load(*2) [N]	2940	
Cooling fan	Input voltage	3-phase 400V
Degree of protection		IP44
Mass[kg]		135
Heat-resistant class		155(F)

Output characteristics



(*1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.



(Note) The load point is at the one-half of the shaft length.

(*3) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or 1.2-fold of "Short time rated output".

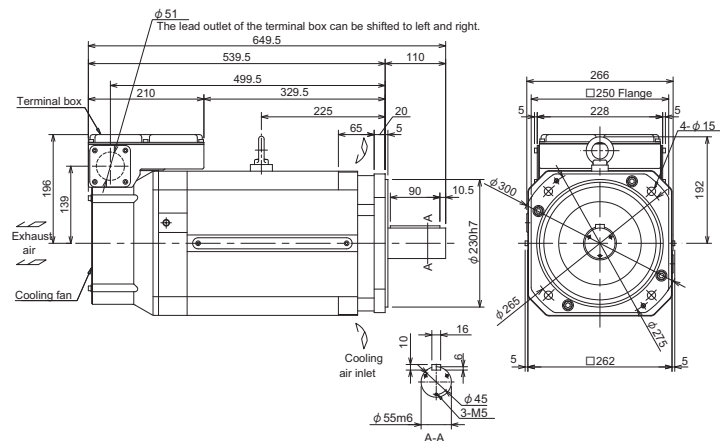
(*4) IP code classifies the degree of protection of the motor body. It does not apply to the other electronic parts such as the cooling fan and the encoder.

Environmental conditions

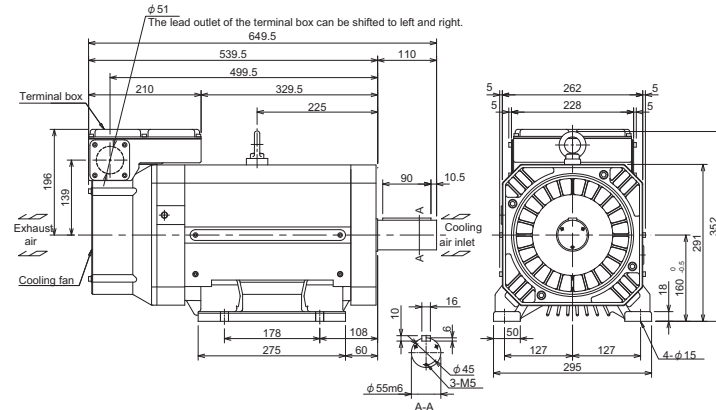
Item	Conditions
Ambient temperature	Operation: 0 to 40°C(with no freezing) Storage: -20°C to +65°C(with no freezing)
Ambient humidity	Operation:90% RH or less(with no dew condensation) Storage: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust
Altitude	Operation/storage: 1000m or less above sea level, Transportation: 10000m or less above sea level

Outline dimension drawings [Unit : mm]

SJ-4-V22-16T with standard flange



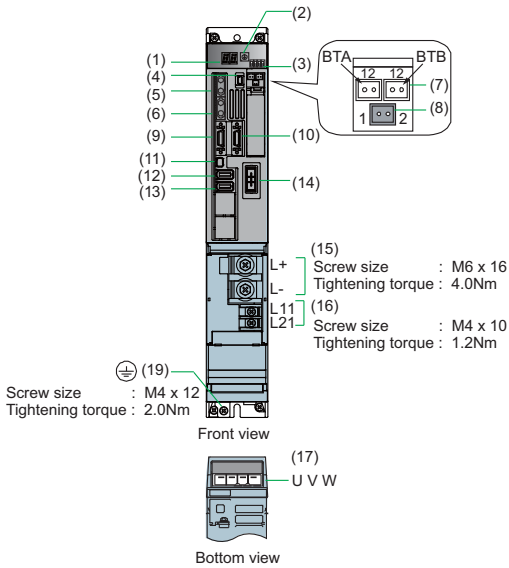
SJ-4-V22-16T with standard legs



Servo Drive Unit

Servo drive unit

MDS-DH2-V1-10



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output connector (3-phase AC output)
(19)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	10
Output	
Rated voltage[V]	340AC
Rated current[A]	2.3
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	0.9
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	19
Outside panel[W]	27
Cooling method	Forced air cooling
Mass[kg]	3.8

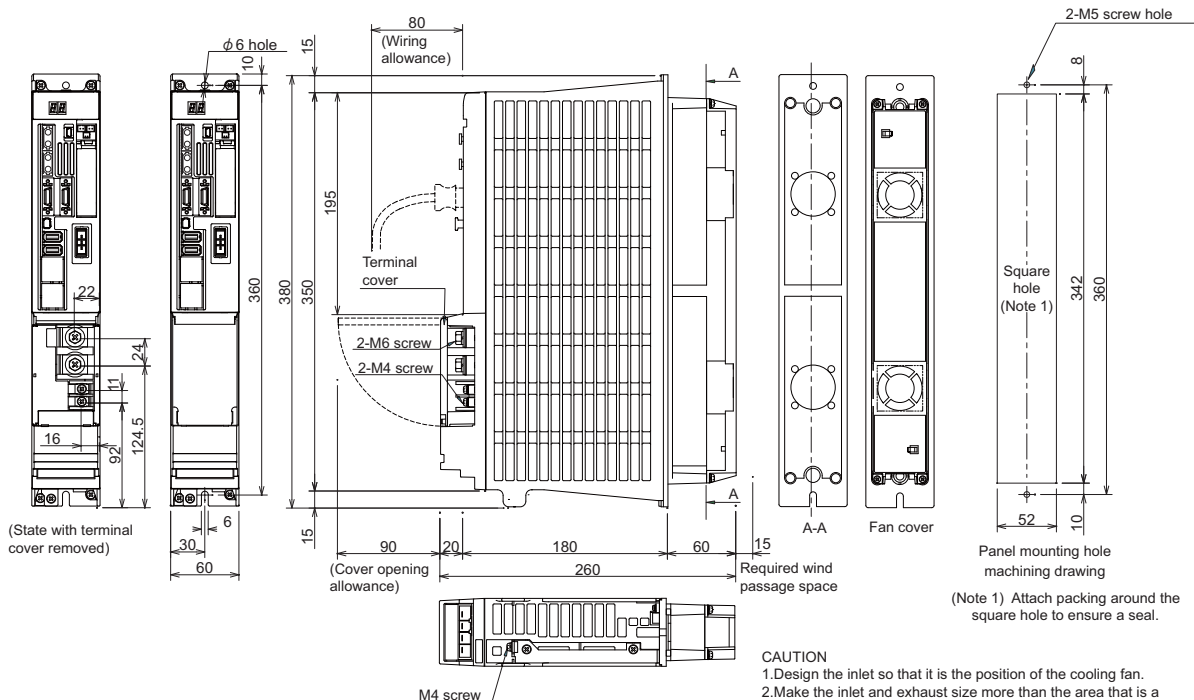
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

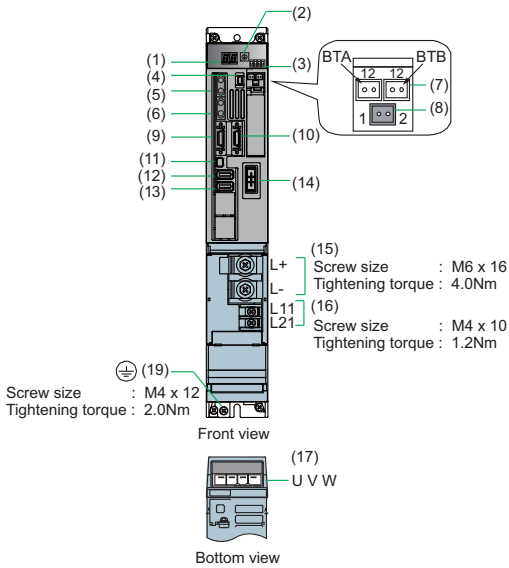
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V1-20



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output connector (3-phase AC output)
(19)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	20
Output	
Rated voltage[V]	340AC
Rated current[A]	3.9
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	1.6
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	22
Outside panel[W]	46
Cooling method	Forced air cooling
Mass[kg]	3.8

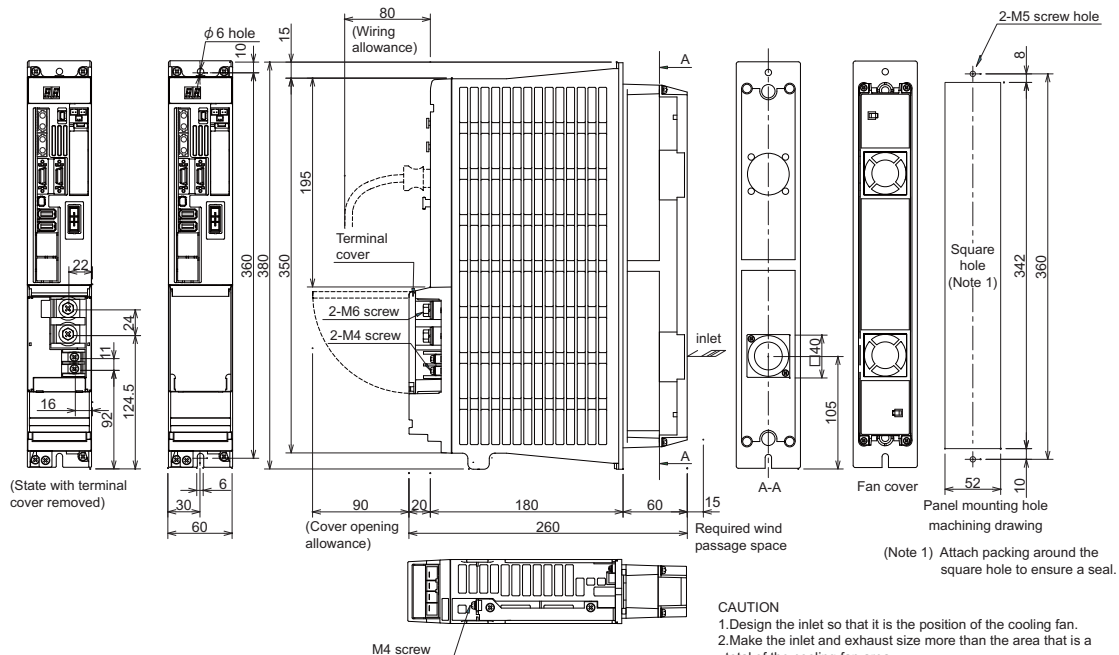
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

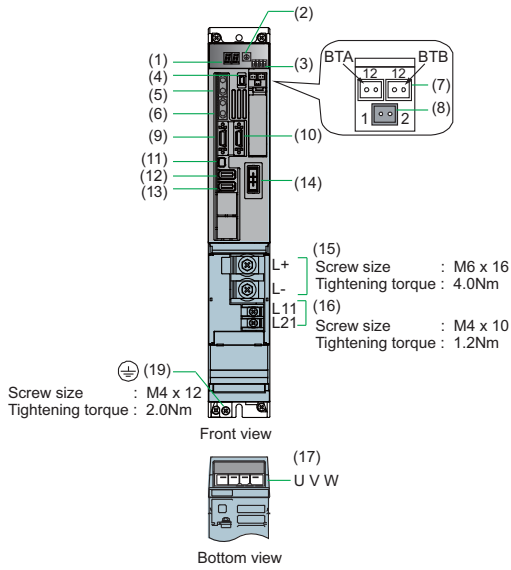
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V1-40



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output connector (3-phase AC output)
(19)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	40
Output	
Rated voltage[V]	340AC
Rated current[A]	7.3
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	2.9
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	27
Outside panel[W]	87
Cooling method	Forced air cooling
Mass[kg]	3.8

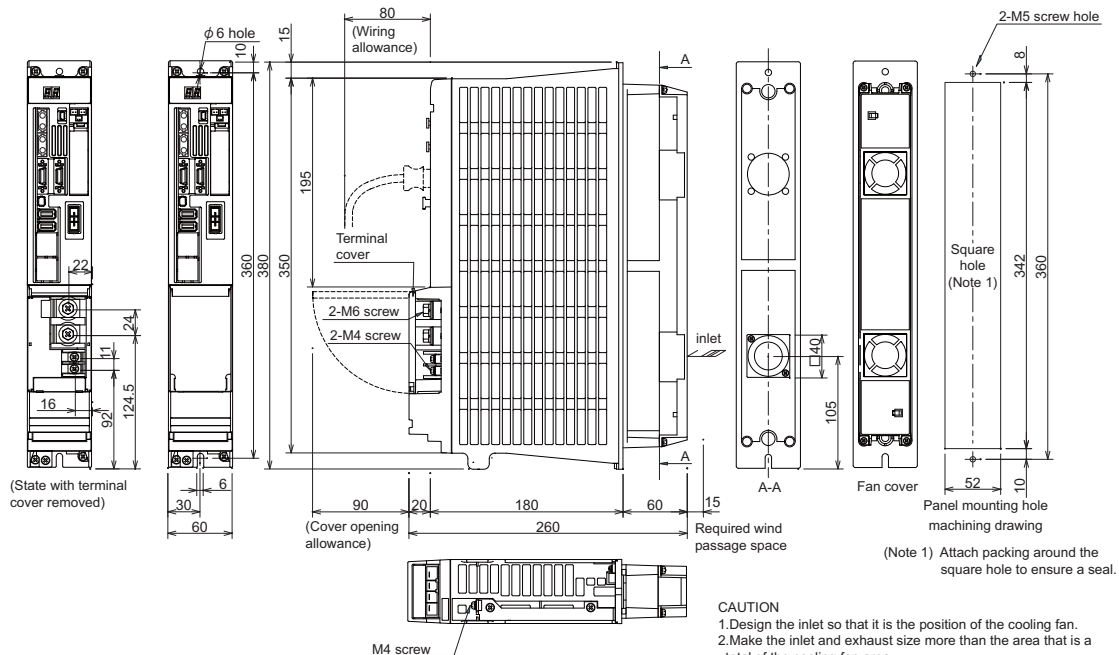
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

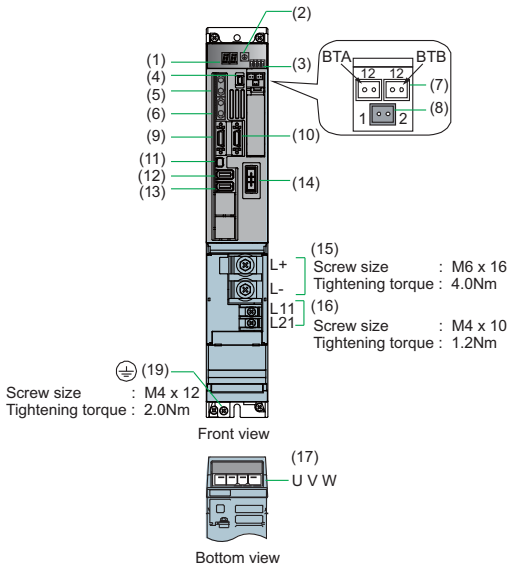
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V1-80



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output connector (3-phase AC output)
(19)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	80
Output	
Rated voltage[V]	340AC
Rated current[A]	17
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	6.0
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	40
Outside panel[W]	175
Cooling method	Forced air cooling
Mass[kg]	3.8

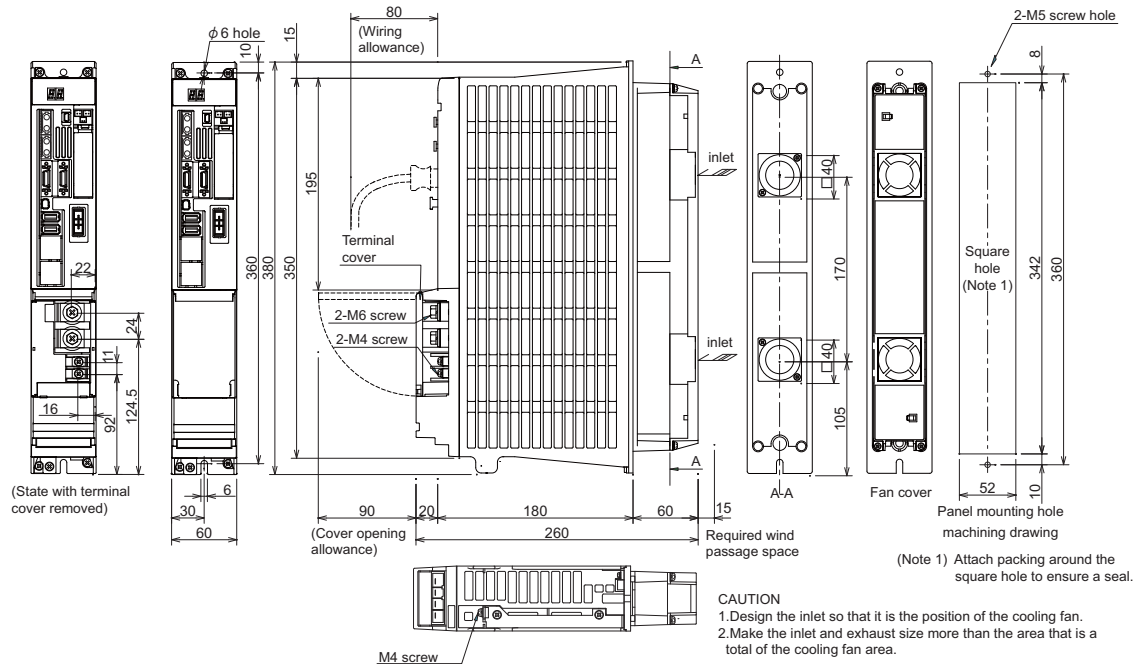
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

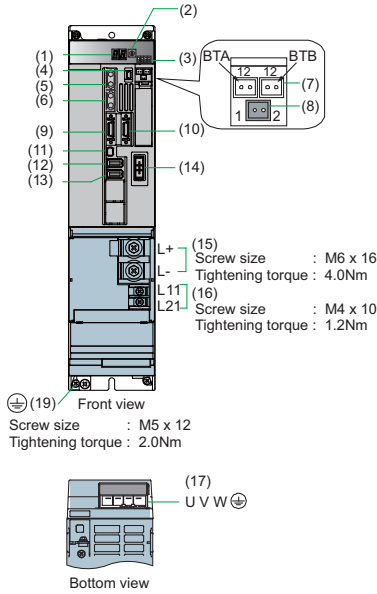
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V1-80W



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output connector (3-phase AC output)
(19)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	80
Output	
Rated voltage[V]	340AC
Rated current[A]	20.1
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	8.0
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	47
Outside panel[W]	222
Cooling method	Forced air cooling
Mass[kg]	4.5

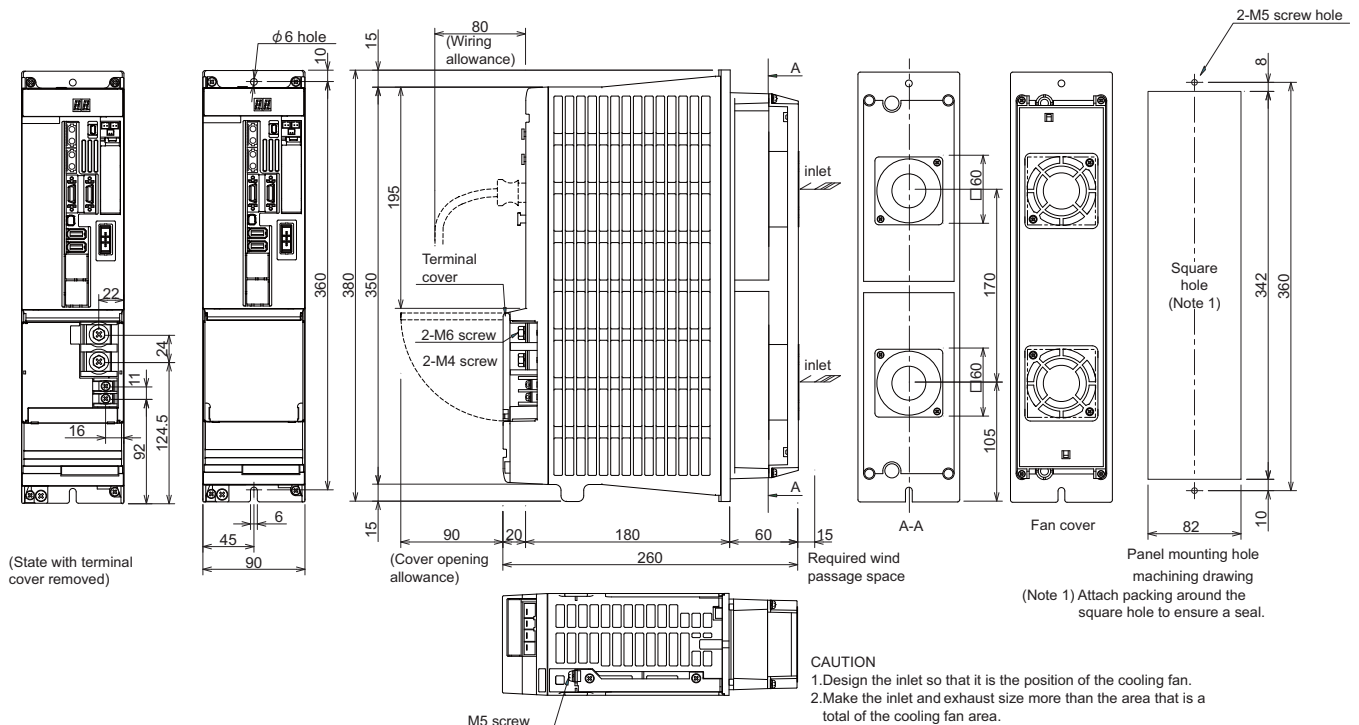
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

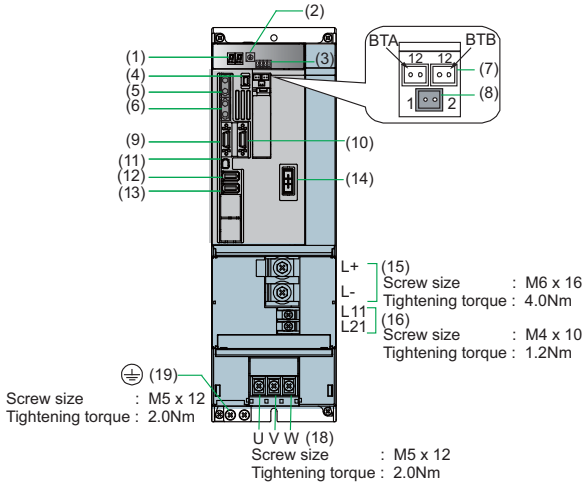
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V1-160



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output terminal (3-phase AC output)
(19)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	160
Output	
Rated voltage[V]	340AC
Rated current[A]	32
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	11.9
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Dynamic brakes	Built-in
Heating value	
Inside panel[W]	62
Outside panel[W]	328
Cooling method	Forced air cooling
Mass[kg]	5.8

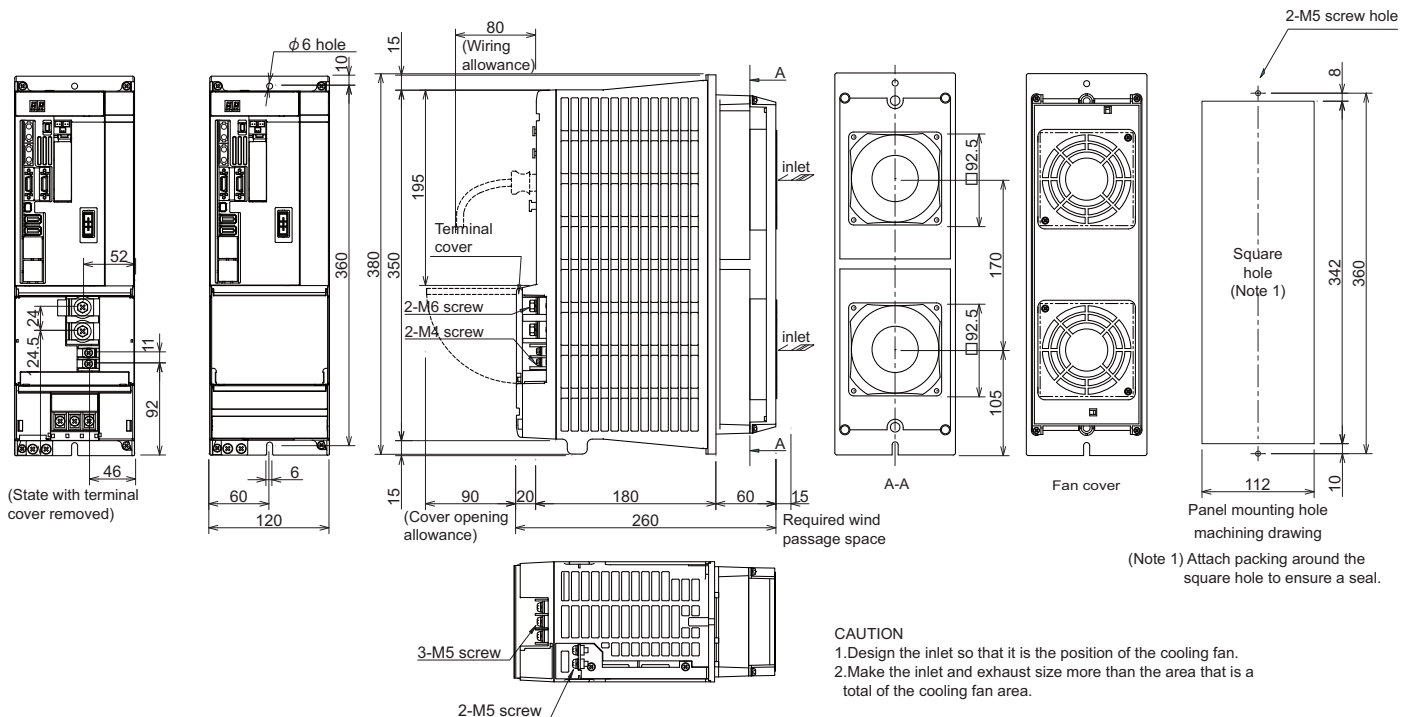
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

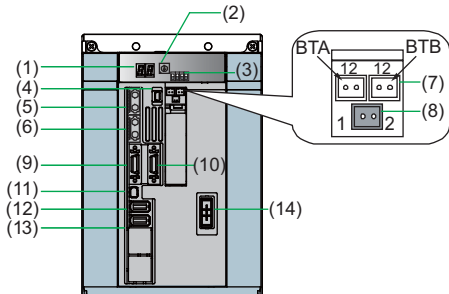
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	8	8	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	8	8			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5	12			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V1-160W



(15) Screw size : M6 x 16
 Tightening torque : 4.0Nm
 (16) Screw size : M4 x 10
 Tightening torque : 1.2Nm

(19) Screw size : M5 x 12
 Tightening torque : 2.0Nm
 U V W (18) Screw size : M5 x 12
 Tightening torque : 2.0Nm

No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output terminal (3-phase AC output)
(19)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	160
Output	
Rated voltage[V]	340AC
Rated current[A]	46
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	16.7
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Heating value	External (MDS-D-DBU)
Dynamic brakes	81
Inside panel[W]	461
Outside panel[W]	
Cooling method	Forced air cooling
Mass[kg]	7.5

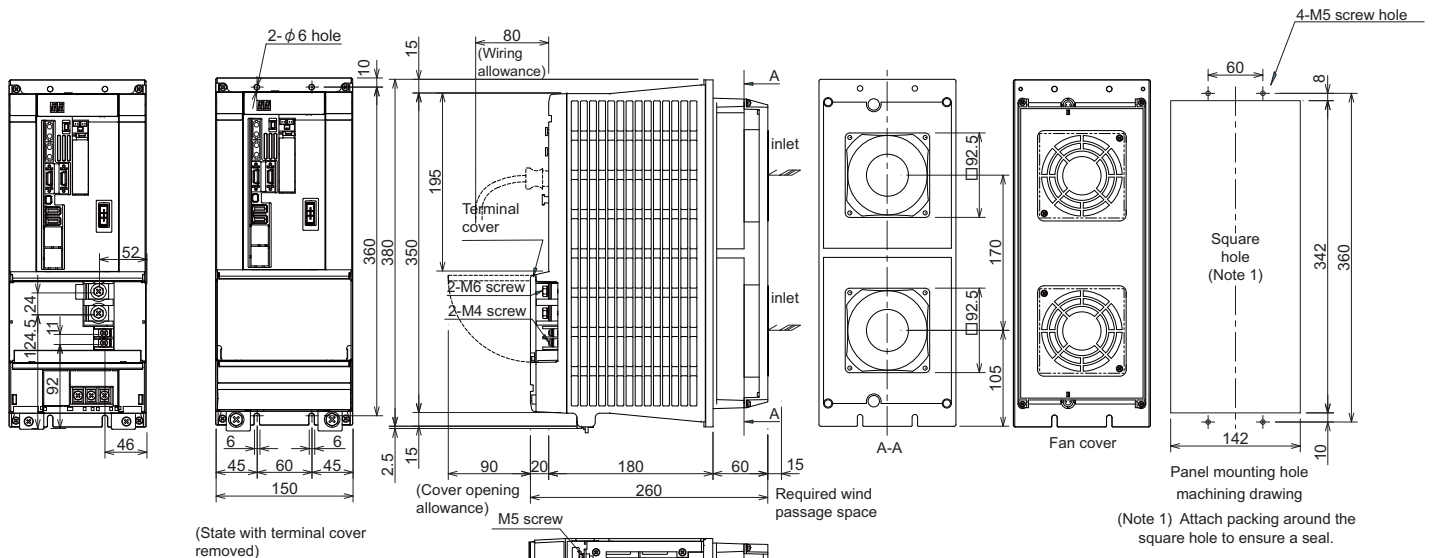
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	14	6	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	8	8			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	8	8			1.25 to 2	16 to 14

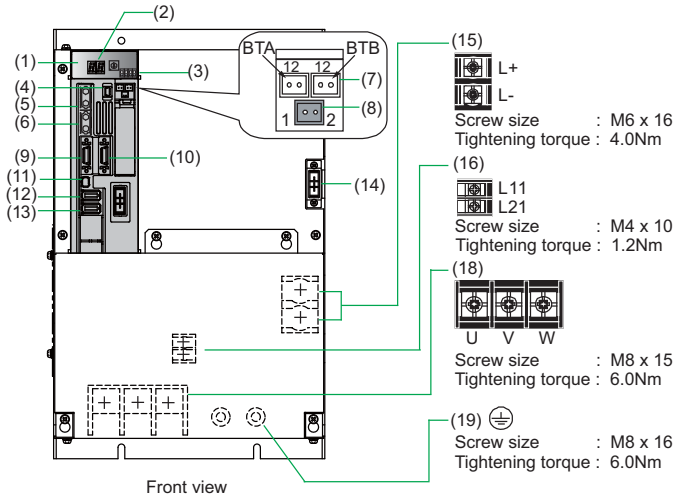
Outline dimension drawings [Unit : mm]



CAUTION
 1. Design the inlet so that it is the position of the cooling fan.
 2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-DH2-V1-200



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector 5V power supply capacity: 0.35A
(14)	CN20	Motor brake/dynamic brake control connector
(15)	TE2	Main circuit power supply input terminal (DC input)
(16)	TE3	Control power input terminal (single-phase AC input)
(18)	TE1	Motor power supply output terminal (3-phase AC output)
(19)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	200
Output	
Rated voltage[V]	340AC
Rated current[A]	76.8
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	39
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	18
Max. earth leakage current[mA]	2
Braking	Regenerative braking and dynamic brakes
Heating value	External (MDS-D-DBU)
Dynamic brakes	105
Inside panel[W]	630
Outside panel[W]	
Cooling method	Forced air cooling
Mass[kg]	16.5

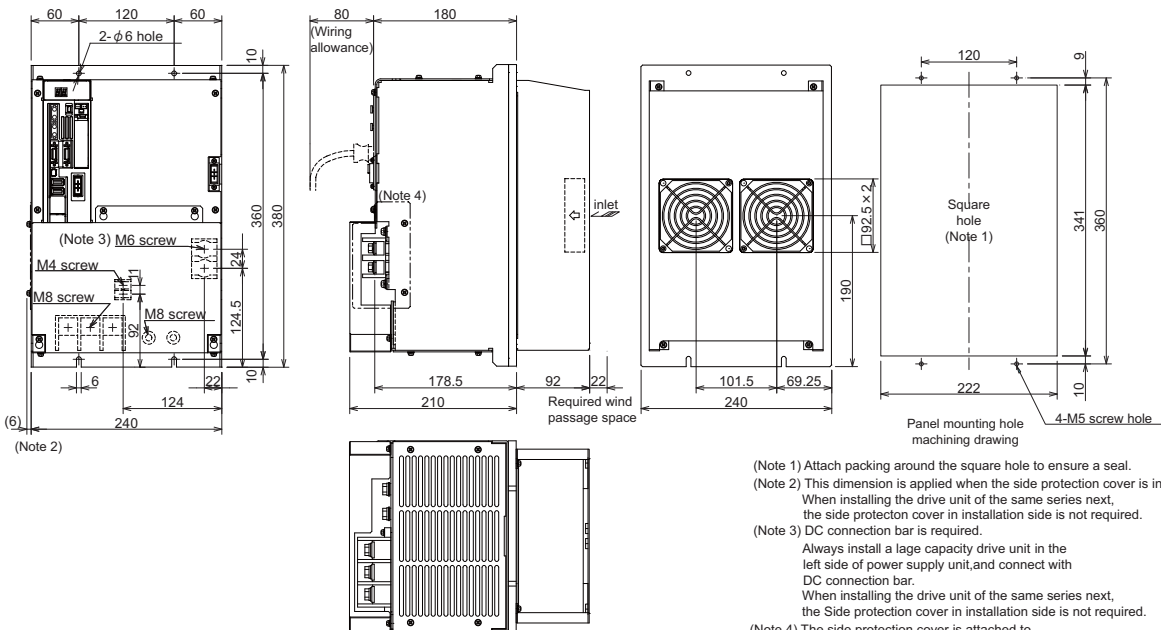
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	38	2			2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	Match with TE2 of selected power supply unit		2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6			1.25 to 2	16 to 14

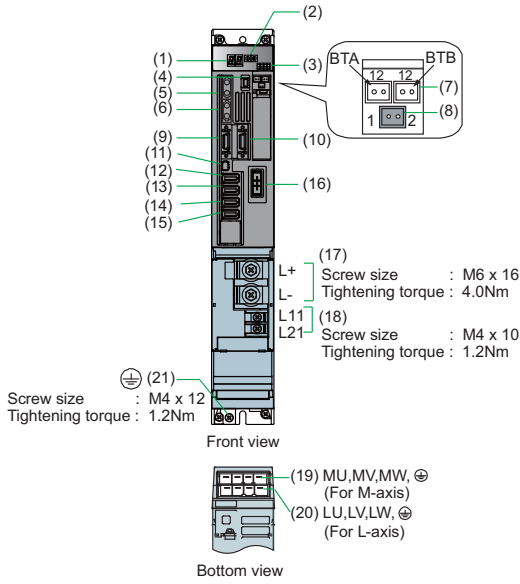
Outline dimension drawings [Unit : mm]



CAUTION
 1.Design the inlet so that it is the position of the cooling fan.
 2.Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-DH2-V2-1010



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	10	10
Output	Rated voltage[V]	340AC
	Rated current[A]	2.3 2.3
Input	Rated voltage[V]	513 to 648DC
	Rated current[A]	1.8
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	380 to 440AC
	Voltage(60Hz)[V]	380 to 480AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.1
	Max. rush current[A]	18
Max. rush conductivity time[ms]	12	
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Inside panel[W]	28
	Outside panel[W]	54
Cooling method	Forced air cooling	
Mass[kg]	3.8	

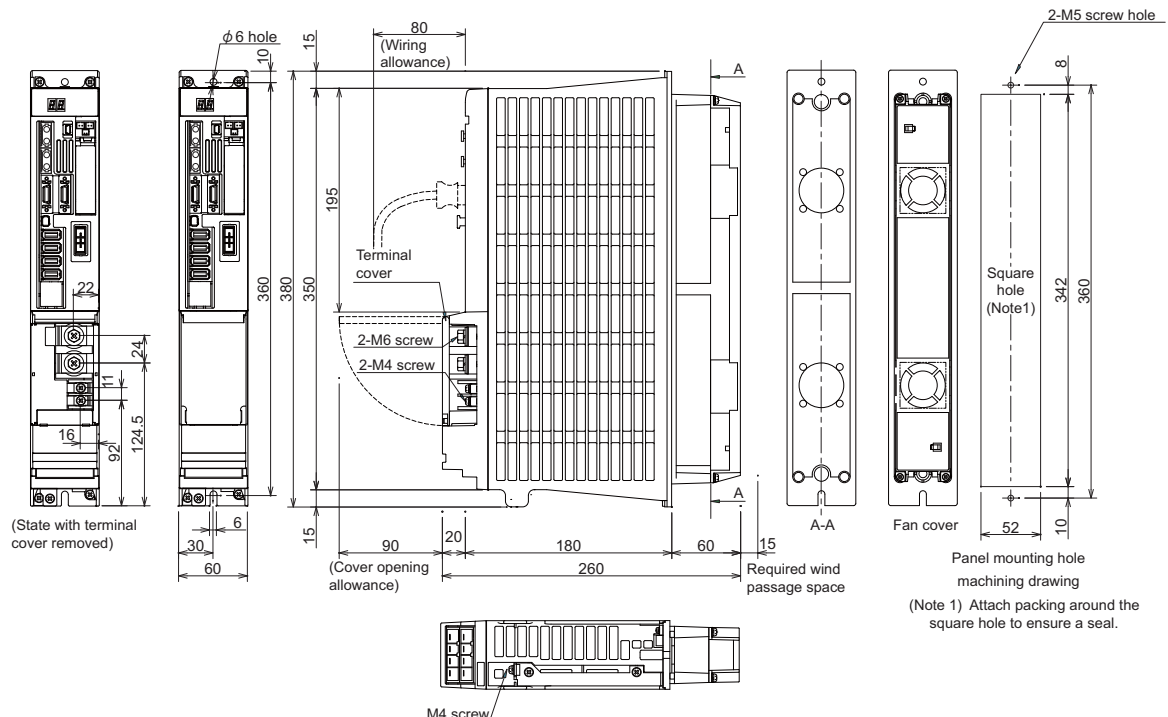
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

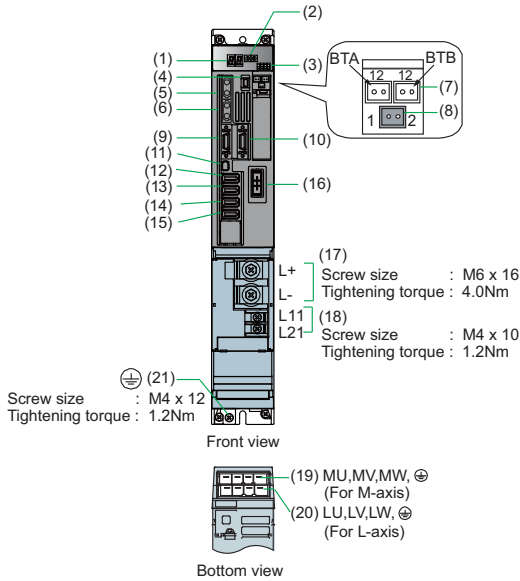
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V2-2010



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	20	10
Output	Rated voltage[V] 340AC	
	Rated current[A]	3.9 2.3
Input	Rated voltage[V] 513 to 648DC	
	Rated current[A]	2.5
Control power	Frequency[Hz] 50 / 60	
	Tolerable frequency fluctuation[%] ±3% max	
	Voltage(50Hz)[V] 380 to 440AC	
	Voltage(60Hz)[V] 380 to 480AC	
	Tolerable voltage fluctuation[%] +10%, -15%	
	Max. current[A] 0.1	
	Max. rush current[A] 18	
Max. rush conductivity time[ms] 12		
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Dynamic brakes	30
	Inside panel[W]	74
Outside panel[W]		
Cooling method	Forced air cooling	
Mass[kg]	3.8	

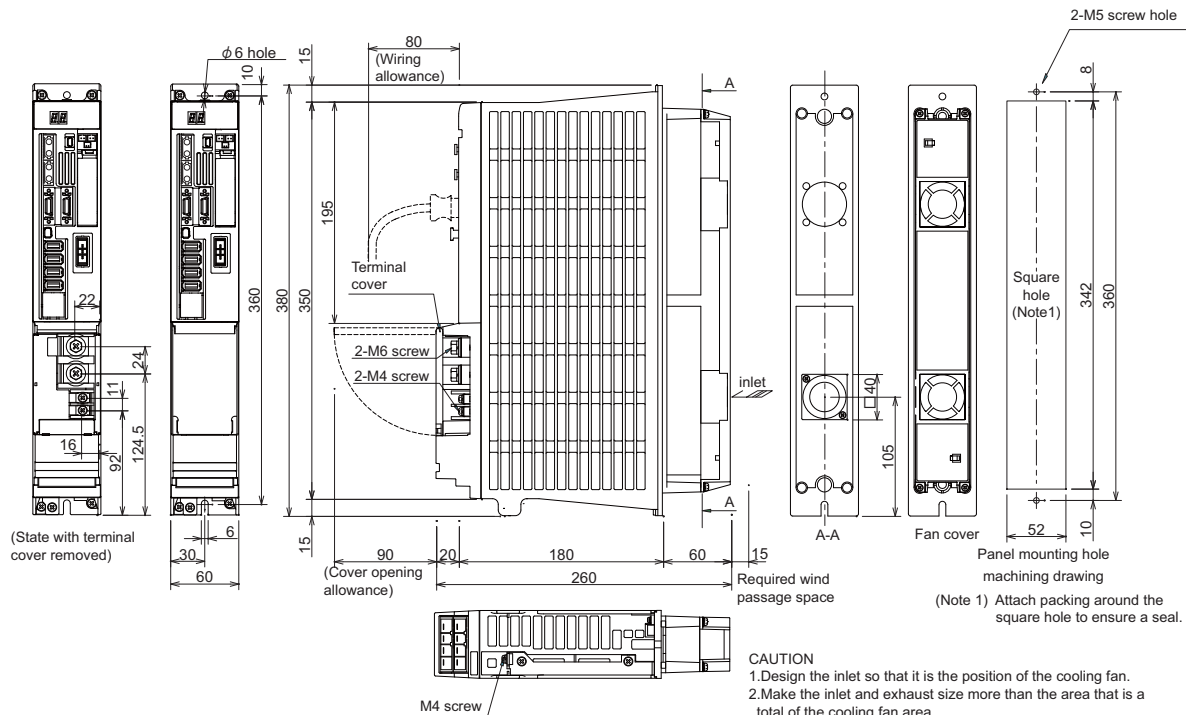
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

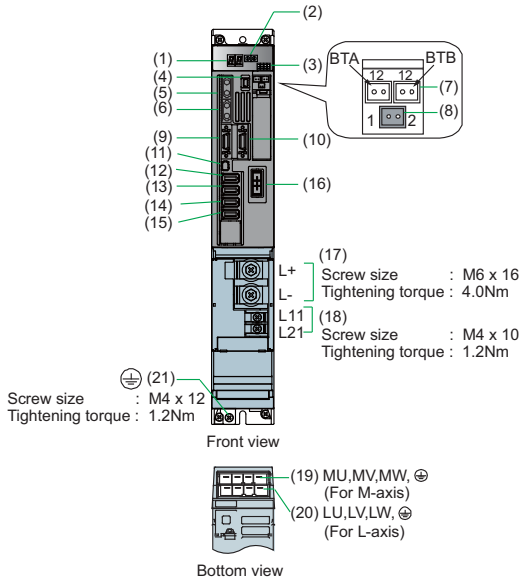
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V2-2020



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)		Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	20	20
Output	Rated voltage[V]	340AC
	Rated current[A]	3.9 3.9
Input	Rated voltage[V]	513 to 648DC
	Rated current[A]	3.2
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	380 to 440AC
	Voltage(60Hz)[V]	380 to 480AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.1
	Max. rush current[A]	18
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Inside panel[W]	33
	Outside panel[W]	93
Cooling method	Forced air cooling	
Mass[kg]	3.8	

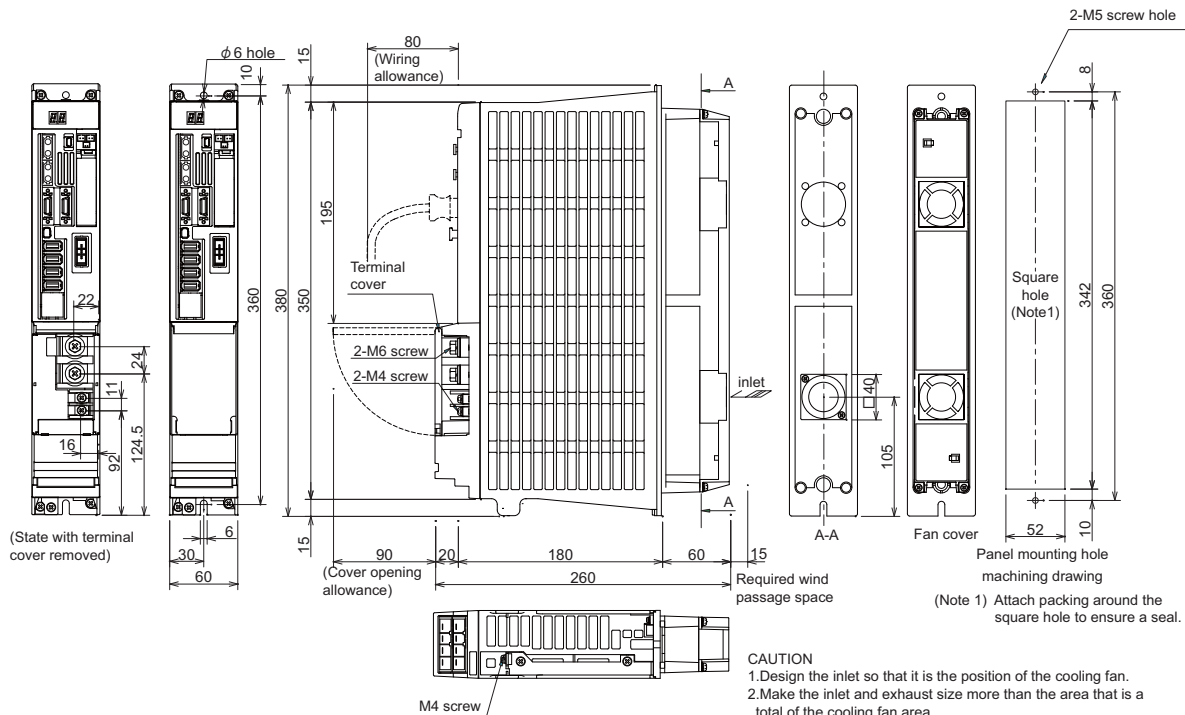
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

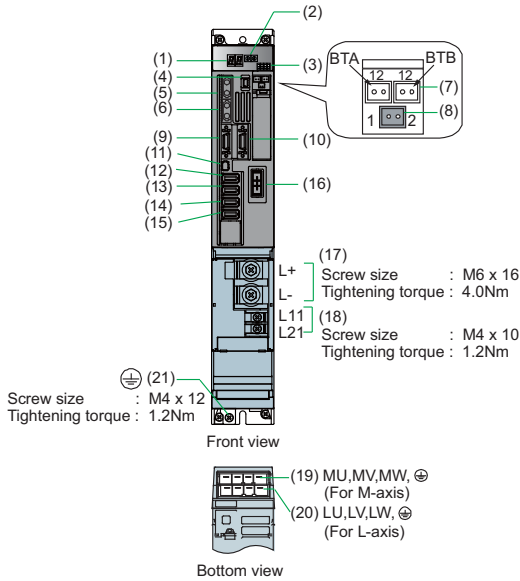
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V2-4020



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	40	20
Output	Rated voltage[V] 340AC	
	Rated current[A]	7.3 3.9
Input	Rated voltage[V] 513 to 648DC	
	Rated current[A]	4.5
Control power	Frequency[Hz] 50 / 60	
	Tolerable frequency fluctuation[%] ±3% max	
	Voltage(50Hz)[V] 380 to 440AC	
	Voltage(60Hz)[V] 380 to 480AC	
	Tolerable voltage fluctuation[%] +10%, -15%	
	Max. current[A] 0.1	
	Max. rush current[A] 18	
Max. rush conductivity time[ms] 12		
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Dynamic brakes	39
	Inside panel[W]	133
Outside panel[W]		
Cooling method	Forced air cooling	
Mass[kg]	3.8	

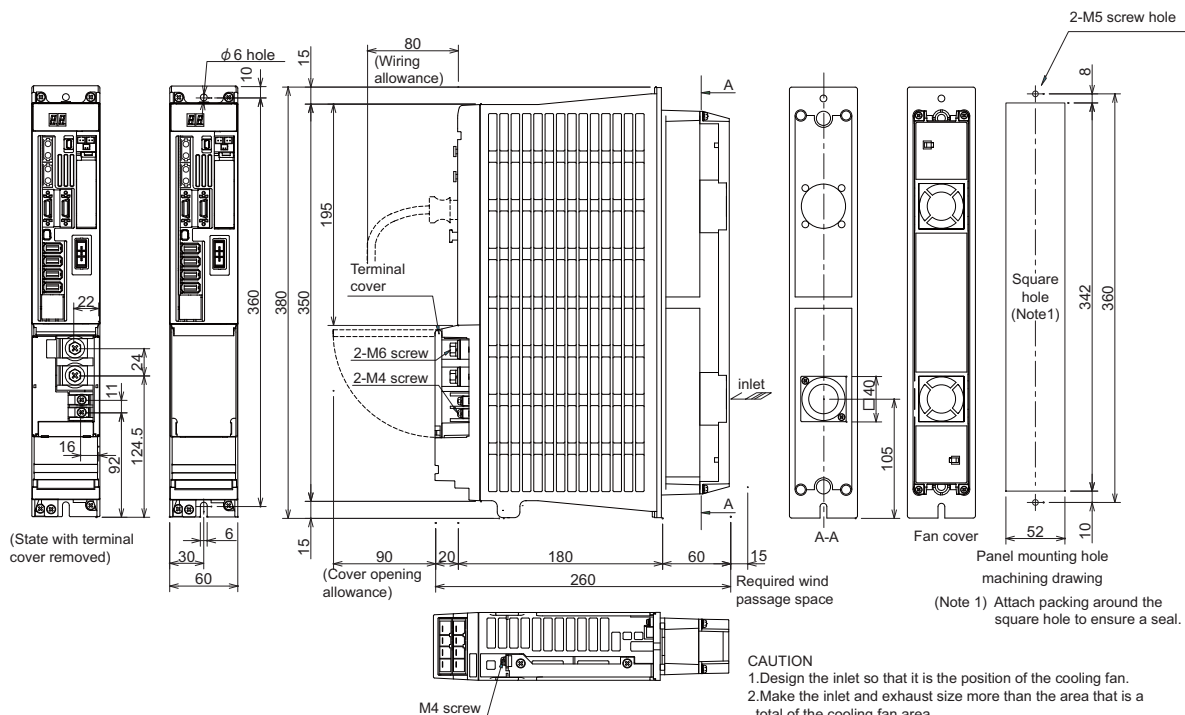
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

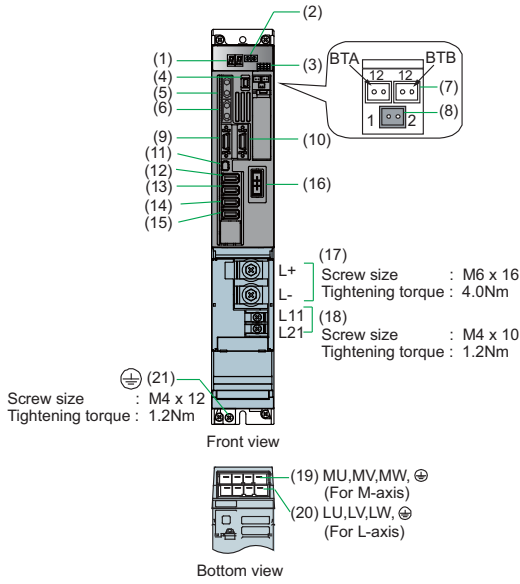
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V2-4040



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	40	40
Output	Rated voltage[V]	340AC
	Rated current[A]	7.3 7.3
Input	Rated voltage[V]	513 to 648DC
	Rated current[A]	5.8
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	380 to 440AC
	Voltage(60Hz)[V]	380 to 480AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.1
	Max. rush current[A]	18
Max. rush conductivity time[ms]	12	
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Inside panel[W]	45
	Outside panel[W]	173
Cooling method	Forced air cooling	
Mass[kg]	3.8	

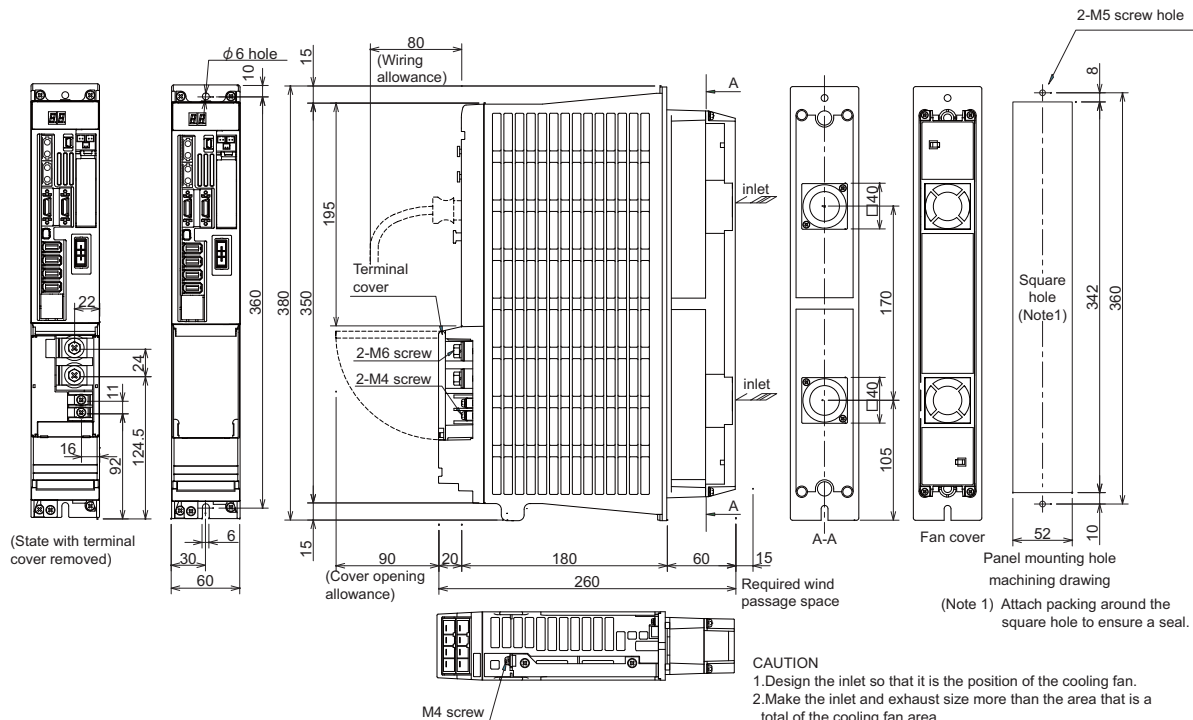
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

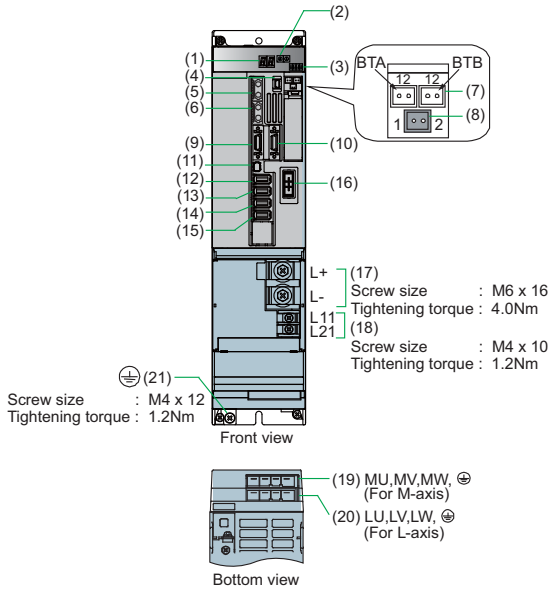
Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2 (2)	14 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Servo drive unit

MDS-DH2-V2-8040



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	80	40
Output	Rated voltage[V]	340AC
	Rated current[A]	17 / 7.3
Input	Rated voltage[V]	513 to 648DC
	Rated current[A]	8.9
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	380 to 440AC
	Voltage(60Hz)[V]	380 to 480AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.1
	Max. rush current[A]	18
Max. rush conductivity time[ms]	12	
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Inside panel[W]	57
	Outside panel[W]	262
Cooling method	Forced air cooling	
Mass[kg]	5.2	

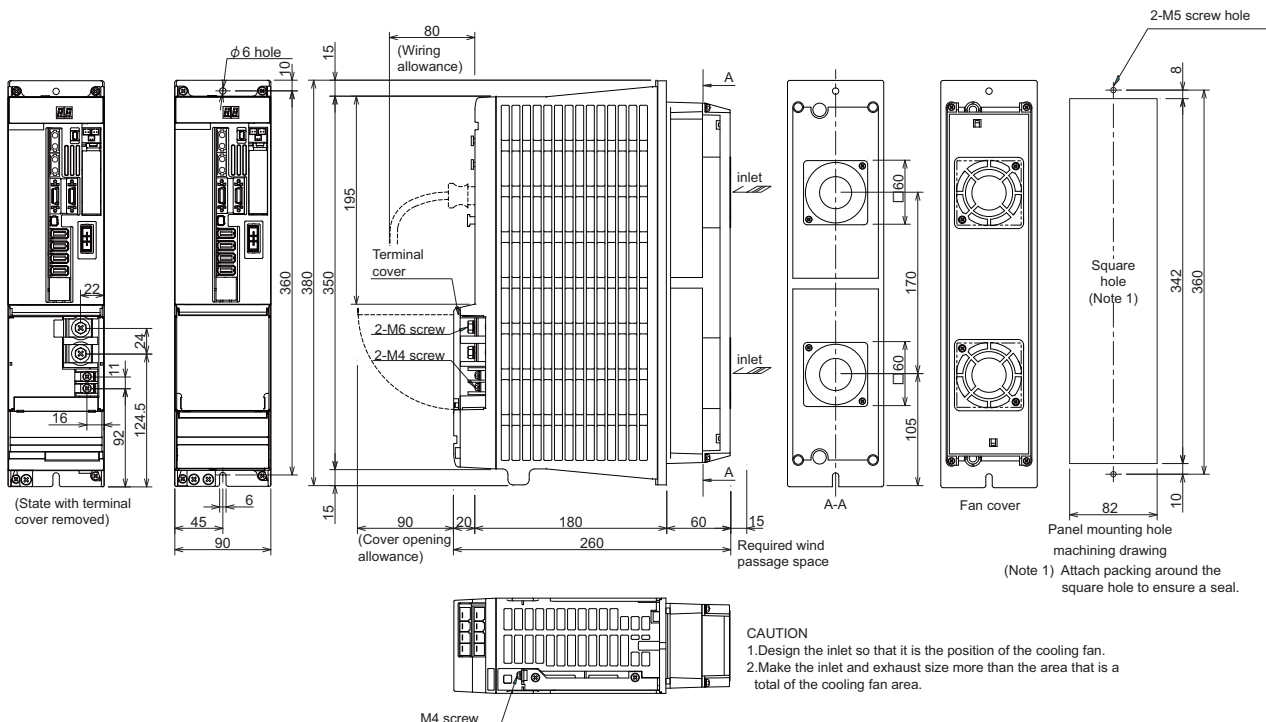
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	3.5 (2)	12 (14)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5 (2)	12 (14)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)			1.25 to 2	16 to 14

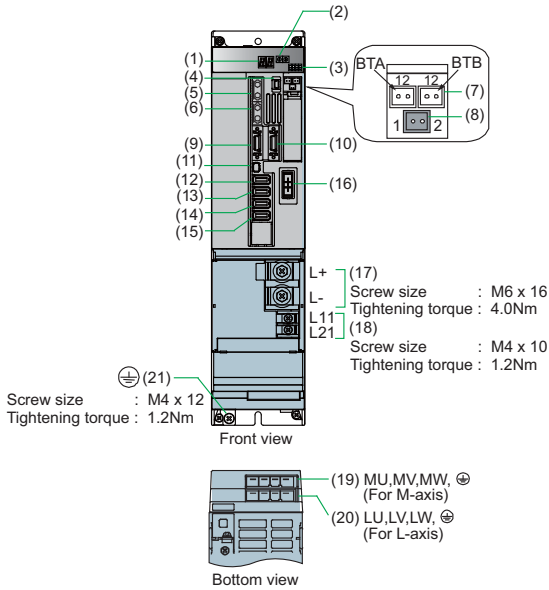
Outline dimension drawings [Unit : mm]



CAUTION
1. Design the inlet so that it is the position of the cooling fan.
2. Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Servo drive unit

MDS-DH2-V2-8080



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL SWM	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BTA BTB	For connecting converged battery unit
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(13)	CN3L	Machine side encoder connection connector (L-axis) 5V power supply capacity: 0.35A
(14)	CN2M	Motor side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(15)	CN3M	Machine side encoder connection connector (M-axis) 5V power supply capacity: 0.35A
(16)	CN20	Motor brake/dynamic brake control connector (Key way: X type)
(17)	TE2	Main circuit power supply input terminal (DC input)
(18)	TE3	Control power input terminal (single-phase AC input)
(19)	TE1	Motor power supply output connector (M-axis, 3-phase AC output)
(20)	TE1	Motor power supply output connector (L-axis, 3-phase AC output)
(21)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications	
	L	M
Nominal maximum current(peak)[A]	80	80
Output	Rated voltage[V]	340AC
	Rated current[A]	17 / 17
Input	Rated voltage[V]	513 to 648DC
	Rated current[A]	12
Control power	Frequency[Hz]	50 / 60
	Tolerable frequency fluctuation[%]	±3% max
	Voltage(50Hz)[V]	380 to 440AC
	Voltage(60Hz)[V]	380 to 480AC
	Tolerable voltage fluctuation[%]	+10%, -15%
	Max. current[A]	0.1
	Max. rush current[A]	18
Max. rush conductivity time[ms]	12	
Max. earth leakage current[mA]	2	2
Braking	Regenerative braking and dynamic brakes	
	Built-in	
Heating value	Inside panel[W]	70
	Outside panel[W]	350
Cooling method	Forced air cooling	
Mass[kg]	5.2	

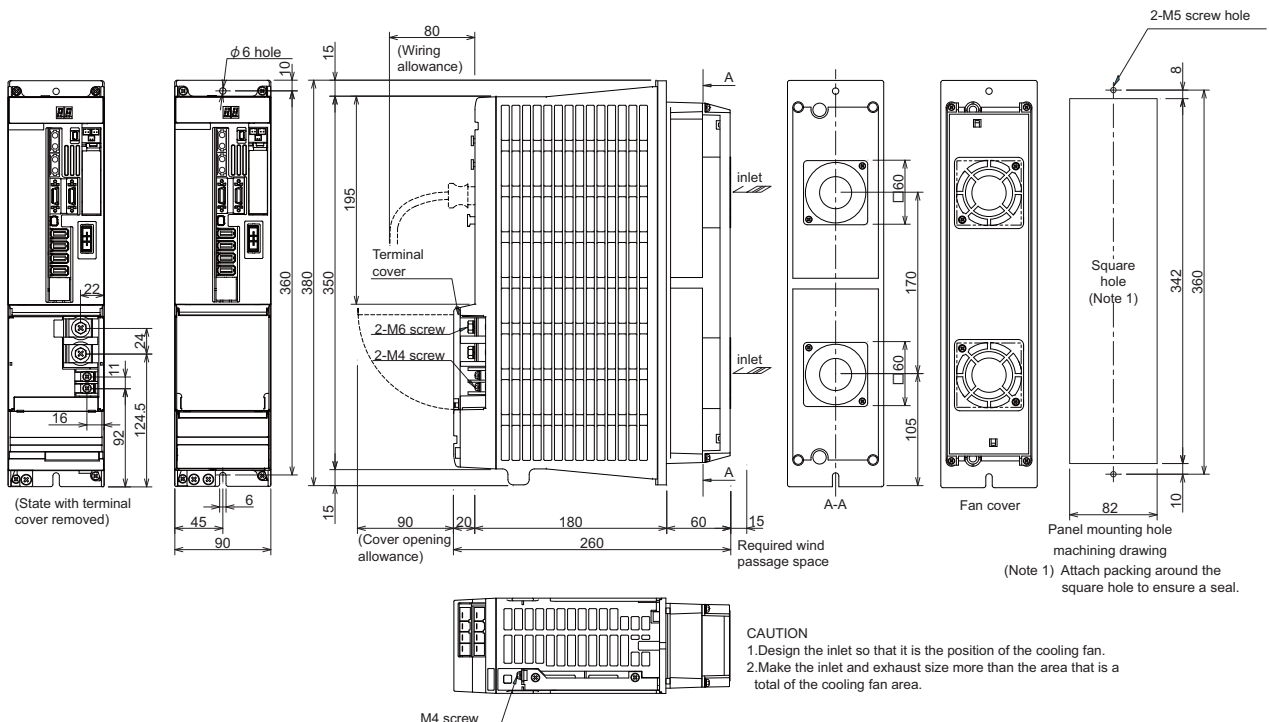
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth) The values inside of () are M side		TE2 (L+, L-)		TE3 (L11, L21, L12, L22, MC1)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	3.5 (3.5)	12 (12)	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5 (3.5)	12 (12)			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2 (2)	14 (14)	1.25 to 2		16 to 14	

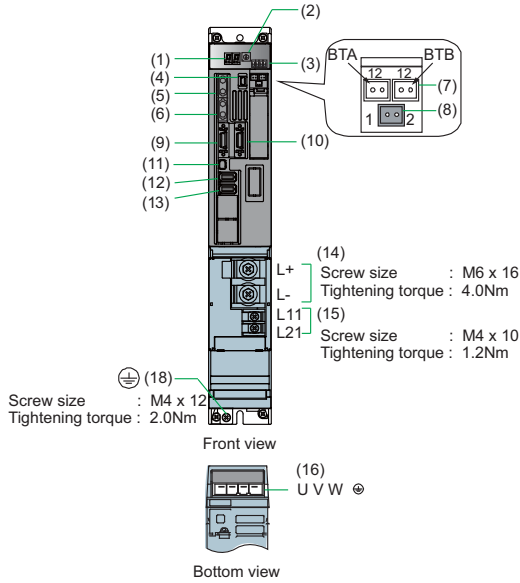
Outline dimension drawings [Unit : mm]



Spindle Drive Unit

Spindle drive unit

MDS-DH2-SP-20



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	BT1	(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(16)	TE1	Motor power supply output connector (3-phase AC output)
(18)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	20
Output	
Rated voltage[V]	340AC
Rated current[A]	9.0
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	10
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	15
Braking	Regenerative braking and dynamic brakes
Heating value	
Inside panel[W]	32
Outside panel[W]	88
Cooling method	Forced air cooling
Mass[kg]	3.8

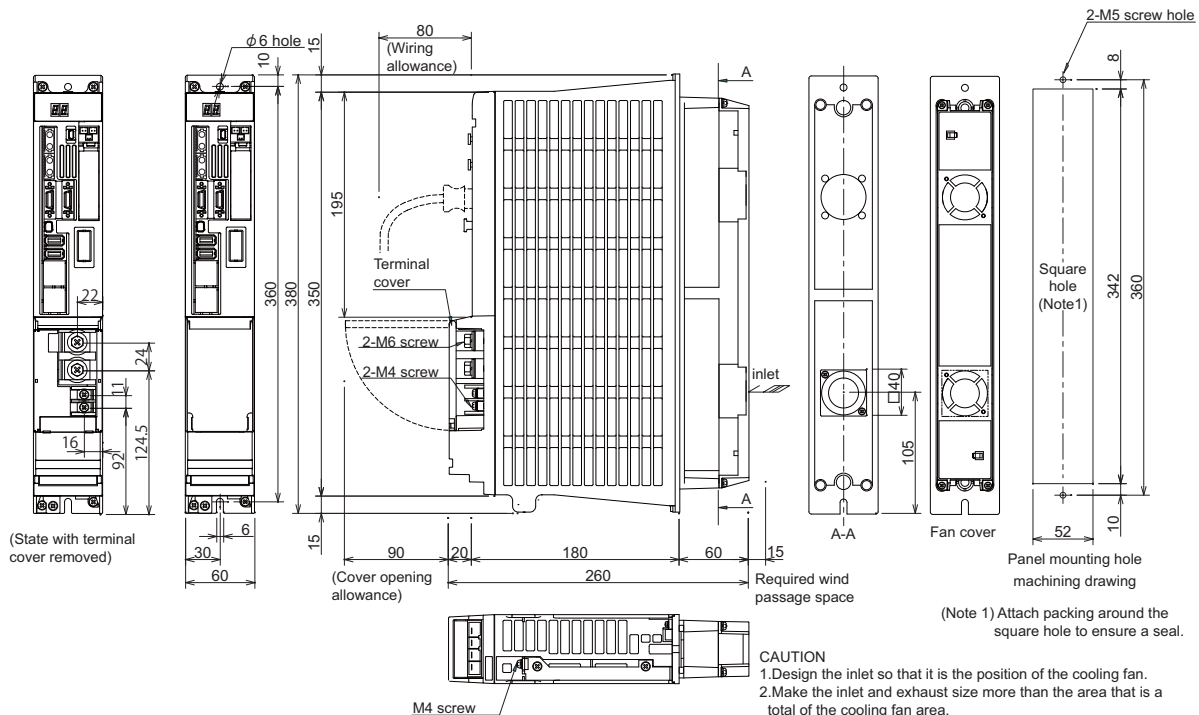
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

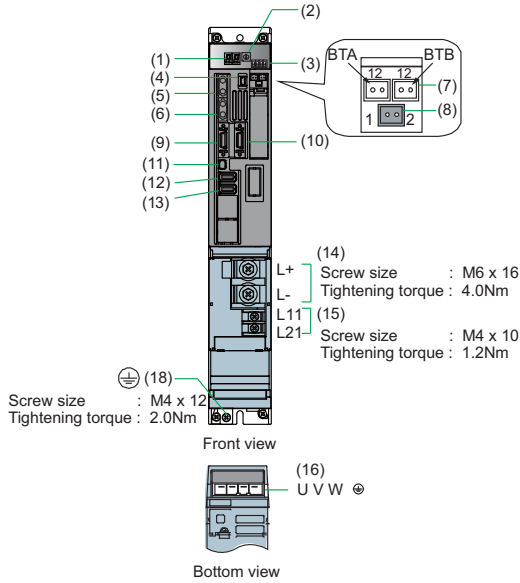
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-DH2-SP-40



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(16)	TE1	Motor power supply output connector (3-phase AC output)
(18)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	40
Output	
Rated voltage[V]	340AC
Rated current[A]	13
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	15
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	15
Braking	Regenerative braking and dynamic brakes
Heating value	
Inside panel[W]	42
Outside panel[W]	158
Cooling method	Forced air cooling
Mass[kg]	4.5

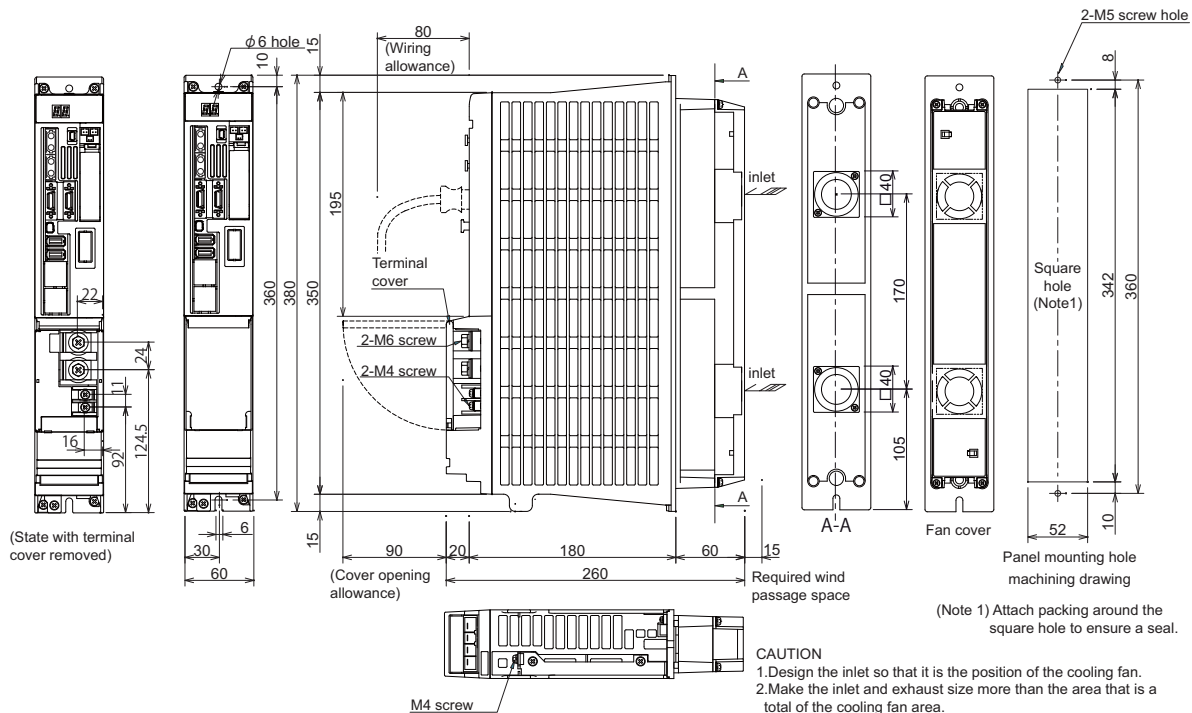
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

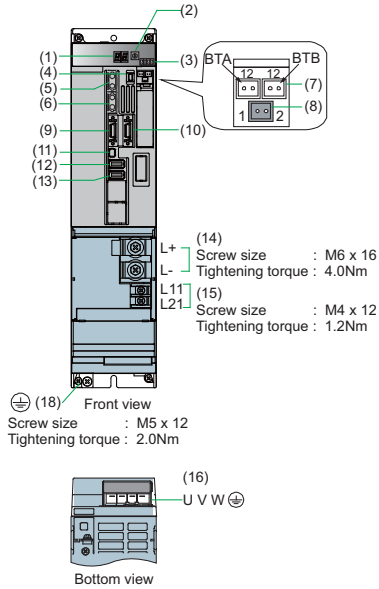
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-DH2-SP-80



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(16)	TE1	Motor power supply output connector (3-phase AC output)
(18)	PE	Grounding terminal Note that TE1 connector is used for the motor grounding.

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	80
Output	
Rated voltage[V]	340AC
Rated current[A]	19
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	21
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	15
Braking	Regenerative braking and dynamic brakes
Heating value	
Inside panel[W]	54
Outside panel[W]	237
Cooling method	Forced air cooling
Mass[kg]	4.5

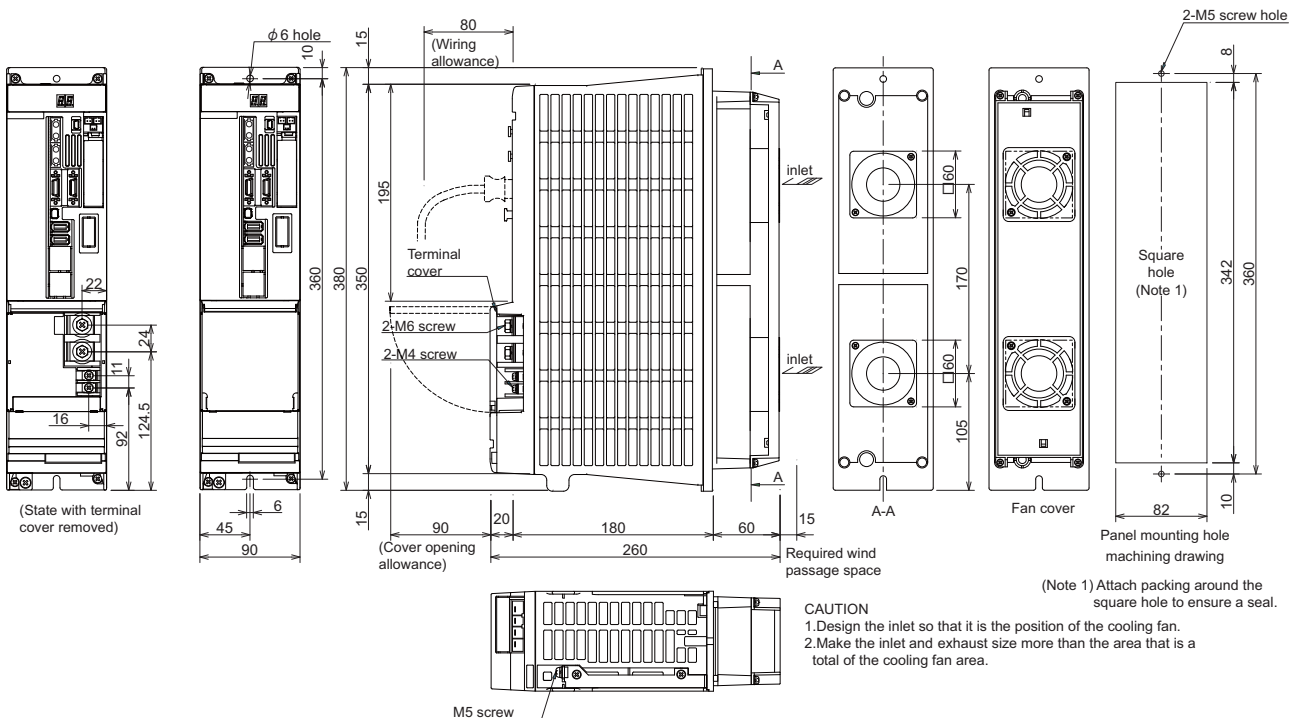
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

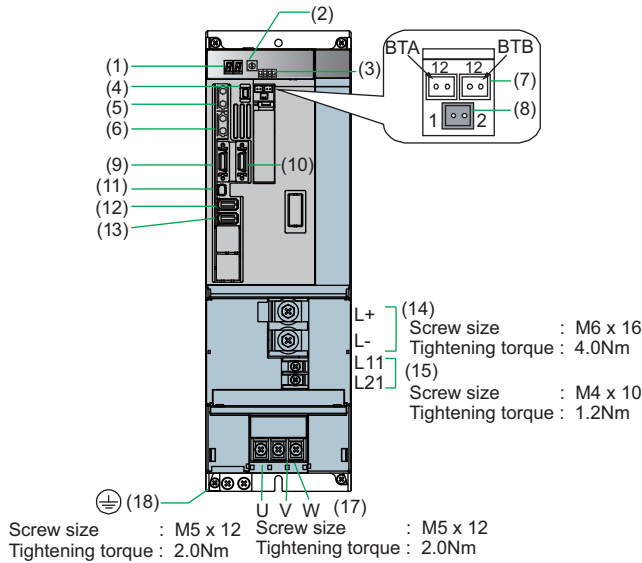
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	3.5	12			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-DH2-SP-100



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	100
Output	
Rated voltage[V]	340AC
Rated current[A]	30
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	38
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	15
Braking	Regenerative braking and dynamic brakes
Heating value	
Inside panel[W]	73
Outside panel[W]	369
Cooling method	Forced air cooling
Mass[kg]	5.8

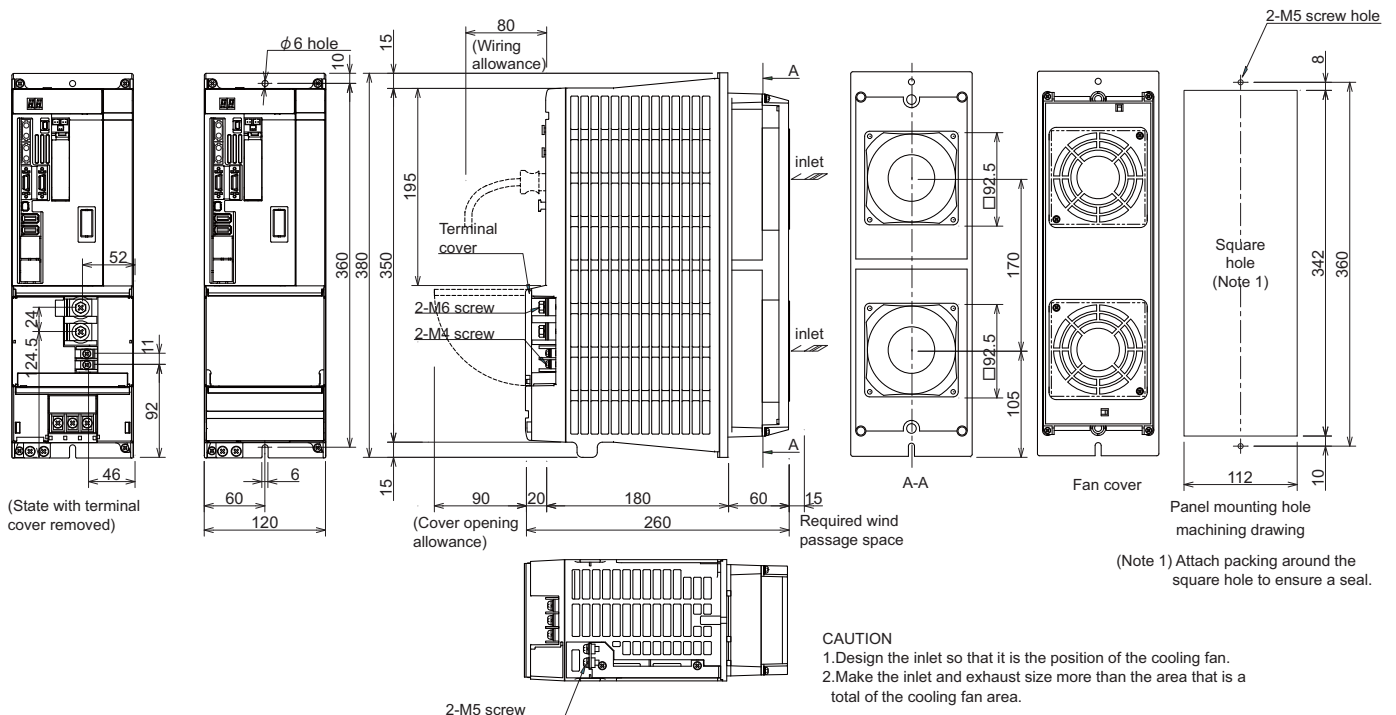
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

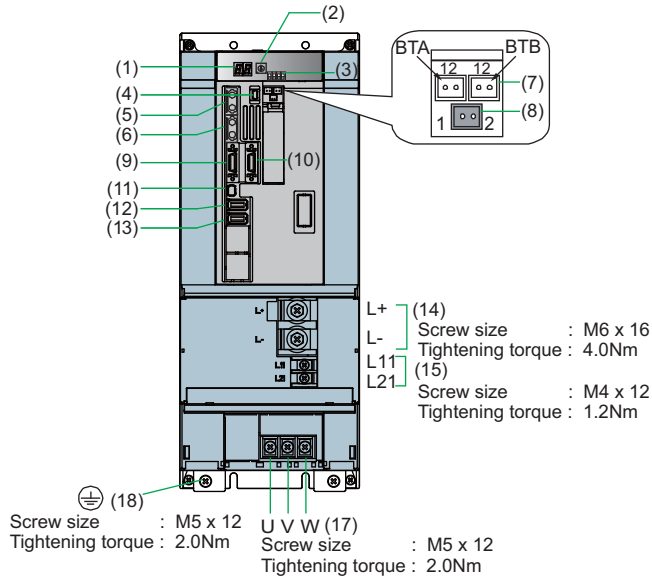
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	8	8	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	5.5	10			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	5.5	10			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-DH2-SP-160



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	160
Output	
Rated voltage[V]	340AC
Rated current[A]	65
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	72
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Max. earth leakage current[mA]	15
Braking	Regenerative braking and dynamic brakes
Heating value	
Inside panel[W]	110
Outside panel[W]	639
Cooling method	Forced air cooling
Mass[kg]	7.5

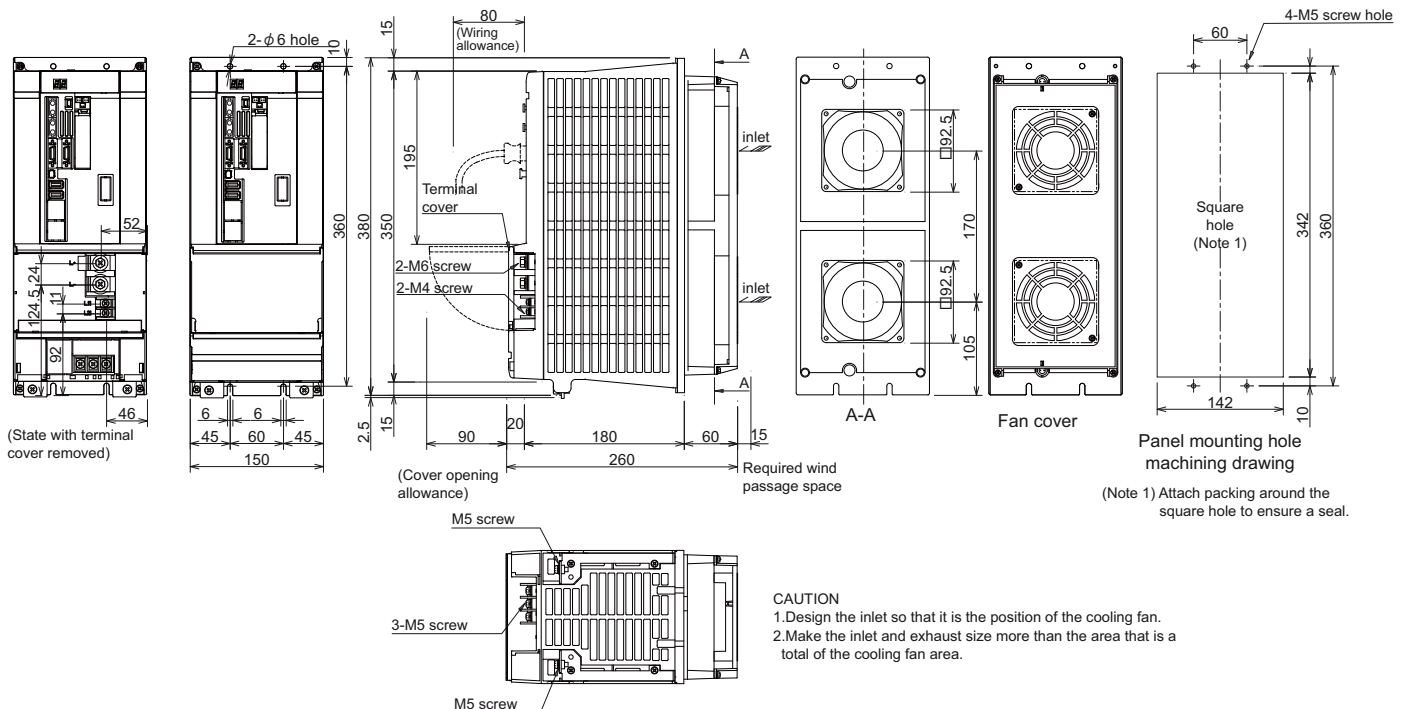
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

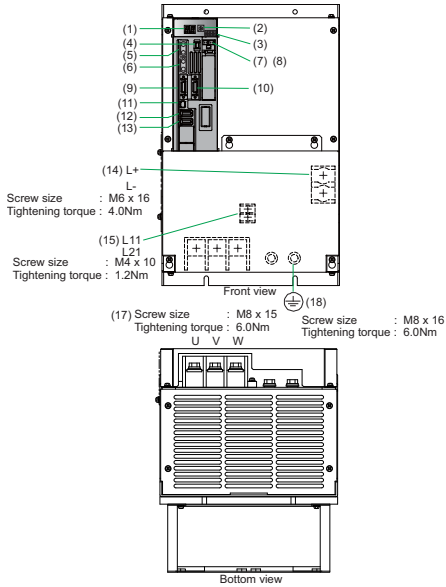
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	22	4	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	14	6			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-DH2-SP-200



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	200
Output	
Rated voltage[V]	340AC
Rated current[A]	85
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	99
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	18
Max. earth leakage current[mA]	15
Braking	Regenerative braking and dynamic brakes
Heating value	
Inside panel[W]	126
Outside panel[W]	746
Cooling method	Forced air cooling
Mass[kg]	16.5

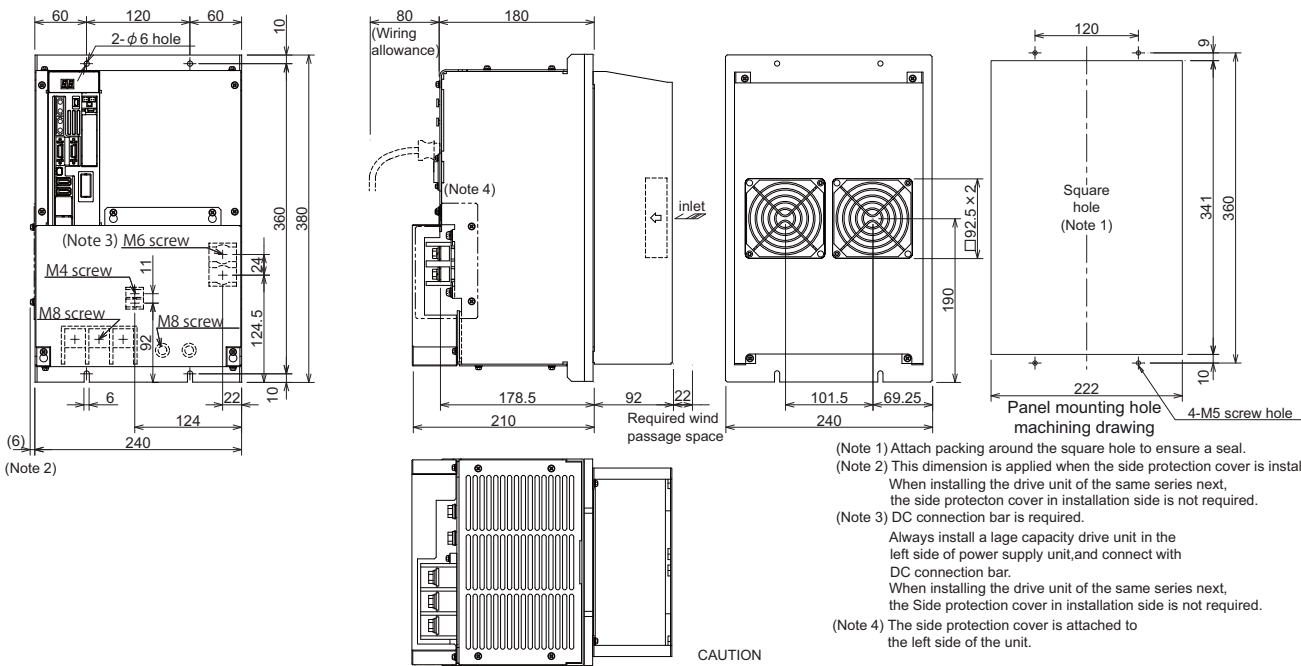
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	38	2	Match with TE2 of selected power supply unit		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	22	4			1.25 to 2	16 to 14

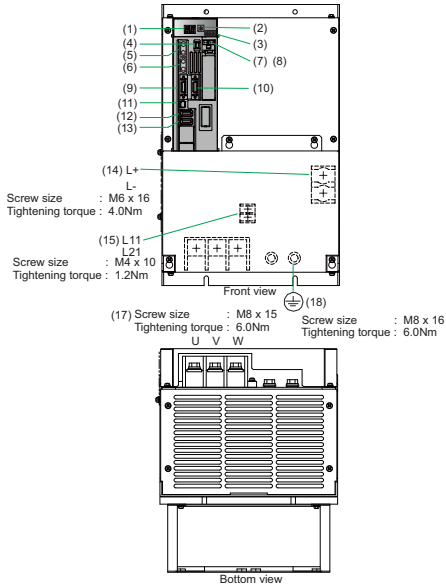
Outline dimension drawings [Unit : mm]



CAUTION
 1.Design the inlet so that it is the position of the cooling fan.
 2.Make the inlet and exhaust size more than the area that is a total of the cooling fan area.

Spindle drive unit

MDS-DH2-SP-320



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)	(Unused)	(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	320
Output	
Rated voltage[V]	340AC
Rated current[A]	103
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	119
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	18
Max. earth leakage current[mA]	15
Braking	Regenerative braking and dynamic brakes
Heating value	
Inside panel[W]	168
Outside panel[W]	1034
Cooling method	Forced air cooling
Mass[kg]	16.5

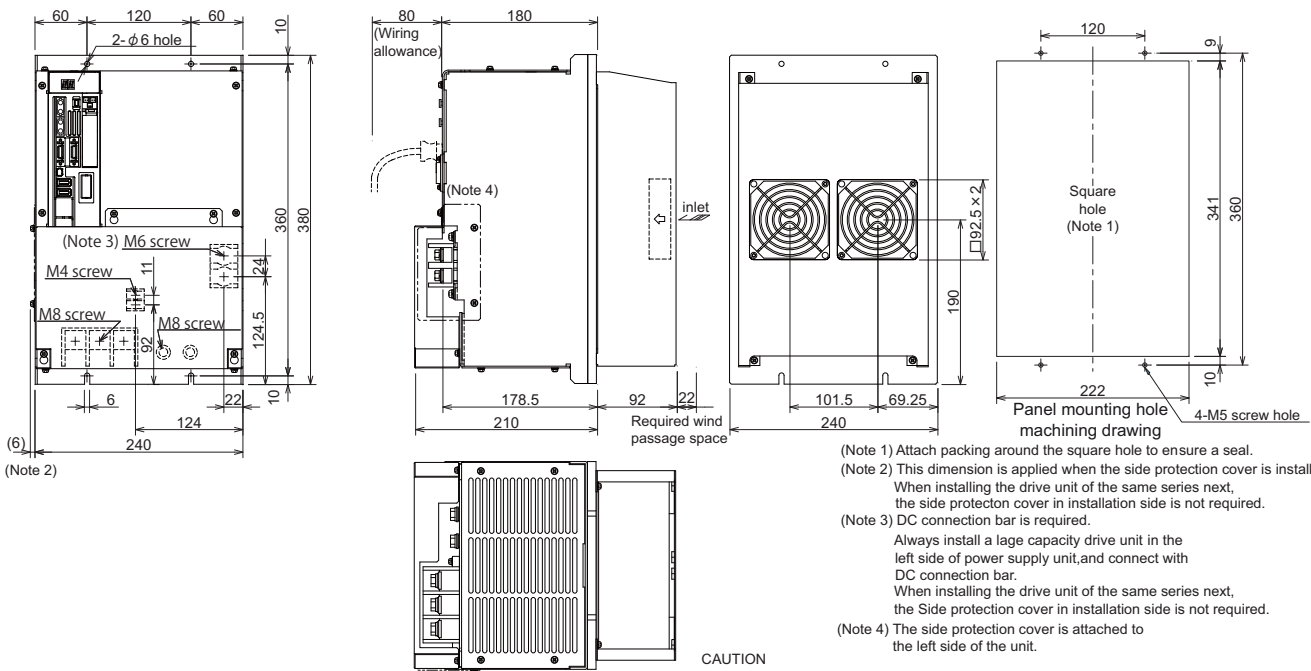
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

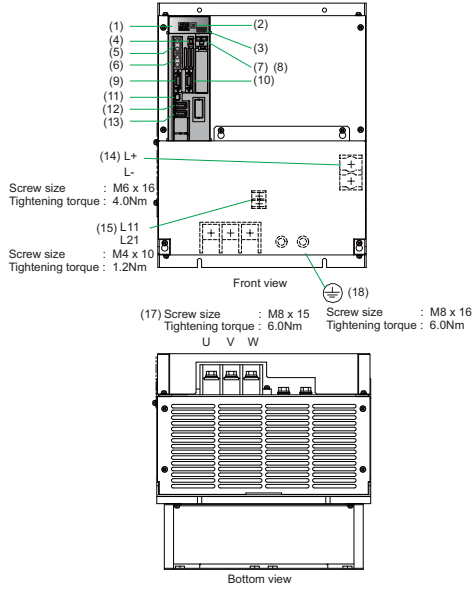
Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	Bar enclosed		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	38	2			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	38	2			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]



Spindle drive unit

MDS-DH2-SP-480



No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SWL	Axis No. setting switch
(3)	SW1	Unused axis setting switch
(4)	CN5	USB maintenance connector usually not used
(5)	CN1A	NC or master axis optical communication connector
(6)	CN1B	Slave axis optical communication connector
(7)		(Unused)
(8)	BT1	For connecting battery built-in drive unit ER6V-C119B
(9)	CN9	(Unused)
(10)	CN4	Power supply communication connector
(11)	CN8	External STO input connector (Insert the provided STO short-circuit connector when not using external STO input.)
(12)	CN2L	Motor side encoder connection connector 5V power supply capacity: 0.35A
(13)	CN3L	Spindle side encoder connection connector 5V power supply capacity: 0.35A
(14)	TE2	Main circuit power supply input terminal (DC input)
(15)	TE3	Control power input terminal (single-phase AC input)
(17)	TE1	Motor power supply output terminal (3-phase AC output)
(18)	PE	Grounding terminal

Specifications

Item	Specifications
Nominal maximum current(peak)[A]	480
Output	
Rated voltage[V]	340AC
Rated current[A]	180
Input	
Rated voltage[V]	513 to 648DC
Rated current[A]	150
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	18
Max. earth leakage current[mA]	15
Braking	Regenerative braking and dynamic brakes
Heating value	
Inside panel[W]	232
Outside panel[W]	1488
Cooling method	Forced air cooling
Mass[kg]	22.5

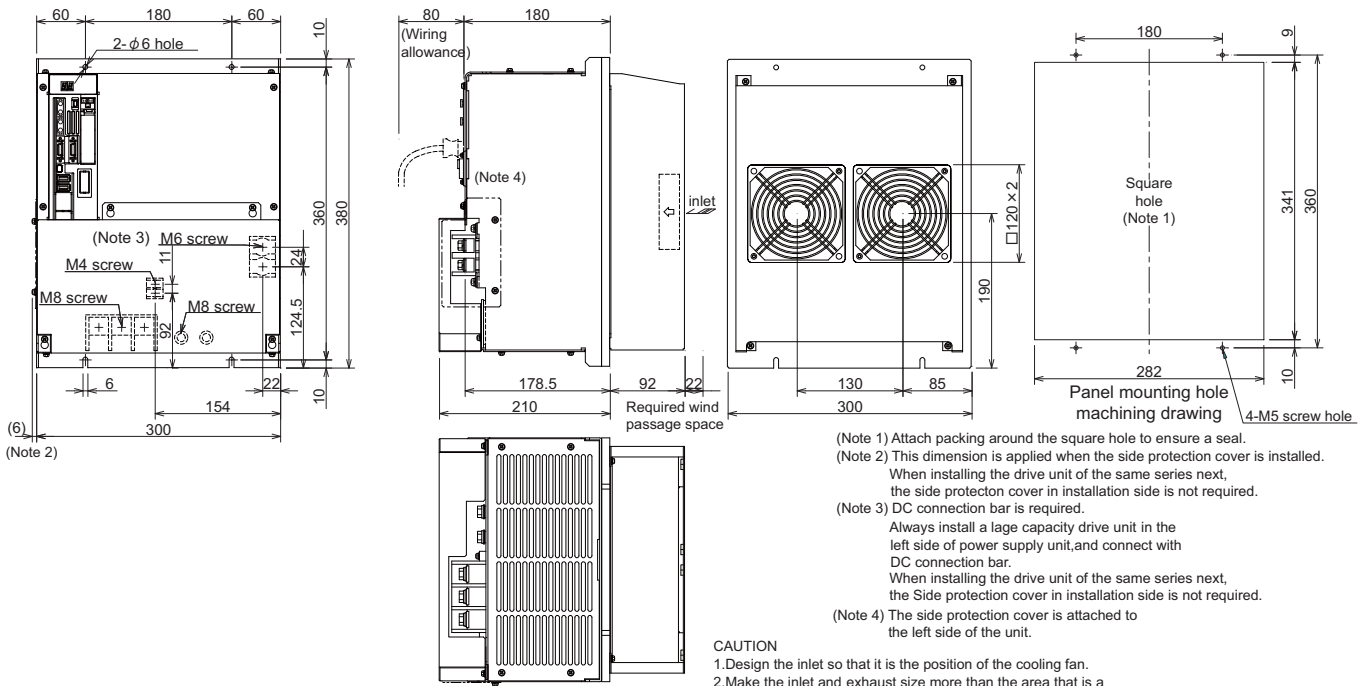
Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C(with no freezing) Storage/transportation: -15°C to +70°C(with no freezing)
Ambient humidity	Operation: 90% RH or less(with no dew condensation) Storage/transportation: 90% RH or less(with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1 (U, V, W, earth)		TE2 (L+, L-)		TE3 (L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	Bar enclosed		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	80	3/0			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	60	1/0			1.25 to 2	16 to 14

Outline dimension drawings [Unit : mm]

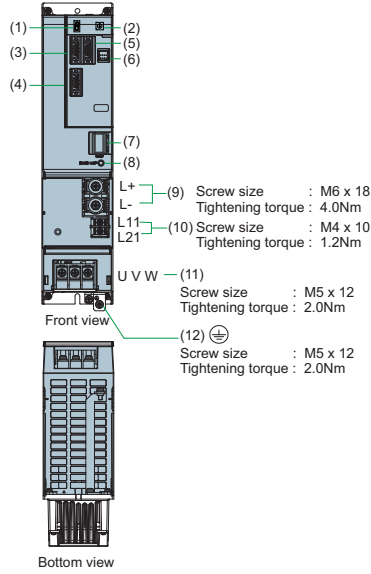


Power Supply Unit

Power supply unit MDS-DH2-CV-37

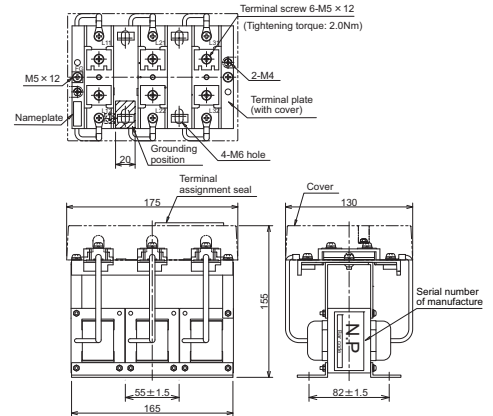
Specifications

Item	Specifications
30-minute rated output[kW]	3.7
Continuous rated output[kW]	2.2
Power facility capacity[kVA]	5.3
Output	Rated voltage[V] 513 to 648DC
	Rated current[A] 7.1
Input	Frequency[Hz] 50 / 60
	Tolerable frequency fluctuation[%] ±3% max
	Rated voltage(50Hz)[V] 380 to 440AC
	Rated voltage(60Hz)[V] 380 to 480AC
	Tolerable voltage fluctuation[%] +10%, -15%
	Rated current[A] 5.2
Control power	Frequency[Hz] 50 / 60
	Tolerable frequency fluctuation[%] ±3% max
	Voltage(50Hz)[V] 380 to 440AC
	Voltage(60Hz)[V] 380 to 480AC
	Tolerable voltage fluctuation[%] +10%, -15%
	Max. current[A] 0.1
	Max. rush current[A] 18
	Max. rush conductivity time[ms] 12
Heating value	Inside panel[W] 20
	Outside panel[W] 34
Cooling method	Forced air cooling
Mass[kg]	6.0
AC reactor	DH-AL-7.5K
Selection example of contactor (option part)	S-T12-AC400V
	Free-air thermal current[A] 20
	Selection current (for 380V input)[A] 8
	Rated output[kW] 3.7
Selection example of circuit protector (option part)	NF63-CW3P-10A
	Rated current[A] 10
	Selection current (for 380V input)[A] 8
	Rated output[kW] 3.7

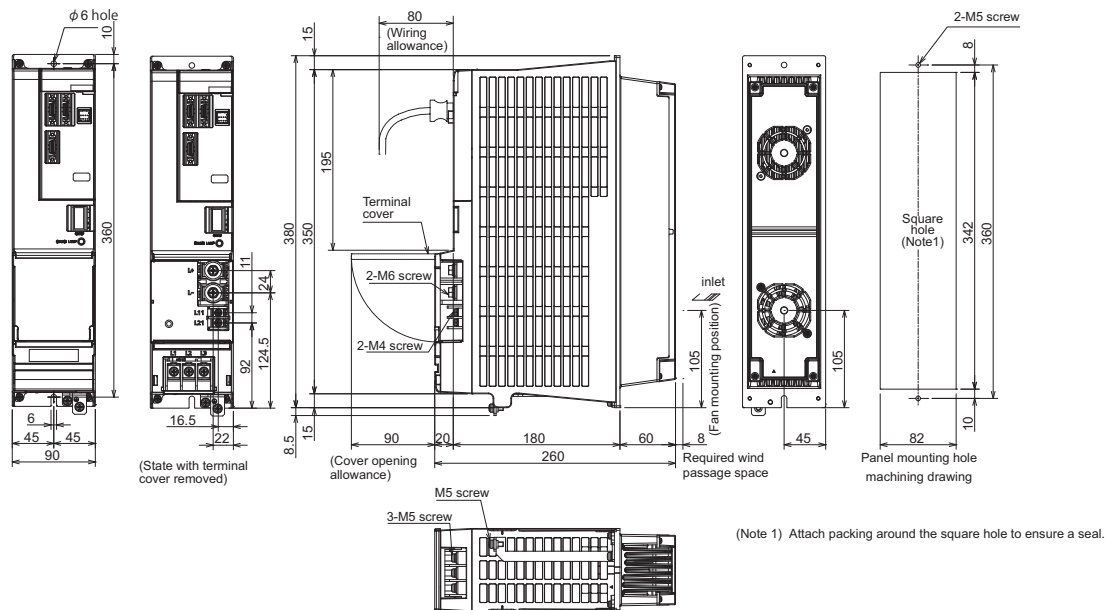


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

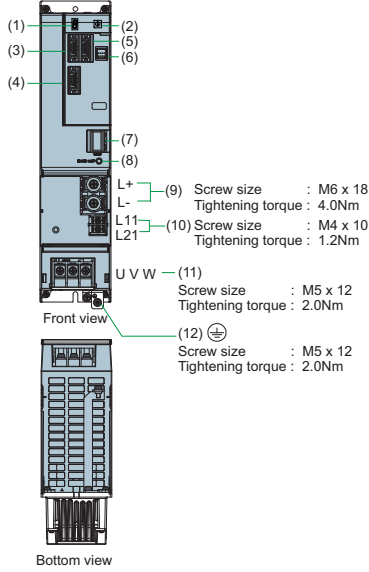
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	2	14	1.25 to 2	16 to 14

Power supply unit
MDS-DH2-CV-75

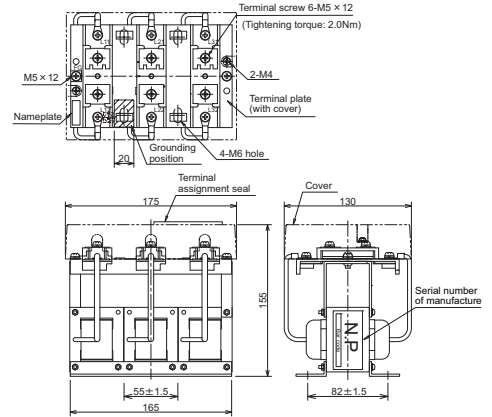
Specifications

Item	Specifications
30-minute rated output[kW]	7.5
Continuous rated output[kW]	5.5
Power facility capacity[kVA]	11.0
Output	Rated voltage[V] : 513 to 648DC
	Rated current[A] : 15
Input	Frequency[Hz] : 50 / 60
	Tolerable frequency fluctuation[%] : ±3% max
	Rated voltage(50Hz)[V] : 380 to 440AC
	Rated voltage(60Hz)[V] : 380 to 480AC
	Tolerable voltage fluctuation[%] : +10%, -15%
	Rated current[A] : 13
Control power	Frequency[Hz] : 50 / 60
	Tolerable frequency fluctuation[%] : ±3% max
	Voltage(50Hz)[V] : 380 to 440AC
	Voltage(60Hz)[V] : 380 to 480AC
	Tolerable voltage fluctuation[%] : +10%, -15%
	Max. current[A] : 0.1
	Max. rush current[A] : 18
	Max. rush conductivity time[ms] : 12
Heating value	Inside panel[W] : 24
	Outside panel[W] : 55
Cooling method	Forced air cooling
Mass[kg]	6.0
AC reactor	DH-AL-7.5K
Selection example of contactor (option part)	S-T12-AC400V
	Free-air thermal current[A] : 20
	Selection current (for 380V input)[A] : 16
	Rated output[kW] : 7.5
Selection example of circuit protector (option part)	NF63-CW3P-20A
	Rated current[A] : 20
	Selection current (for 380V input)[A] : 16
	Rated output[kW] : 7.5

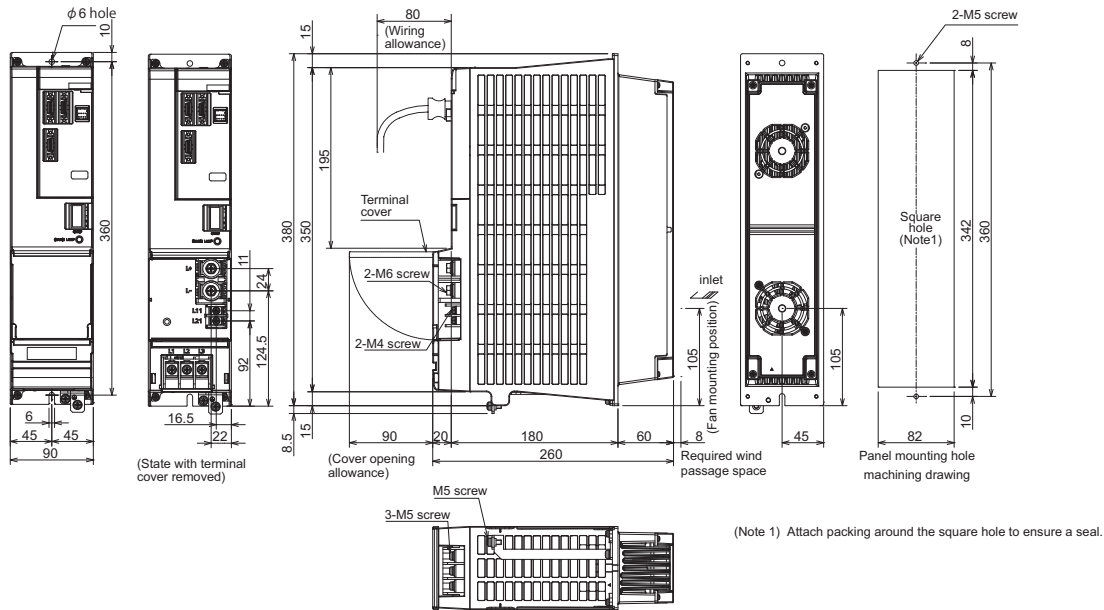


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

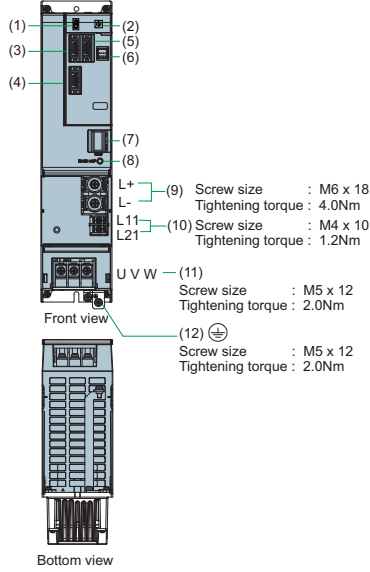
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	2	14	3.5	12	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	2	14	2	14	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	2	14	1.25 to 2	16 to 14

Power supply unit MDS-DH2-CV-110

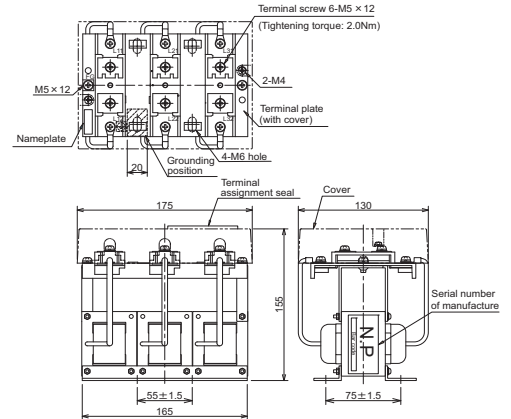
Specifications

Item	Specifications
30-minute rated output[kW]	11.0
Continuous rated output[kW]	7.5
Power facility capacity[kVA]	16.0
Output	
Rated voltage[V]	513 to 648DC
Rated current[A]	21
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz)[V]	380 to 440AC
Rated voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	18
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Heating value	
Inside panel[W]	25
Outside panel[W]	99
Cooling method	Forced air cooling
Mass[kg]	6.0
AC reactor	DH-AL-11K
Selection example of contactor (option part)	S-T21-AC400V
Free-air thermal current[A]	32
Selection current (for 380V input)[A]	24
Rated output[kW]	11
Selection example of circuit protector (option part)	NF63-CW3P-30A
Rated current[A]	30
Selection current (for 380V input)[A]	24
Rated output[kW]	11

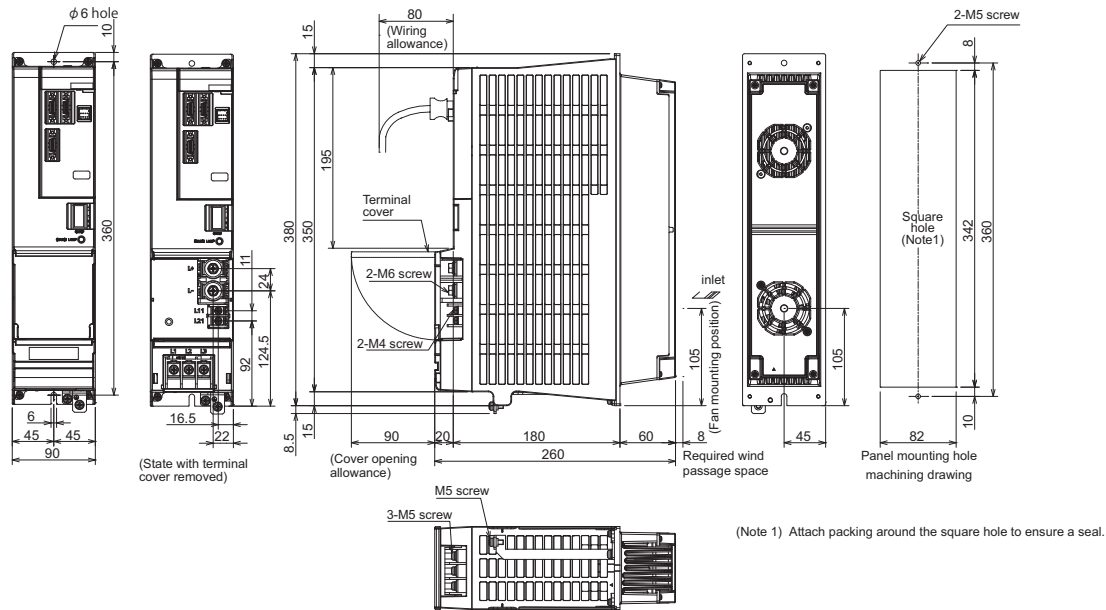


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

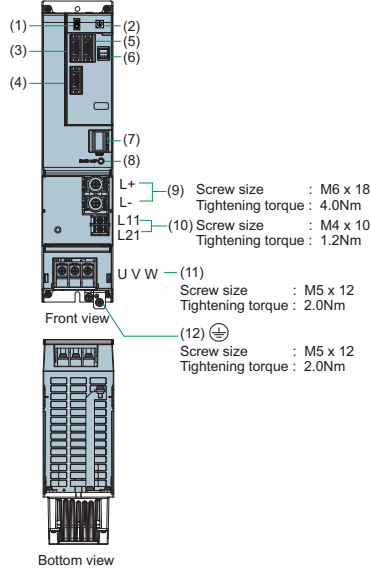
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12	5.5	10	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	3.5	12	5.5	10	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	2	14	3.5	12	1.25 to 2	16 to 14

Power supply unit
MDS-DH2-CV-185

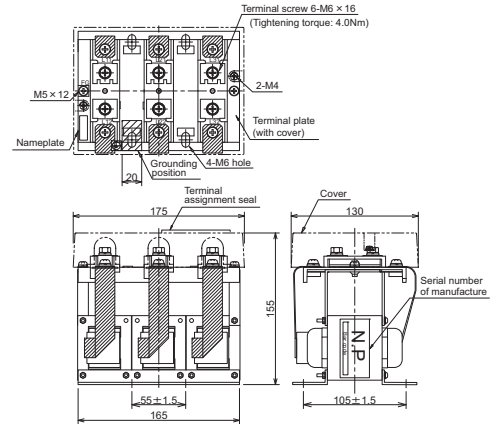
Specifications

Item	Specifications
30-minute rated output[kW]	18.5
Continuous rated output[kW]	15.0
Power facility capacity[kVA]	27.0
Output	Rated voltage[V] : 513 to 648DC
	Rated current[A] : 38
Input	Frequency[Hz] : 50 / 60
	Tolerable frequency fluctuation[%] : ±3% max
	Rated voltage(50Hz)[V] : 380 to 440AC
	Rated voltage(60Hz)[V] : 380 to 480AC
	Tolerable voltage fluctuation[%] : +10%, -15%
	Rated current[A] : 35
Control power	Frequency[Hz] : 50 / 60
	Tolerable frequency fluctuation[%] : ±3% max
	Voltage(50Hz)[V] : 380 to 440AC
	Voltage(60Hz)[V] : 380 to 480AC
	Tolerable voltage fluctuation[%] : +10%, -15%
	Max. current[A] : 0.1
	Max. rush current[A] : 18
	Max. rush conductivity time[ms] : 12
Heating value	Inside panel[W] : 32
	Outside panel[W] : 161
Cooling method	Forced air cooling
Mass[kg]	6.0
AC reactor	DH-AL-18.5K
Selection example of contactor (option part)	S-T35-AC400V
	Free-air thermal current[A] : 50
	Selection current (for 380V input)[A] : 40
	Rated output[kW] : 18.5
Selection example of circuit protector (option part)	NF63-CW3P-40A
	Rated current[A] : 40
	Selection current (for 380V input)[A] : 40
	Rated output[kW] : 18.5

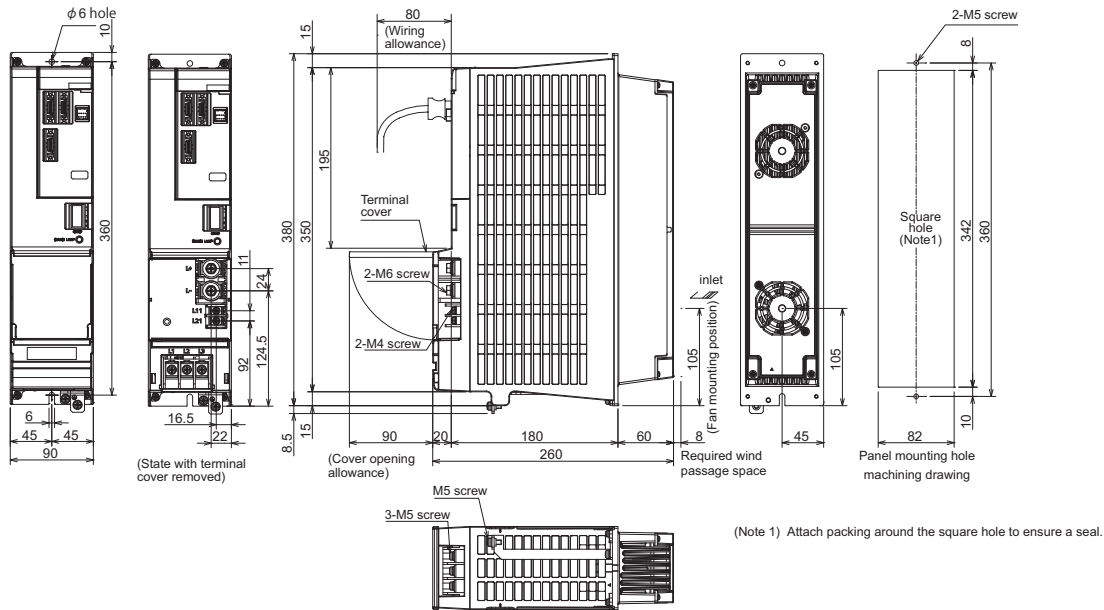


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

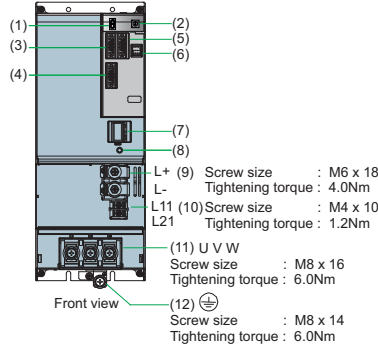
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	14	6	14	6	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	8	8	8	8	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	5.5	10	5.5	10	1.25 to 2	16 to 14

Power supply unit MDS-DH2-CV-300

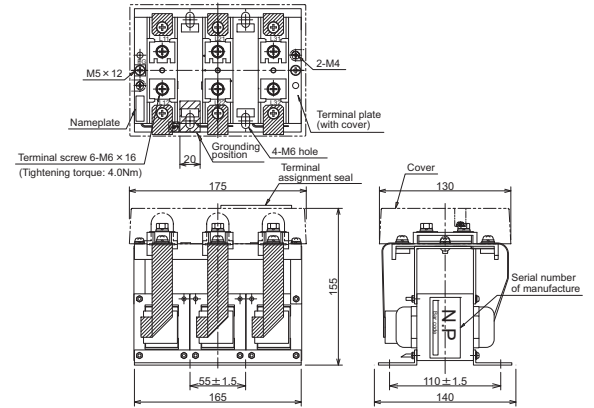
Specifications

Item	Specifications
30-minute rated output[kW]	30.0
Continuous rated output[kW]	26.0
Power facility capacity[kVA]	43.0
Output	
Rated voltage[V]	513 to 648DC
Rated current[A]	72
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz)[V]	380 to 440AC
Rated voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	61
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Heating value	
Inside panel[W]	45
Outside panel[W]	272
Cooling method	Forced air cooling
Mass[kg]	10.0
AC reactor	DH-AL-30K
Selection example of contactor (option part)	S-T50-AC400V
Free-air thermal current[A]	80
Selection current (for 380V input)[A]	65
Rated output[kW]	30
Selection example of circuit protector (option part)	NF125-CW3P-75A
Rated current[A]	75
Selection current (for 380V input)[A]	65
Rated output[kW]	30

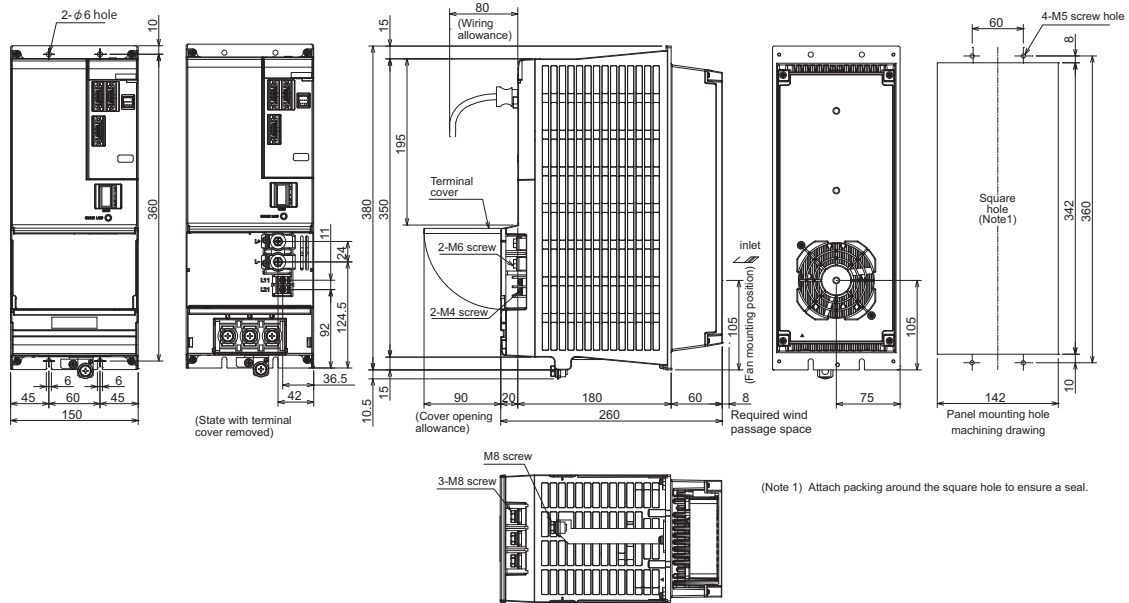


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

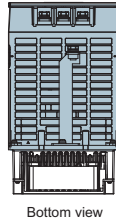
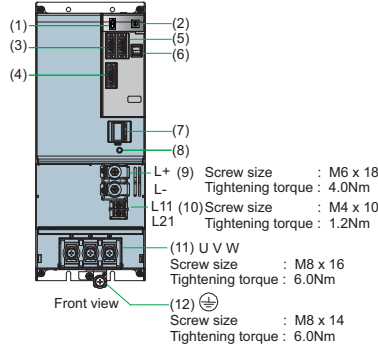
Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	22	4	38	2	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	14	6	22	4	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	14	6	1.25 to 2	16 to 14

Power supply unit

MDS-DH2-CV-370

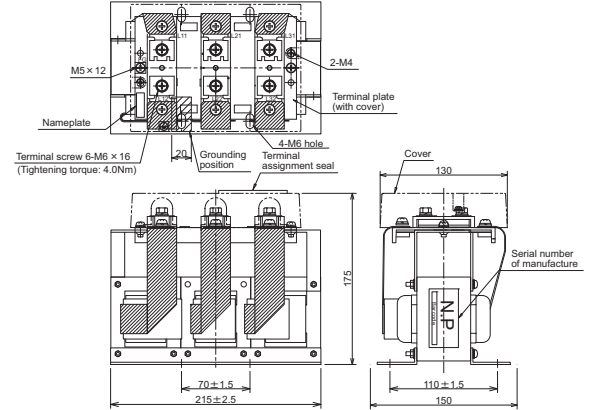
Specifications

Item	Specifications
30-minute rated output[kW]	37.0
Continuous rated output[kW]	30.0
Power facility capacity[kVA]	53.0
Output	
Rated voltage[V]	513 to 648DC
Rated current[A]	82
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz)[V]	380 to 440AC
Rated voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	70
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Heating value	
Inside panel[W]	53
Outside panel[W]	343
Cooling method	Forced air cooling
Mass[kg]	10.0
AC reactor	DH-AL-37K
Selection example of contactor (option part)	S-T65-AC400V
Free-air thermal current[A]	100
Selection current (for 380V input)[A]	80
Rated output[kW]	37
Selection example of circuit protector (option part)	NF125-CW3P-100A
Rated current[A]	100
Selection current (for 380V input)[A]	80
Rated output[kW]	37

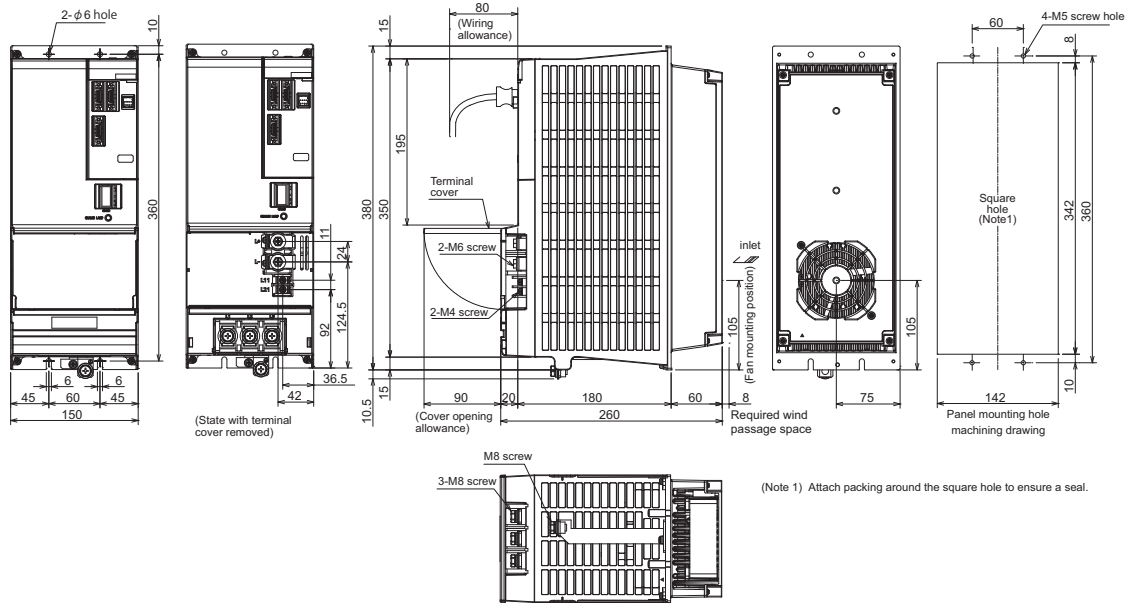


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

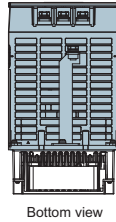
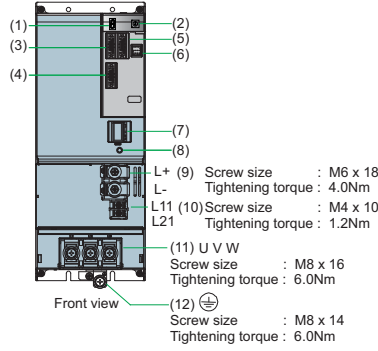
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	38	2	50	1	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	22	4	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	14	6	22	4	1.25 to 2	16 to 14

Power supply unit MDS-DH2-CV-450

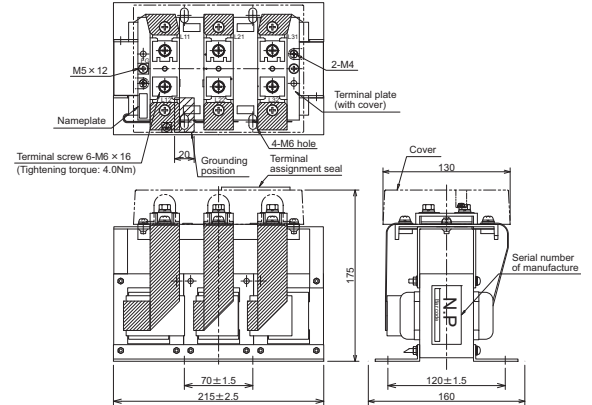
Specifications

Item	Specifications
30-minute rated output[kW]	45.0
Continuous rated output[kW]	37.0
Power facility capacity[kVA]	64.0
Output	
Rated voltage[V]	513 to 648DC
Rated current[A]	99
Input	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Rated voltage(50Hz)[V]	380 to 440AC
Rated voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Rated current[A]	85
Control power	
Frequency[Hz]	50 / 60
Tolerable frequency fluctuation[%]	±3% max
Voltage(50Hz)[V]	380 to 440AC
Voltage(60Hz)[V]	380 to 480AC
Tolerable voltage fluctuation[%]	+10%, -15%
Max. current[A]	0.1
Max. rush current[A]	18
Max. rush conductivity time[ms]	12
Heating value	
Inside panel[W]	104
Outside panel[W]	392
Cooling method	Forced air cooling
Mass[kg]	10.0
AC reactor	DH-AL-45K
Selection example of contactor (option part)	S-T65-AC400V
Free-air thermal current[A]	100
Selection current (for 380V input)[A]	98
Rated output[kW]	45
Selection example of circuit protector (option part)	NF125-CW3P-100A
Rated current[A]	100
Selection current (for 380V input)[A]	98
Rated output[kW]	45

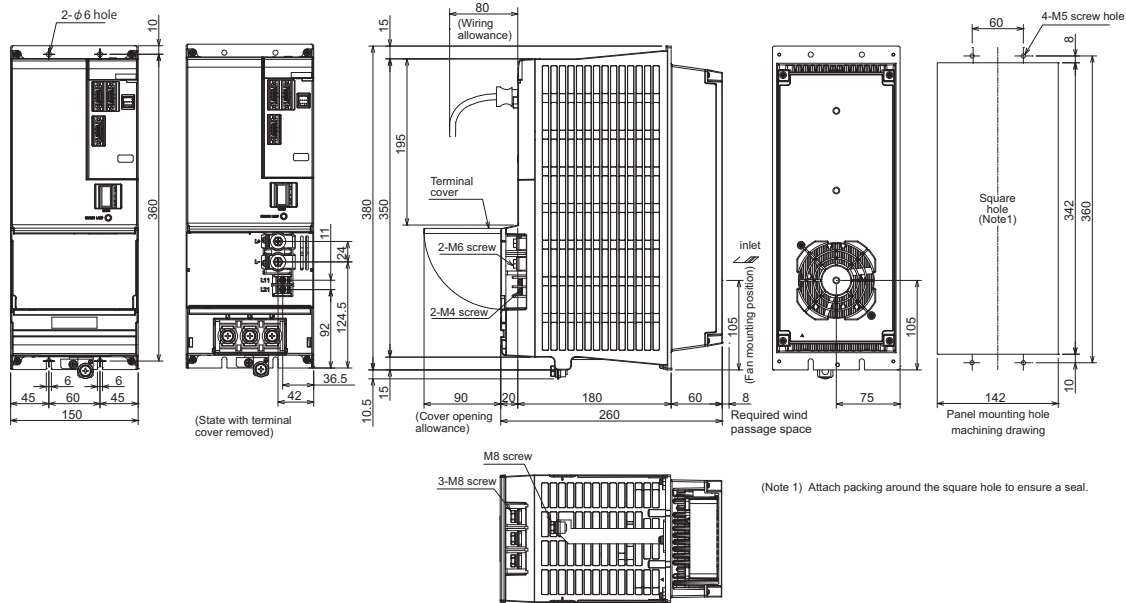


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE1	Power input terminal (3-phase AC input)
(12)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

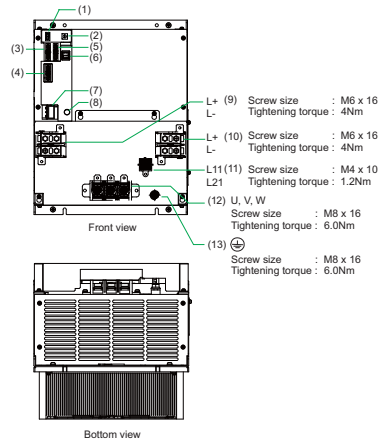
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	38	2	60	1/0	2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	22	4	38 or bar enclosed	2 or bar enclosed	2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	22	4	30	3	1.25 to 2	16 to 14

Power supply unit MDS-DH2-CV-550

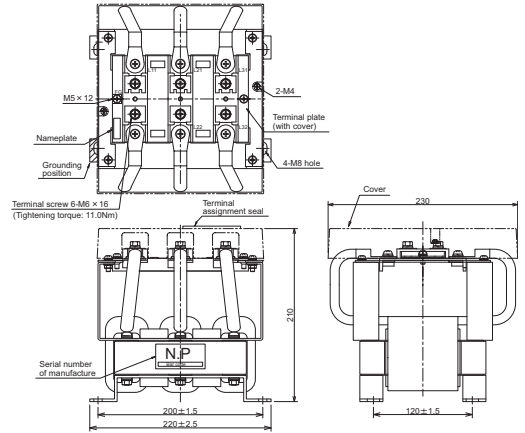
Specifications

Item	Specifications
30-minute rated output[kW]	55.0
Continuous rated output[kW]	45.0
Power facility capacity[kVA]	78.0
Output	Rated voltage[V] 513 to 648DC
	Rated current[A] 119
Input	Frequency[Hz] 50 / 60
	Tolerable frequency fluctuation[%] ±3% max
	Rated voltage(50Hz)[V] 380 to 440AC
	Rated voltage(60Hz)[V] 380 to 480AC
	Tolerable voltage fluctuation[%] +10%, -15%
	Rated current[A] 106
Control power	Frequency[Hz] 50 / 60
	Tolerable frequency fluctuation[%] ±3% max
	Voltage(50Hz)[V] 380 to 440AC
	Voltage(60Hz)[V] 380 to 480AC
	Tolerable voltage fluctuation[%] +10%, -15%
	Max. current[A] 0.1
	Max. rush current[A] 18
	Max. rush conductivity time[ms] 12
Heating value	Inside panel[W] 164
	Outside panel[W] 431
Cooling method	Forced air cooling
Mass[kg]	25.5
AC reactor	DH-AL-55K
Selection example of contactor (option part)	S-T80-AC400V
	Free-air thermal current[A] 135
	Selection current (for 380V input)[A] 119
	Rated output[kW] 55
Selection example of circuit protector (option part)	NF250-CW3P-125A
	Rated current[A] 125
	Selection current (for 380V input)[A] 119
	Rated output[kW] 55

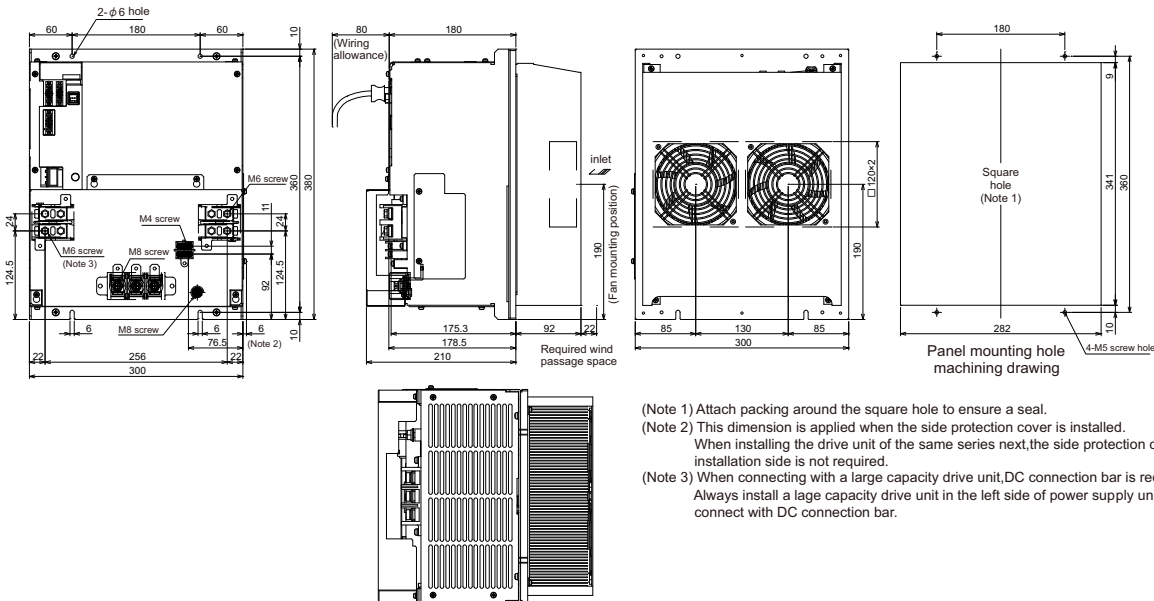


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE LAMP	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)	TE3	Control power input terminal (single-phase AC input)
(11)	TE3	Control power input terminal (single-phase AC input)
(12)	TE1	Power input terminal (3-phase AC input)
(13)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

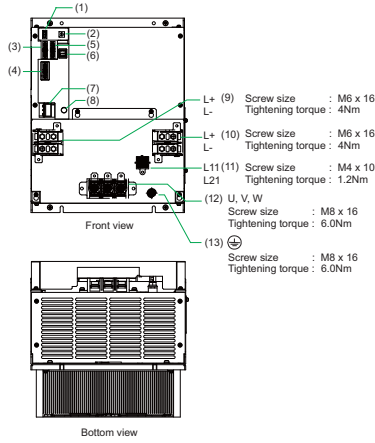
Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	Bar enclosed		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	38	2			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	22	4			1.25 to 2	16 to 14

Power supply unit MDS-DH2-CV-750

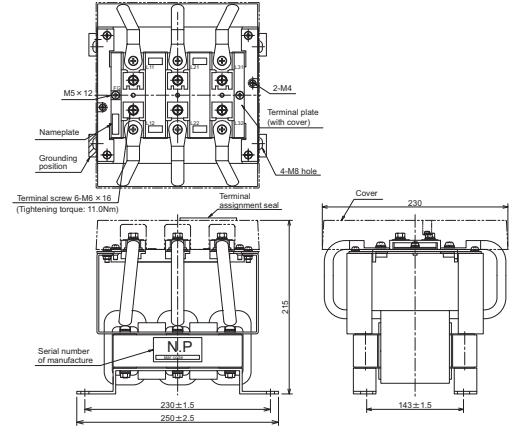
Specifications

Item	Specifications
30-minute rated output[kW]	75.0
Continuous rated output[kW]	55.0
Power facility capacity[kVA]	107.0
Output	Rated voltage[V] : 513 to 648DC
Input	Rated current[A] : 150
	Frequency[Hz] : 50 / 60
	Tolerable frequency fluctuation[%] : ±3% max
	Rated voltage(50Hz)[V] : 380 to 440AC
	Rated voltage(60Hz)[V] : 380 to 480AC
Control power	Tolerable voltage fluctuation[%] : +10%, -15%
	Rated current[A] : 130
	Frequency[Hz] : 50 / 60
	Tolerable frequency fluctuation[%] : ±3% max
	Voltage(50Hz)[V] : 380 to 440AC
	Voltage(60Hz)[V] : 380 to 480AC
	Tolerable voltage fluctuation[%] : +10%, -15%
	Max. current[A] : 0.1
	Max. rush current[A] : 18
	Max. rush conductivity time[ms] : 12
Heating value	Inside panel[W] : 228
	Outside panel[W] : 614
Cooling method	Forced air cooling
Mass[kg]	25.5
AC reactor	DH-AL-75K
Selection example of contactor (option part)	S-N150-AC400V
	Free-air thermal current[A] : 200
	Selection current (for 380V input)[A] : 163
	Rated output[kW] : 75
Selection example of circuit protector (option part)	NF250-CW3P-200A
	Rated current[A] : 200
	Selection current (for 380V input)[A] : 163
	Rated output[kW] : 75

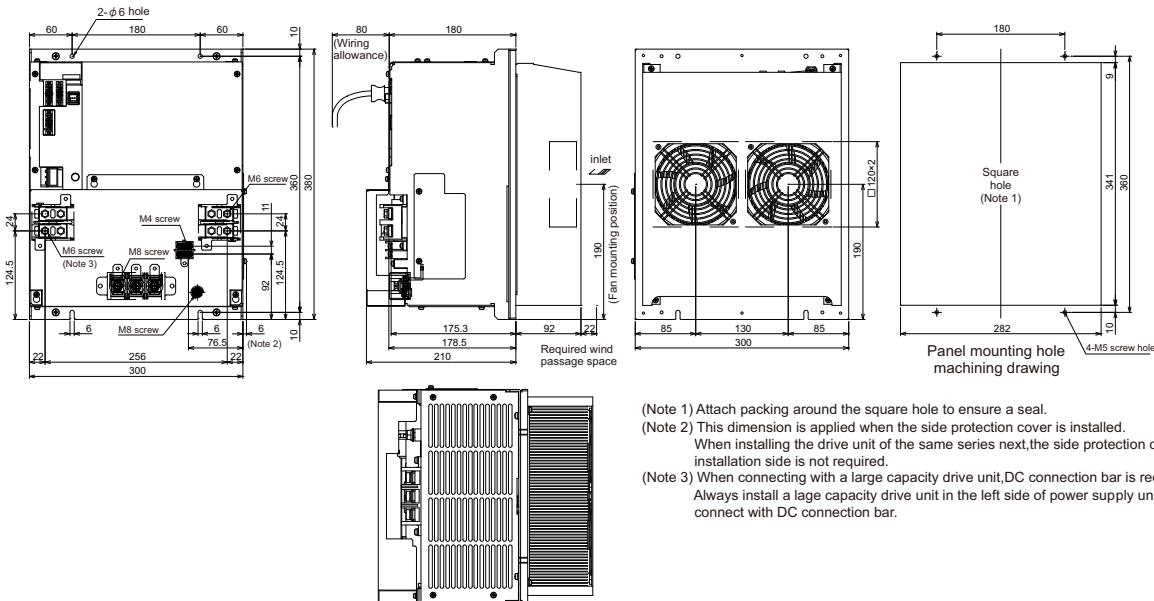


No.	Name	Description
(1)	LED	Unit status indication LED
(2)	SW1	Power supply setting switch
(3)	CN4	Servo/spindle communication connector (primary)
(4)	CN9	Servo/spindle communication connector (secondary)
(5)	CN41	Power backup unit communication connector
(6)	CN24	External emergency stop input connector
(7)	CN23	External contactor control connector
(8)	CHARGE	TE2 output charging/discharging circuit indication LED
(9)	TE2	Converter voltage output terminal (DC output)
(10)		
(11)	TE3	Control power input terminal (single-phase AC input)
(12)	TE1	Power input terminal (3-phase AC input)
(13)	PE	Grounding terminal

AC reactor



Outline dimension drawings [Unit : mm]



Environmental conditions

Item	Conditions
Ambient temperature	Operation: 0°C to +55°C (with no freezing) Storage/transportation: -15°C to +70°C (with no freezing)
Ambient humidity	Operation: 90% RH or less (with no dew condensation) Storage/transportation: 90% RH or less (with no dew condensation)
Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
Altitude	Operation/storage: 1000m or less above sea level Transportation: 13000m or less above sea level
Vibration/impact	4.9m/s ² (0.5G) / 49m/s ² (5G)

Recommended wire

Types	Terminal name					
	TE1(U, V, W, earth)		TE2(L+, L-)		TE3(L11, L21)	
	mm ²	AWG	mm ²	AWG	mm ²	AWG
600V vinyl insulated wire (IV wire) 60°C product (Example according to IEC/EN60204-1, UL508C)	-	-	Bar enclosed		2	14
600V double (heat proof) vinyl insulated wire (HIV wire) 75°C product (Example according to IEC/EN60204-1, UL508C)	60	1/0			2	14
600V bridge polyethylene insulated wire (IC) 105°C product (Example according to JEAC8001)	38	2			1.25 to 2	16 to 14

Dynamic Brake Unit (MDS-D-DBU)

The MDS-DH2-V1-160W and MDS-DH2-V1-200 or larger units do not have dynamic brakes built in, so install an external dynamic brake unit.

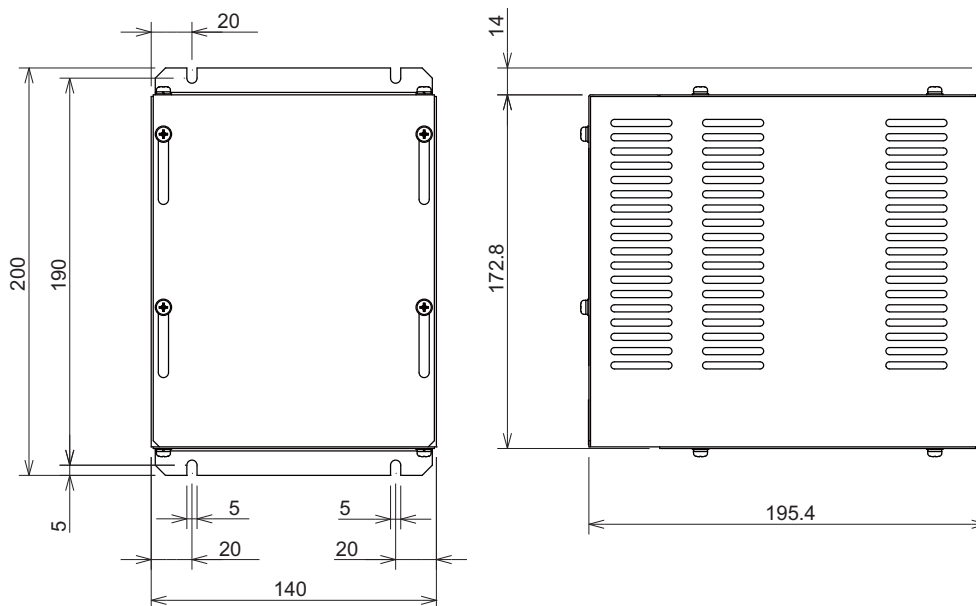
(1) Specifications

Type	Coil specifications	Wire size	Compatible drive unit	Mass (kg)
MDS-D-DBU	24VDC 160mA	5.5mm ² or more (For IV wire)	MDS-DH2-V1-160W, MDS-DH2-V1-200	3kg

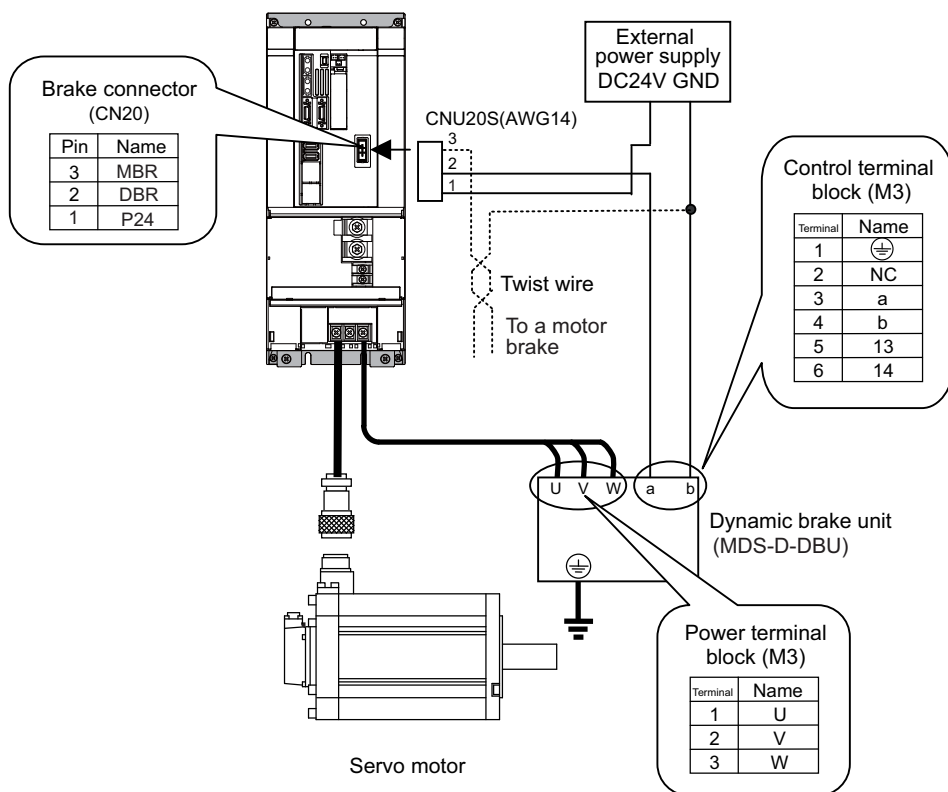
(2) Outline dimension drawings

MDS-D-DBU

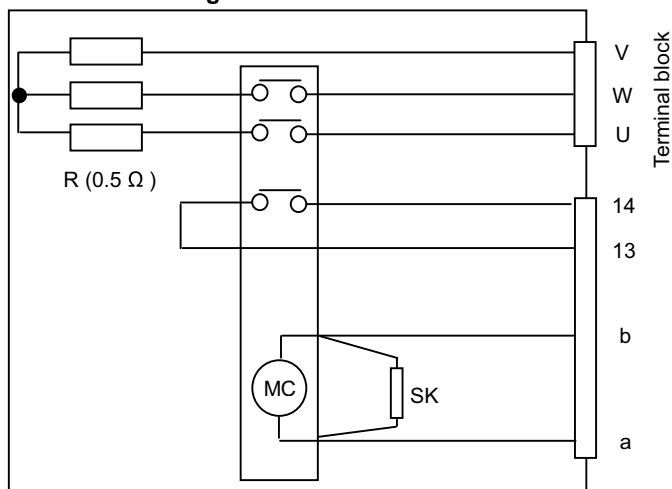
[Unit: mm]



(3) Connecting with the servo drive unit



Internal circuit diagram



CAUTION

Correctly wire the dynamic brake unit to the servo drive unit.

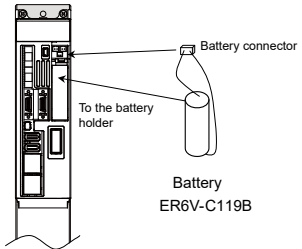
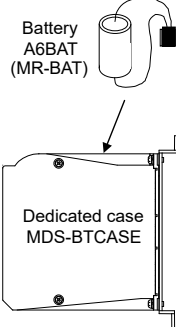
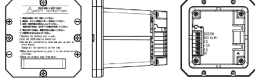
Do not use for applications other than emergencies (normal braking, etc.). The internal resistor could heat up, and lead to fires or faults.

POINT

When you use a motor with a brake, please wire (between 1pin and 3pin) for the CN20 connector.

Battery (ER6V-C119B, A6BAT, MDS-BTBOX-36)

This battery option may be required to establish absolute position system.

Type	ER6V-C119B	A6BAT(MR-BAT)	MDS-BTBOX-36
Installation type	Drive unit installation	Dedicated case type	Control panel installation
Hazard class	Not applicable	Not applicable (24 or less)	Not applicable
Number of connectable axes	Up to 3 axes	Up to 8 axes (When using dedicated case)	Up to 8 axes
Change method	Battery option change	Battery option change	Battery change
Appearance	(1) 	(2) 	(3) 

CAUTION

1. When transporting lithium batteries with means such as by air transport, measures corresponding to the United Nations Dangerous Goods Regulations must be taken.
2. The lithium battery must be transported according to the rules set forth by the International Civil Aviation Organization (ICAO), International Air Transportation Association (IATA), International Maritime Organization (IMO), and United States Department of Transportation (DOT), etc. The packaging methods, correct transportation methods, and special regulations are specified according to the quantity of lithium alloys. The battery unit exported from Mitsubishi is packaged in a container (UN approved part) satisfying the standards set forth in this UN Advisory.
3. To protect the absolute value, do not shut off the servo drive unit control power supply if the battery voltage becomes low (warning 9F).
4. The battery life (backup time) is greatly affected by the working ambient temperature. The above data is the theoretical value for when the battery is used 8 hours a day/240 days a year at an ambient temperature of 25°C. Generally, if the ambient temperature increases, the backup time and useful life will both decrease.

POINT

A6BAT is a battery with same specifications as MR-BAT.

(1) Cell battery (ER6V-C119B)

(a) Specifications

Battery option type	Cell battery ER6V-C119B	
Battery model name	ER6V	
Nominal voltage	3.6V	
Nominal capacity	2000mAh	
Battery safety	Hazard class	-
	Battery shape	Single battery
	Number of batteries used	ER6V x 1
	Lithium alloy content	0.7g
	Mercury content	1g or less
Number of connectable axes (Note 1)	Up to 3 axes (Note 1)	
Battery continuous backup time	Up to 2 axes: Approx. 10,000 hours 3 axes connected: Approx. 6,600 hours	
Battery useful life (From date of unit manufacture)	7 years	
Data save time in battery replacement	Approx. 20 hours at time of delivery, approx. 10 hours after 5 years	
Back up time from battery warning to alarm occurrence (Note 2)	Up to 2 axes: Approx. 100 hours 3 axes connected: Approx. 60 hours	
Mass	20g	

(Note 1) When using ball screw side encoder, both ball screw side encoder and motor side encoder need to be backed up by a battery, so the load becomes double.

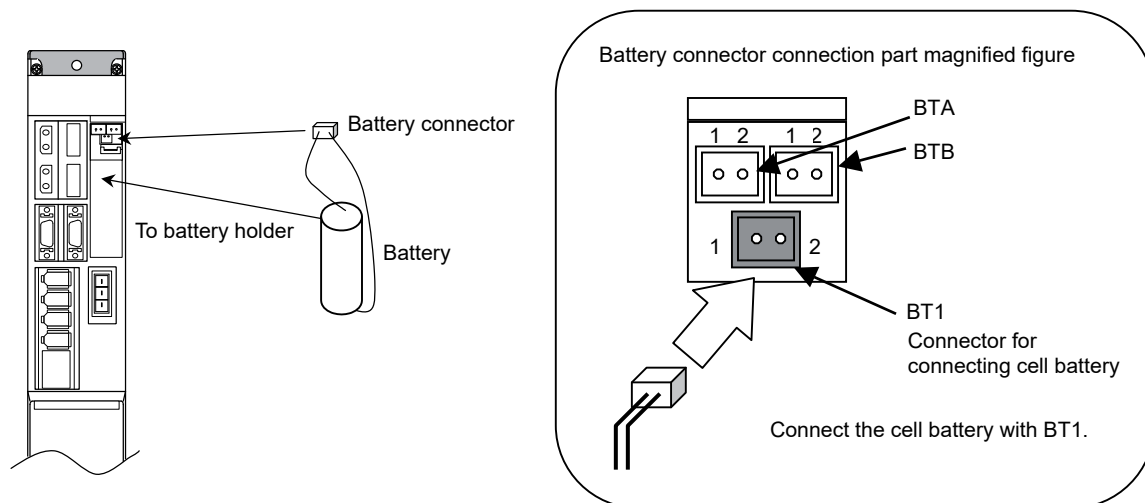
(Note 2) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery warning occurs.

(Note 3) A battery load is generated in the axis for which the incremental control is set when a battery is connected.

(b) Installing the cell battery

Open the upper front cover of the servo drive unit.

Connect the battery connector and then put the battery inside.



(Note) When using a cell battery, do not connect the battery unit and MDS-BTBOX-36.



POINT

When using a cell battery built-in drive unit, the wiring between units is not required. The cell battery can be changed in each drive unit.

(2) Cell battery (A6BAT)

Always use the cell battery (A6BAT) in combination with the dedicated case (MDS-BTCASE).

(a) Specifications

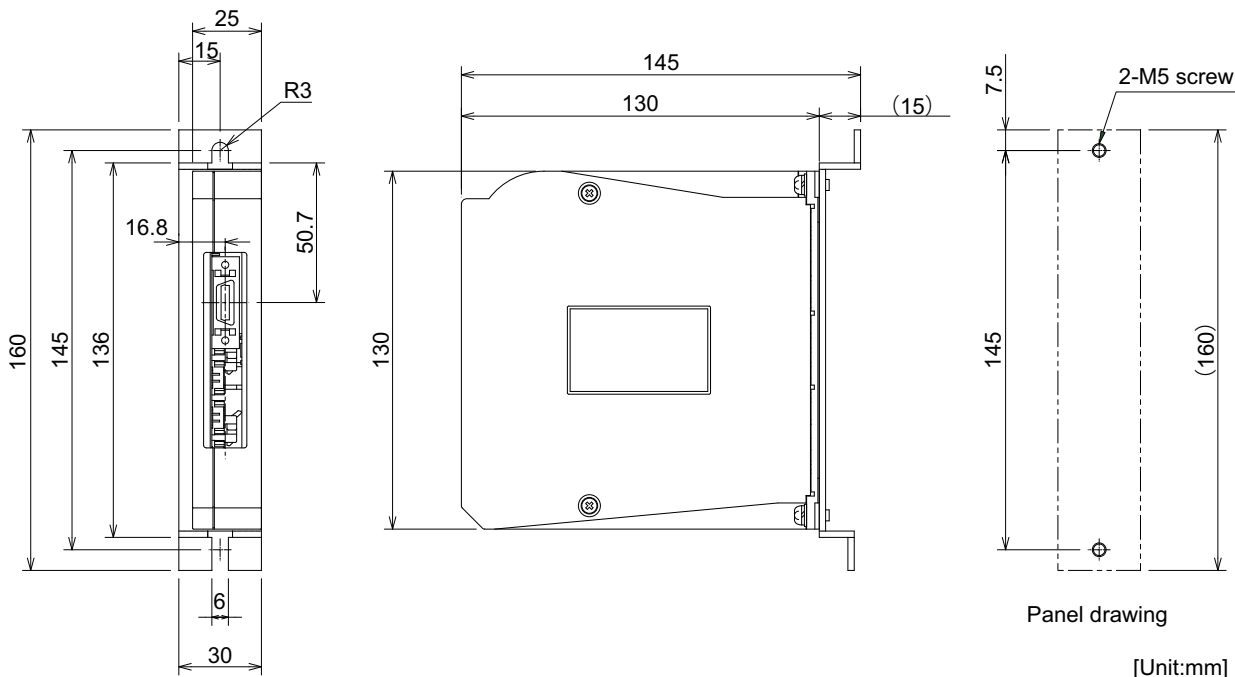
Battery option type		Cell battery
		A6BAT (MR-BAT)
Battery model name		ER17330V
Nominal voltage		3.6V
Nominal capacity		1700mAh
Battery safety	Hazard class	-
	Battery shape	Single battery
	Number of batteries used	A6BAT (MR-BAT) x 1
	Lithium alloy content	0.48g
	Mercury content	1g or less
Number of connectable axes		1 axis / (per 1 battery)
Battery continuous backup time		Approx. 10000 hours
Battery useful life (From date of unit manufacture)		5 years
Data save time in battery replacement		Approx. 20 hours at time of delivery, approx. 10 hours after 5 years
Back up time from battery warning to alarm occurrence (Note)		Approx. 80 hours
Mass		17g

(Note) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery warning occurs.

(b) Specifications of the dedicated case MDS-BTCASE

Type	MDS-BTCASE
Number of batteries installed	Up to 8 A6BATs (MR-BATs) (Install either 2, 4, 6 or 8 A6BATs (MR-BATs))
Number of connectable axes	Max. 8 axes (It varies depending on the number of batteries installed.) When A6BAT (MR-BAT) x 2, 1 to 2 axis/axes When A6BAT (MR-BAT) x 4, 3 to 4 axes When A6BAT (MR-BAT) x 6, 5 to 6 axes When A6BAT (MR-BAT) x 8, 7 to 8 axes

(c) Outline dimension drawing of the dedicated case MDS-BTCASE



(3) Battery box (MDS-BTBOX-36)

(a) Specifications

Battery option type	Battery box
	MDS-BTBOX-36
Battery model name (Note 1)	size-D alkaline batteries LR20 x 4 pieces
Nominal voltage	3.6V (Unit output), 1.5V (Isolated battery)
Number of connectable axes	Up to 8 axes
Battery continuous backup time (Note 3)	Approx. 10000 hours (when 8 axes are connected, cumulative time in non-energized state)
Back up time from battery warning to alarm occurrence (Note 3)	

(Note 1) Install commercially-available alkaline dry batteries into MDS-BTBOX-36. The batteries should be procured by customers. Make sure to use new batteries that have not passed the expiration date. We recommend you to replace the batteries in the one-year cycle.

(Note 2) When using ball screw side encoder, both ball screw side encoder and motor side encoder need to be backed up by a battery, so the load becomes double.

(Note 3) This time is a guideline, so does not guarantee the back up time. Replace the battery with a new battery as soon as a battery warning (9F) occurs.

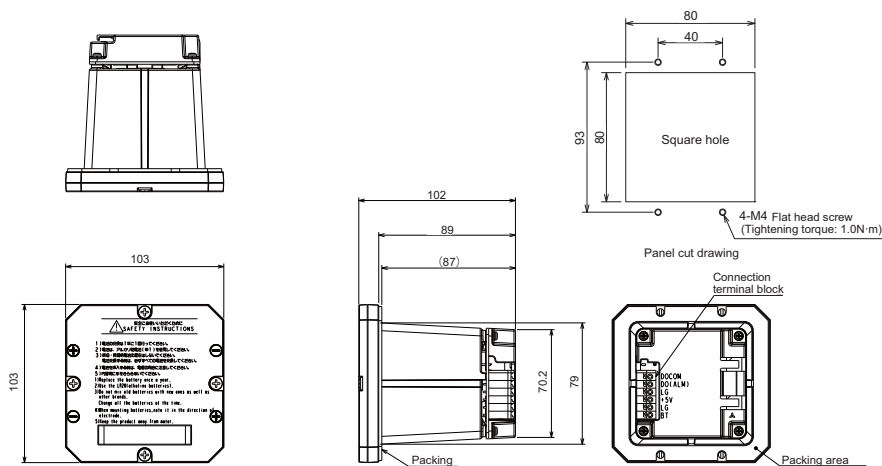
(Note 4) A battery load is generated in the axis for which the incremental control is set when a battery is connected.

(b) Explanation of terminals

	Name	Description
(1)	BT	3.6V output for absolute position encoder backup
(2)	LG	Ground
(3)	+5V	5V power supply input for battery voltage drop detection circuit
(4)	LG	Ground
(5)	DO(ALM)	Battery voltage drop warning output
(6)	DOCOM	DO output common

(c) Explanation of terminals

[Unit: mm]



POINT

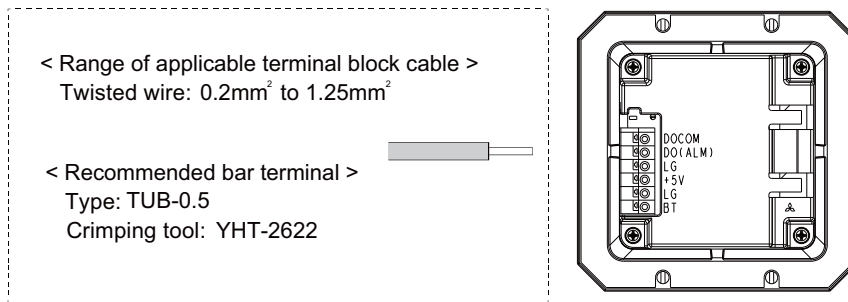
As soon as the battery warning has occurred, replace the batteries with new ones. Make sure to use new batteries that have not passed the expiration date. We recommend you to replace the batteries in the one-year cycle.

CAUTION

When installing the battery box on the panel, it may be damaged if the screw is tightened too much. Make sure the tightening torque of the screw.

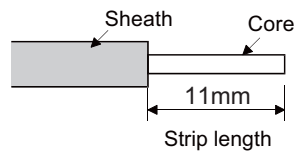
(d) Cable connection procedure

When connecting the terminal block, select a cable for the terminal block referring to the applicable size as a guide. Connect the cable by crimping the bare conductor or bar terminal. Do not pre-solder the wire.

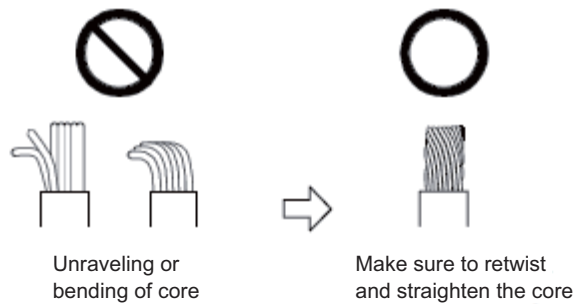


- Processing of power insulator

The strip length of the wire insulator should be 11mm.

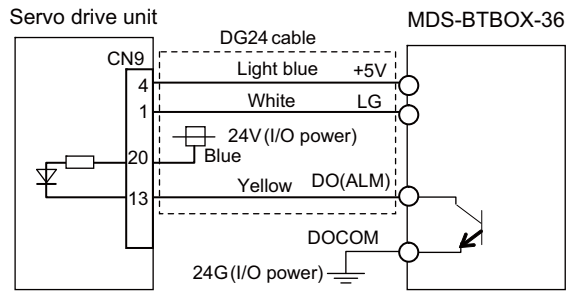


Retwist and straighten the core as shown below.



(e) Wiring of the battery voltage drop warning output

The battery voltage drop warning is detected in the MDS-BTBOX-36 and output to the servo drive unit as digital signal. Connect the battery voltage drop warning signal to one of the servo drive units supported by MDS-BTBOX-36. For the connected servo axis, set the servo parameter "SV082/bitF-C" to "2" to enable this signal input. When using 2 or 3-axis drive unit, set the value to one of the axes and set other axes in the same unit to "0" (No signal).



(f) When backing up for more than 8 axes

Add a MDS-BTBOX-36 so that the number of connectable axes for a battery unit is 8 axes or less.

For all of servo drive units supported by one MDS-BTBOX-36, start the control powers ON simultaneously.

CAUTION

1. The battery voltage drop warning signal and SLS (Safely Limited Speed) function door state signal cannot be connected to the same drive unit. To use these function together as a system, connect to the different drive unit.
2. Battery voltage drop warning (9F) can also occur when the cable between the battery box and drive unit is broken.
3. For 2-axis or 3-axis drive unit, the parameter error "E4" or drivers communication error "82" occurs at all the axes when the setting of SV082(SSF5)/bitF-C differs according to axes (except 0 setting).
4. The drive unit which is connected to the battery box and cell battery cannot be used together.
5. Replace the batteries with new ones without turning the control power of the drive unit OFF immediately after the battery voltage drop alarm (9F) has been detected.
6. Replace the batteries while applying the control power of all drive units which are connected to the battery box.
7. When changing the wiring of the CN9 control input, change after SV082(SSF5)/bitF-C is set to 0. Otherwise unexpected alarms can be detected because of a mismatch of the control input signal and setting parameter.

(4) Converged battery option

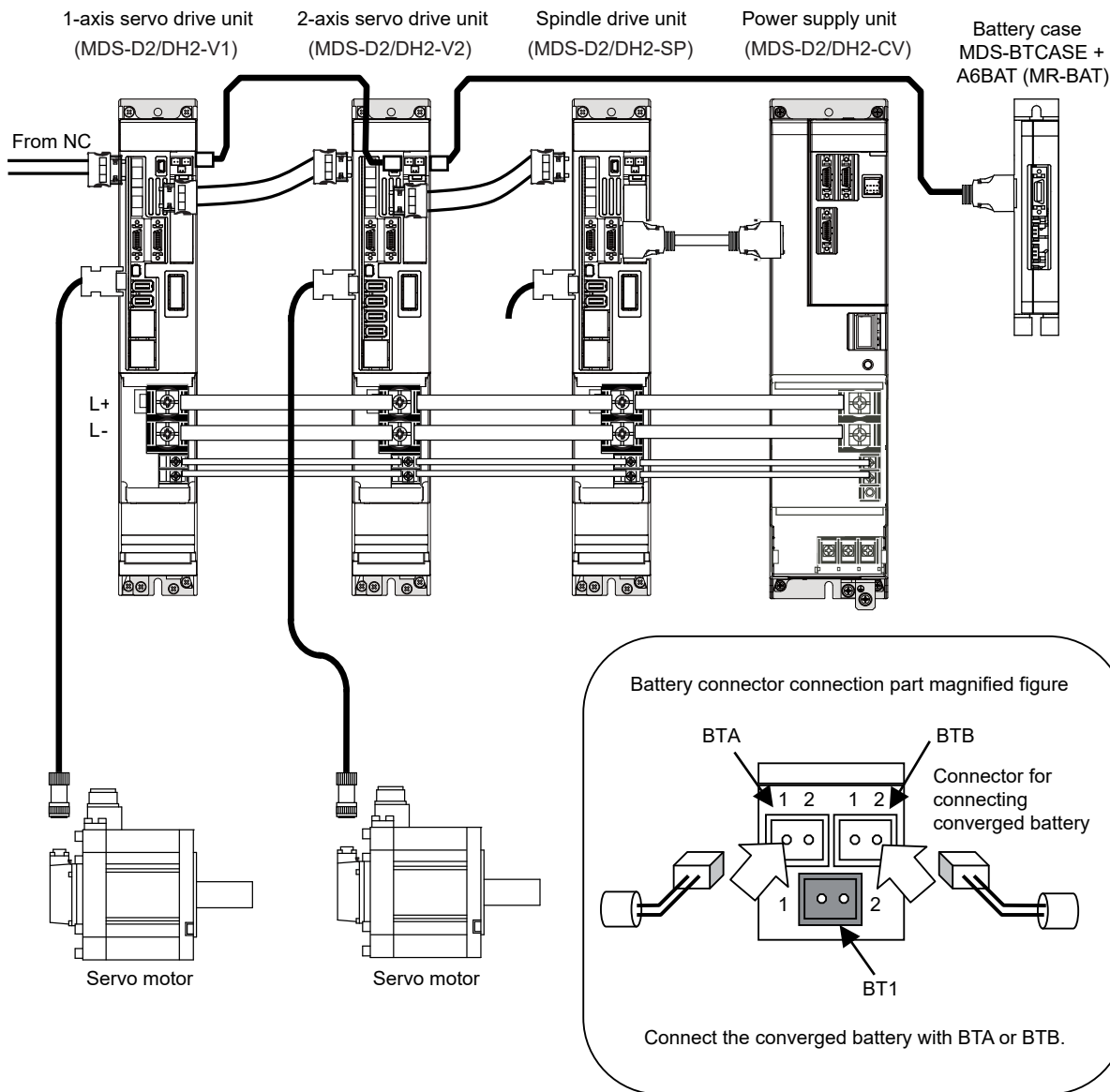
When using the following battery options, the wiring between units which configure an absolute position system is required.

Battery option type	Installation type	Battery charge
A6BAT (MR-BAT)	Dedicated case type (built-in MDS-BTCASE)	Possible
MDS-BTBOX-36	Unit and battery integration type	Possible

System configuration

<A6BAT(MR-BAT) Series>

(a) MDS-DH2 Series

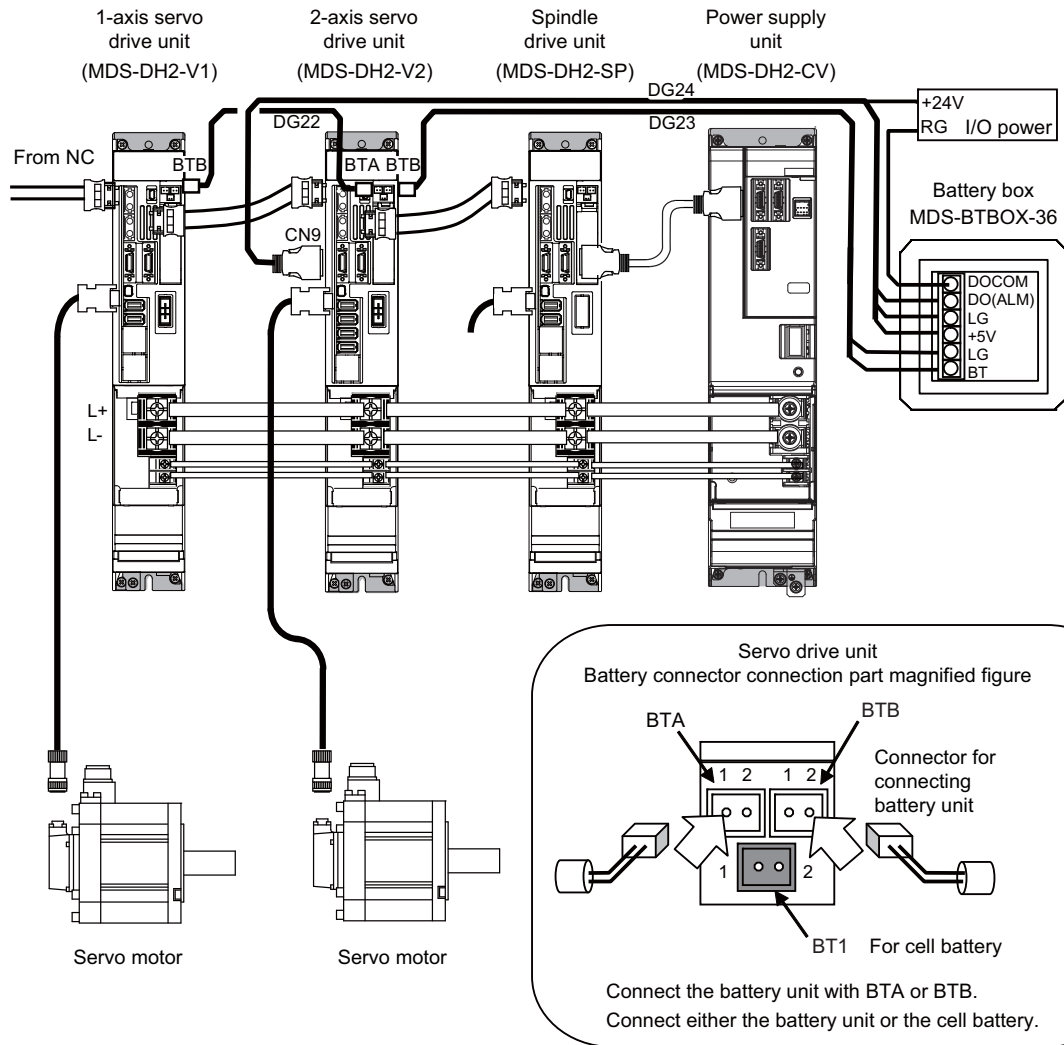


POINT

1. This wiring is not required for the drive unit or spindle drive unit which is not an absolute system.
2. Use a shield cable for wiring between drive units.
The drive unit could malfunction.

< MDS-BTBOX-36 >

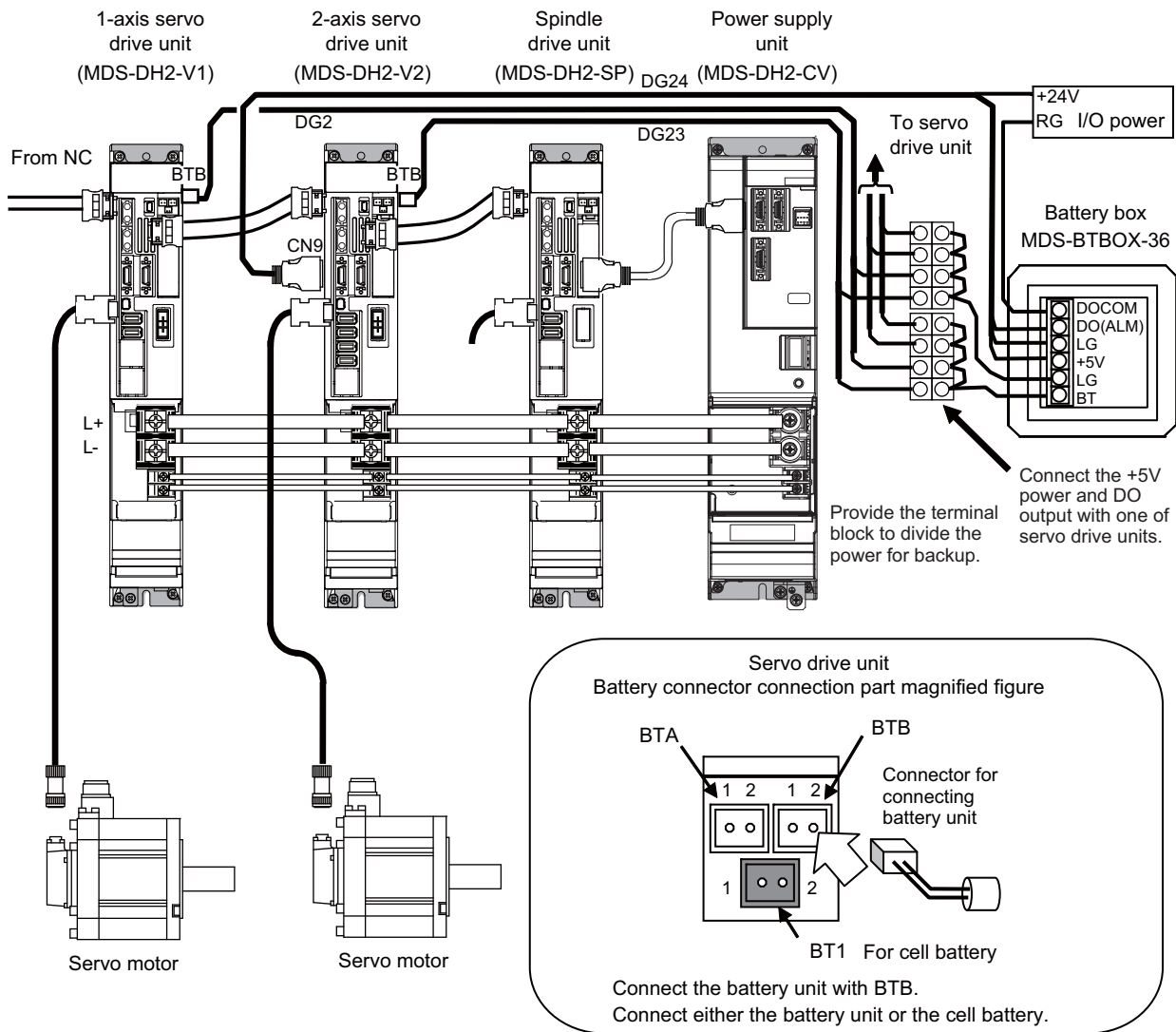
(a) MDS-DH2-V1/V2 Series connected in serial



CAUTION

1. 24V power for DO output must always be turned ON before the NC power input.
2. Spindle drive unit has no battery voltage drop warning function. Wiring to CN9 of drive unit must be always connected to servo drive unit.
3. The total length of battery cable (from the battery unit to the last connected drive unit) must be 30m or less.

(b) MDS-DH2-V1/V2 Series connected in parallel



CAUTION

1. 24V power for DO output must always be turned ON before the NC power input.
2. Spindle drive unit has no battery voltage drop warning function. Wiring to CN9 of drive unit must be always connected to servo drive unit.
3. The total length of battery cable (from the battery unit to the last connected drive unit) must be 30m or less.

Ball Screw Side Encoder (OSA105ET2A, OSA166ET2NA)

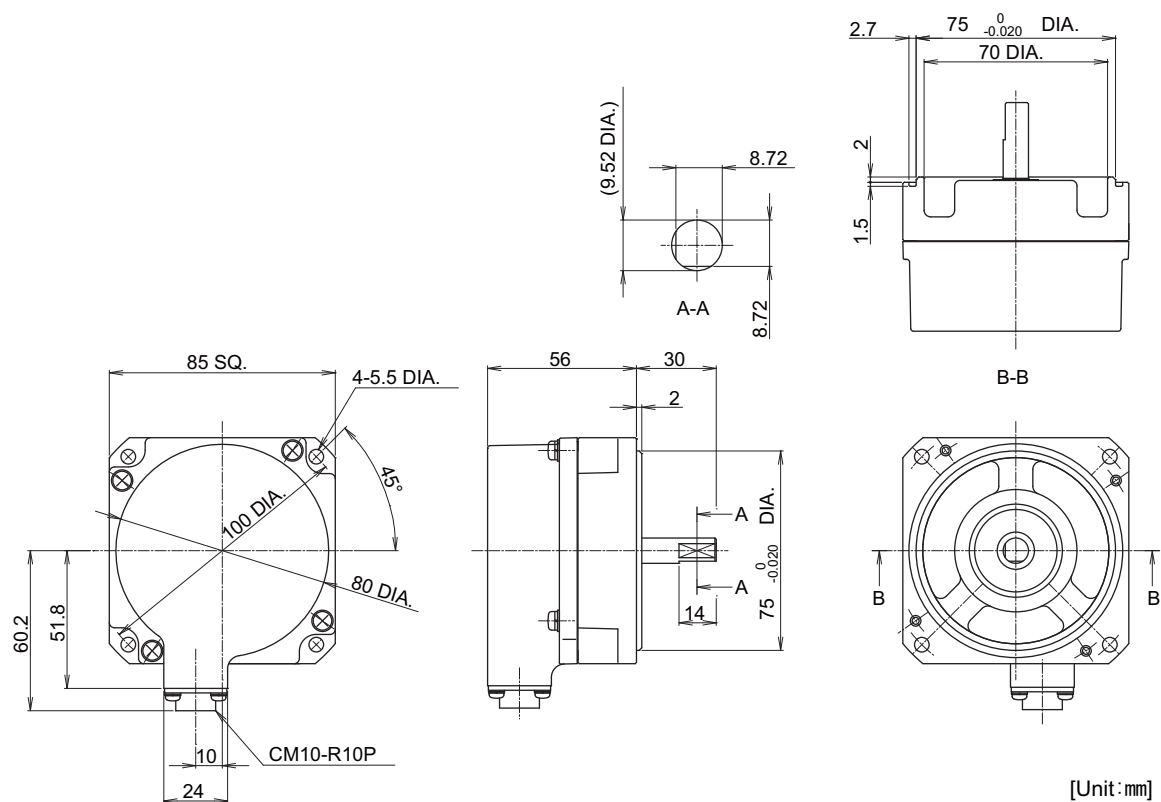
(1) Specifications

Encoder type		OSA105ET2A	OSA166ET2NA
Electrical characteristics	Encoder resolution	1,000,000 pulse/rev	16,000,000 pulse/rev
	Detection method	Absolute position method (battery backup method)	
	Accuracy (*1)	±3 seconds	
	Tolerable rotation speed at power off (*2)	500r/min	
	Encoder output data	Serial data	
	Power consumption	0.3A	
Mechanical characteristics for rotation	Inertia	$0.5 \times 10^{-4} \text{kgm}^2$ or less	
	Shaft friction torque	0.1Nm or less	
	Shaft angle acceleration	$4 \times 10^4 \text{rad/s}^2$ or less	
	Tolerable continuous rotation speed	4000r/min	
Mechanical configuration	Shaft amplitude (position 15mm from end)	0.02mm or less	
	Tolerable load (thrust direction/radial direction)	9.8N/19.8N	
	Mass	0.6kg	
	Degree of protection	IP65 (The shaft-through portion is excluded.)	
	Recommended coupling	bellows coupling	
Working environment	Ambient temperature	0°C to +55°C	
	Storage temperature	-20°C to +85°C	
	Humidity	95%Ph	
	Vibration resistance	5 to 50Hz, total vibration width 1.5mm, each shaft for 30min	
	Impact resistance	490m/s ² (50G)	

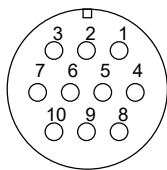
(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed.

(*2) If the tolerable rotation speed at power off is exceeded, the absolute position cannot be repaired.

(2) Outline dimension drawings
OSA105ET2A / OSA166ET2NA



(3) Explanation of connectors

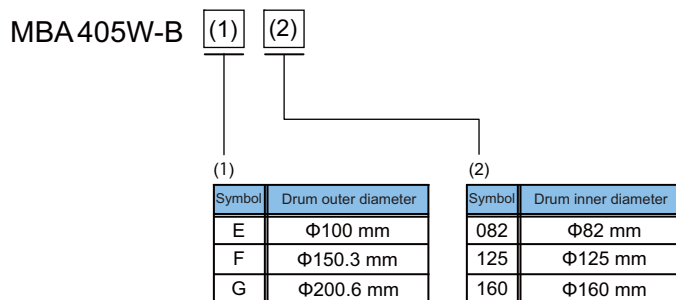


Connector pin layout

Pin	Function	Pin	Function
1	RQ	6	SD
2	RQ*	7	SD*
3	-	8	P5(+5V)
4	BAT	9	-
5	LG(GND)	10	SHD

Twin-head Magnetic Encoder (MBA Series)

(1) Type description



(2) Specifications

Encoder type		MBE405W-BE082	MBE405W-BF125	MBE405W-BG160
Electrical characteristics	Encoder resolution	4,000,000p/rev		
	Detection method	Absolute position method (battery backup method)		
	Accuracy (*1) (*2)	±4 seconds	±3 seconds	±2 seconds
	Wave number within one rotation	512 waves	768 waves	1024 waves
	Encoder output data	Serial data		
	Power consumption	0.2A or less		
Mechanical characteristics for rotation	Inertia	$0.5 \times 10^{-3} \text{kg} \cdot \text{m}^2$	$2.4 \times 10^{-3} \text{kg} \cdot \text{m}^2$	$8.7 \times 10^{-3} \text{kg} \cdot \text{m}^2$
	Tolerable continuous rotation speed	3000r/min	2000r/min	1500r/min
Mechanical configuration	Drum inner diameter	Φ82mm	Φ125mm	Φ160mm
	Drum outer diameter	Φ100mm	Φ150.3mm	Φ200.6mm
	Drum mass	0.2kg	0.46kg	1.0kg
	Degree of protection (*3)	IP67		
Working environment	Ambient temperature range	0°C to +55°C		
	Storage temperature range	-20°C to +85°C		
	Humidity	95%RH		
	Vibration resistance	Horizontal direction to the axis: 5G or less, Vertical direction to the axis: 5G or less		
	Impact resistance	490m/s ² (50G)		

(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed.

(*2) The user is requested to install the magnetic drum and installation ring in the encoder within the accuracy range specified herein. Even when the accuracy of the encoder when shipped and when installed by the user is both within the specified range, there is a difference in the installation position. Therefore, the accuracy at the time of our shipment may not be acquired.

(*3) It is the degree of protection when fitted with a connector.

(3) Specifications of preamplifier

Item	Specified value
Output communication style	High-speed serial communication I/F
Working ambient temperature	0°C to +55°C
Working ambient humidity	90%RH or less (with no dew condensation)
Atmosphere	No toxic gases
Tolerable vibration	Horizontal direction to the axis: 5G or less, Vertical direction to the axis: 5G or less
Tolerable impact	490m/s ² (50G)
Tolerable power voltage	DC5V±10%
Mass	0.33kg
Degree of protection (*2)	IP67

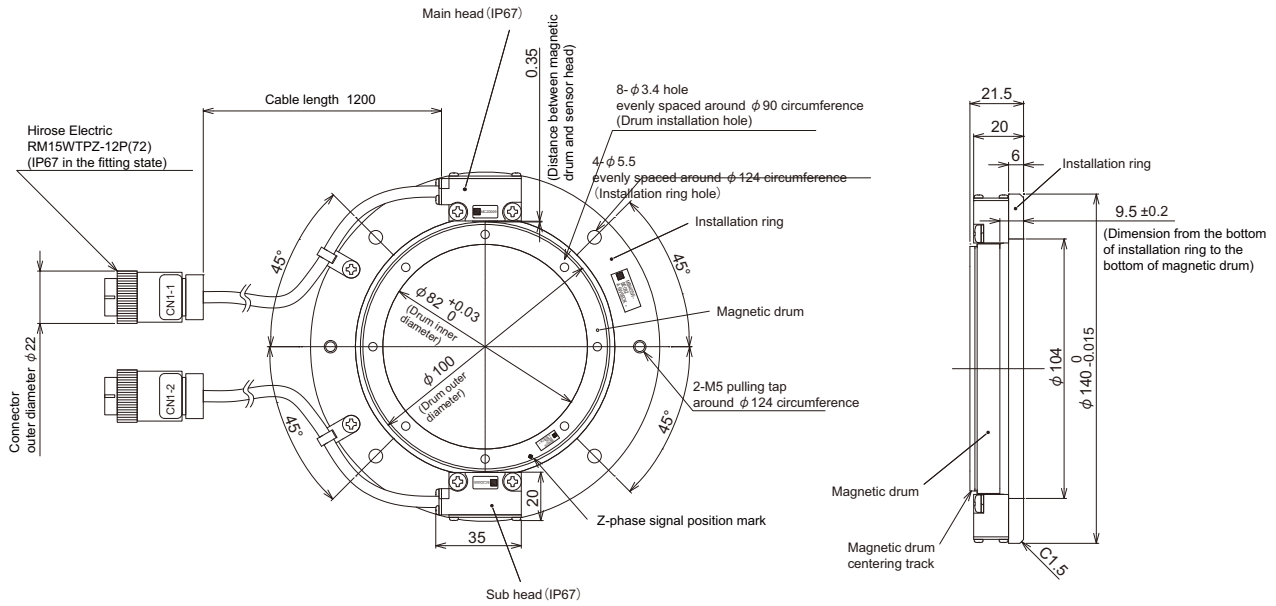
(*1) The values above are the specified values for the preamplifier provided with a twin-head magnetic encoder.

(*2) It is the degree of protection when fitted with a connector.

(4) Outline dimension drawing

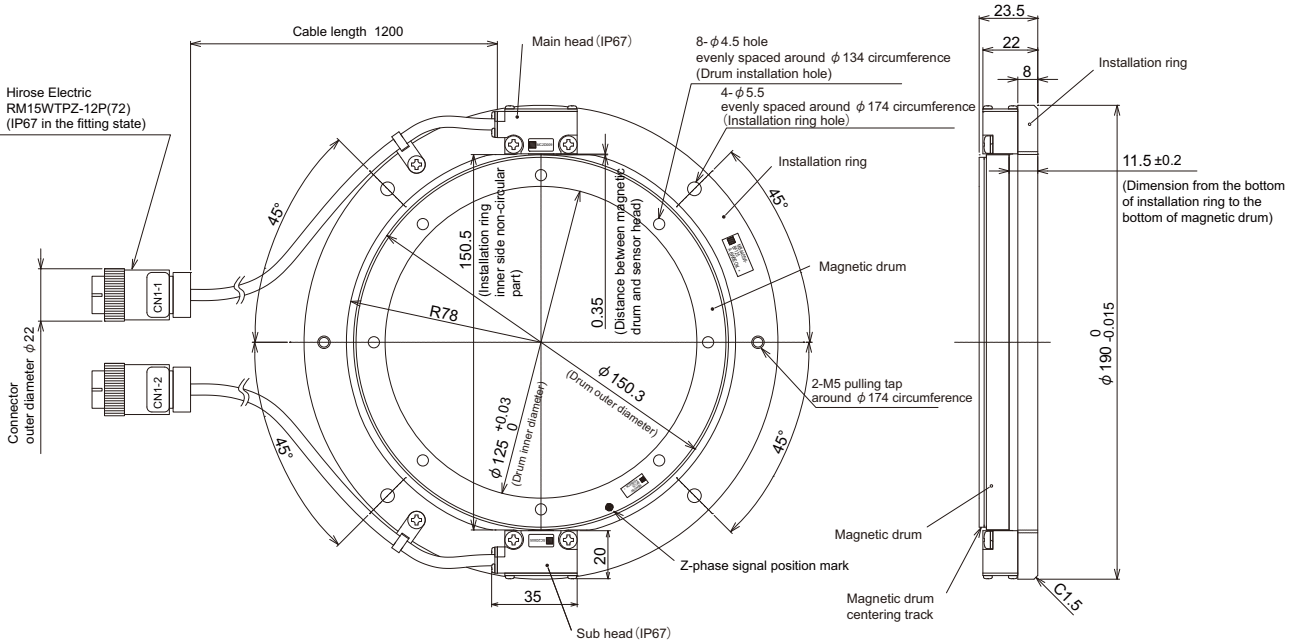
< MBA405W-BE082 >

[Unit: mm]



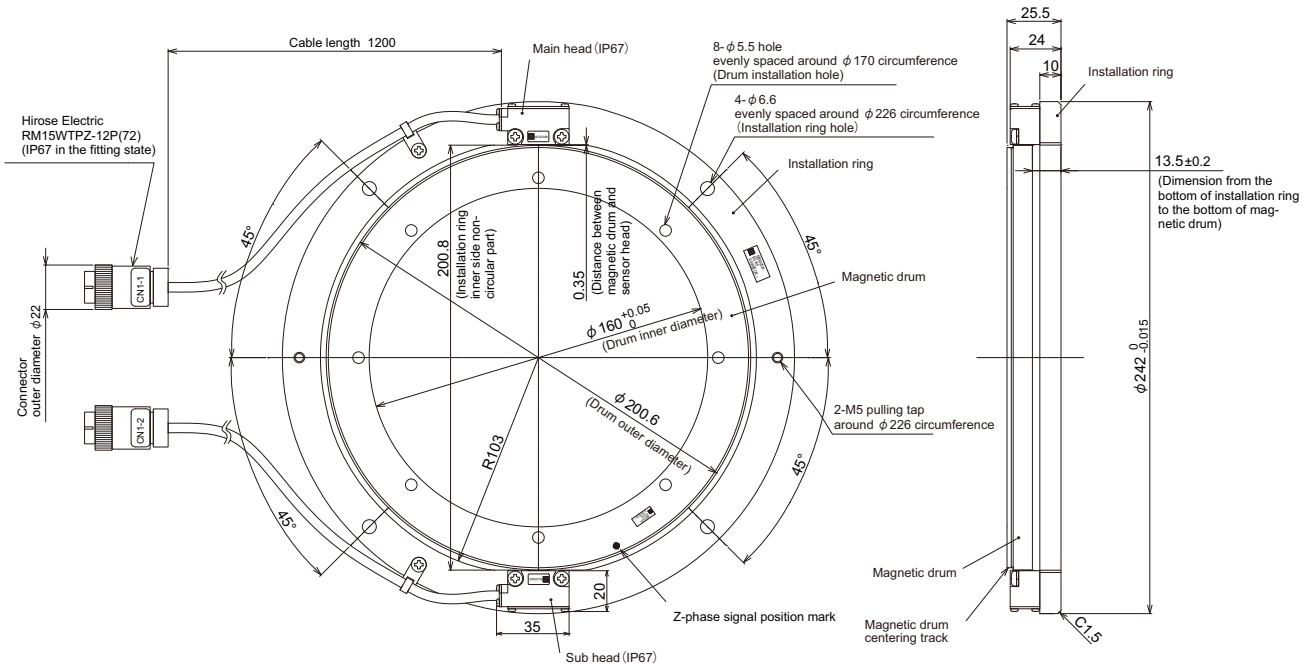
< MBA405W-BF125 >

[Unit: mm]



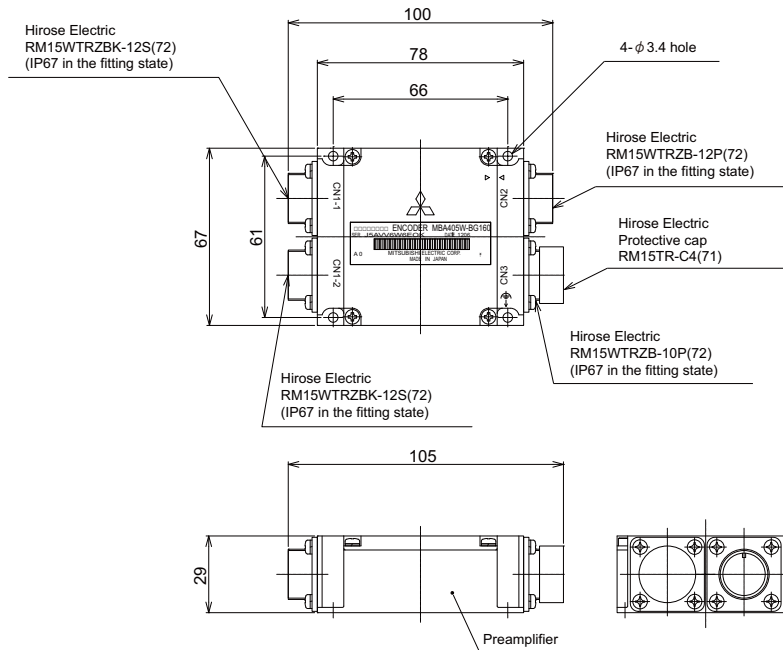
< MBA405W-BG160 >

[Unit: mm]



< Preampifier (common) >

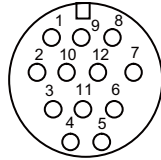
[Unit: mm]



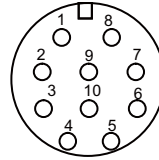
< Explanation of connectors >

Connector name	Application
CN1-1	For connection with scale (main head)
CN1-2	For connection with scale (sub head)
CN2	For connection with servo drive unit
CN3	For connection with motor thermistor

< Connector pin layout >



CN2 < Drive unit >



CN3 < Thermistor >

Pin No.	Function	Pin No.	Function
1	-	1	-
2	BT	2	-
3	SD	3	MT1-i
4	SD*	4	-
5	SHD	5	-
6	MT1	6	-
7	RQ	7	-
8	RQ*	8	-
9	P5	9	MT2-i
10	LG	10	-
11	MT2	11	-
12	CNT	12	-

Encoder for Spindle Motor

(1) No-variable speed control

(When spindle and motor are directly coupled or coupled with a 1:1 gear ratio)

Spindle control item	Control specifications	Without spindle side encoder	With spindle side encoder
Spindle control	Normal cutting control	●	This normally is not used for no-variable speed control.
	Constant surface speed control (lathe)	●	
	Thread cutting (lathe)	●	
Orientation control	1-point orientation control	●	
	Multi-point orientation control	●	
	Orientation indexing	●	
Synchronous tap control	Standard synchronous tap	●	
	Synchronous tap after zero point return	●	
Spindle synchronous control	Without phase alignment function	●	
	With phase alignment function	●	
C-axis control	C-axis control	● (Note 2)	●

(Note 1) ● :Control possible

x :Control not possible

(Note 2) When spindle and motor are coupled with a 1:1 gear ratio, use of a spindle side encoder is recommended to assure the precision.

(2) Variable speed control

(When using V-belt, or when spindle and motor are connected with a gear ratio other than 1:1)

Spindle control item	Control specifications	Without spindle side encoder	With spindle side encoder		
			TS5690/ERM280/MPCI/MBE405W Series	OSE-1024	Proximity switch
Spindle control	Normal cutting control	●	●	●	●
	Constant surface speed control (lathe)	● (Note 2)	●	●	● (Note 2)
	Thread cutting (lathe)	x	●	●	x
Orientation control	1-point orientation control	x	●	●	● (Note 4)
	Multi-point orientation control	x	●	●	x
	Orientation indexing	x	●	●	x
Synchronous tap control	Standard synchronous tap	● (Note 3)	●	●	● (Note 3)
	Synchronous tap after zero point return	x	●	●	x
Spindle synchronous control	Without phase alignment function	● (Note 2)	●	●	● (Note 2)
	With phase alignment function	x	●	●	x
C-axis control	C-axis control	x	●	x	x

(Note 1) ● :Control possible

x :Control not possible

(Note 2) Control not possible when connected with the V-belt.

(Note 3) Control not possible when connected with other than the gears.

(Note 4) Orientation is carried out after the spindle is stopped when a proximity switch is used.

As for 2-axis spindle drive unit, setting is available only for one of the axes.

Spindle Side ABZ Pulse Output Encoder (OSE-1024 Series)

When a spindle and motor are connected with a V-belt, or connected with a gear ratio other than 1:1, use this spindle side encoder to detect the position and speed of the spindle. Also use this encoder when orientation control and synchronous tap control, etc are executed under the above conditions.

(1) Specifications

Encoder type		OSE-1024-3-15-68	OSE-1024-3-15-68-8
Mechanical characteristics for rotation	Inertia	0.1x10 ⁻⁴ kgm ² or less	0.1x10 ⁻⁴ kgm ² or less
	Shaft friction torque	0.98Nm or less	0.98Nm or less
	Shaft angle acceleration	10 ⁴ rad/s ² or less	10 ⁴ rad/s ² or less
	Tolerable continuous rotation speed	6000 r/min	8000 r/min
Mechanical configuration	Bearing maximum non-lubrication time	20000h/6000r/min	20000h/8000r/min
	Shaft run-out (position 15mm from end)	0.02mm or less	0.02mm or less
	Tolerable load (thrust direction/radial direction)	10kg/20kg Half of value during operation	10kg/20kg Half of value during operation
	Mass	1.5kg	1.5kg
	Degree of protection	IP54	
	Squareness of flange to shaft	0.05mm or less	
	Flange matching eccentricity	0.05mm or less	
Working environment	Ambient temperature range	-5°C to +55°C	
	Storage temperature range	-20°C to +85°C	
	Humidity	95%Ph	
	Vibration resistance	5 to 50Hz, total vibration width 1.5mm, each shaft for 30min.	
	Impact resistance	294.20m/s ² (30G)	

(2) Detection signals

Signal name	Number of detection pulses
A, B phase	1024p/rev
Z phase	1p/rev

Connector pin layout

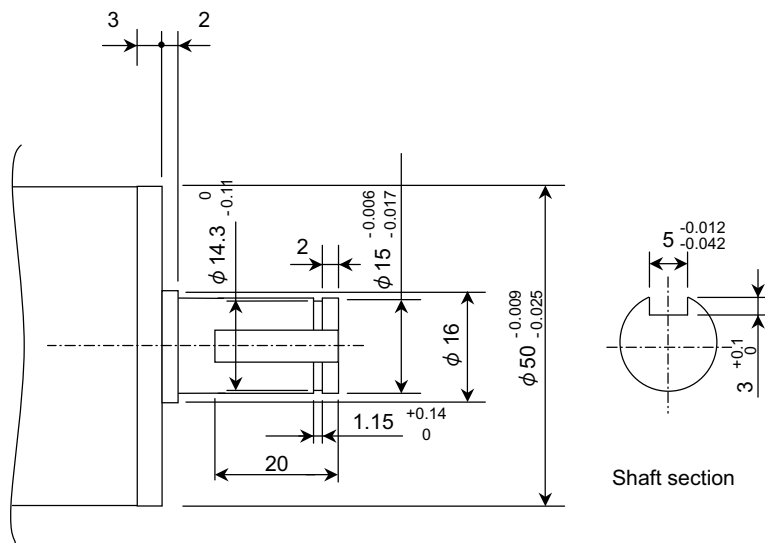
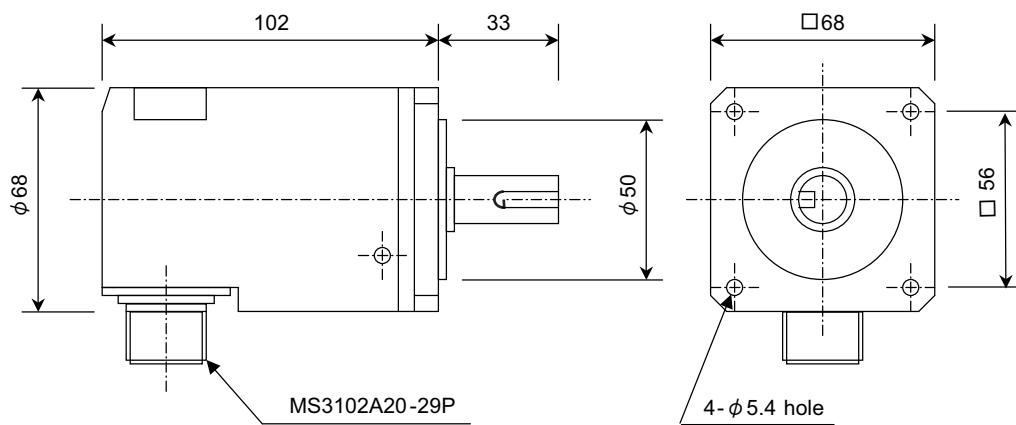
Pin	Function	Pin	Function
A	A+ signal	K	0V
B	Z+ signal	L	-
C	B+ signal	M	-
D	-	N	A- signal
E	Case earth	P	Z- signal
F	-	R	B- signal
G	-	S	-
H	+5V	T	-
J	-		

 **CAUTION**

Cautions for connecting the spindle end with an OSE-1024 encoder

1. Confirm that the gear ratio (pulley ratio) of the spindle end to the encoder is 1:1.
2. Use a timing belt when connecting by a belt.

(3) Outline dimension drawings



Key way magnified figure

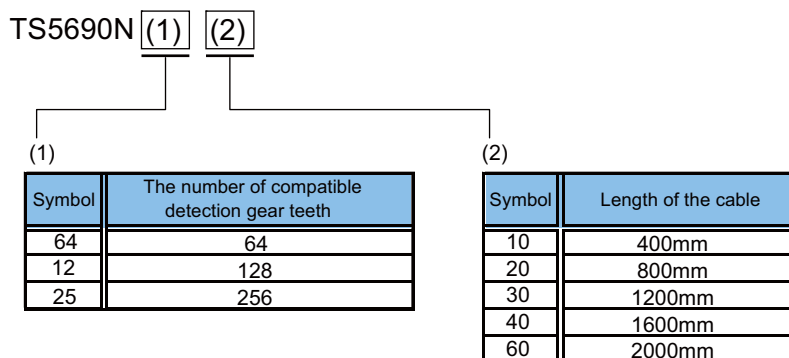
[Unit: mm]

Spindle side encoder (OSE-1024-3-15-68, OSE-1024-3-15-68-8)

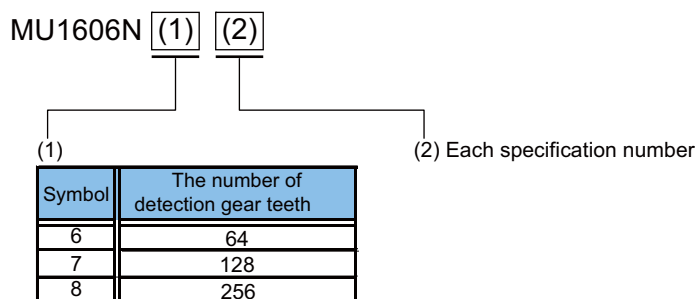
Spindle Side PLG Serial Output Encoder (TS5690, MU1606 Series)

This encoder is used when a more accurate synchronous tapping control or C-axis control than OSE encoder is performed to the spindle which is not directly-connected to the spindle motor.

- (1) Type configuration
< Sensor type >



- < Detection gear type >



- (2) Specifications

Sensor	Series type	TS5690N64xx					TS5690N12xx					TS5690N25xx				
	xx (The end of the type name)	10	20	30	40	60	10	20	30	40	60	10	20	30	40	60
	Length of lead [mm]	400 ±10	800 ±20	1200 ±20	1600 ±30	2000 ±30	400 ±10	800 ±20	1200 ±20	1600 ±30	2000 ±30	400 ±10	800 ±20	1200 ±20	1600 ±30	2000 ±30
Detection gear	Type	MU1606N601					MU1606N709					MU1606N805				
	The number of teeth	64					128					256				
	Outer diameter [mm]	Φ52.8					Φ104.0					Φ206.4				
	Inner diameter [mm]	Φ40H5					Φ80H5					Φ140H5				
	Thickness [mm]	12					12					14				
Notched fitting section	Shrink fitting [mm]	0.020 to 0.040					0.030 to 0.055					0.050 to 0.085				
	Outer diameter [mm]	Φ72.0					Φ122.0					Φ223.6				
The number of output pulse	Outer diameter tolerance [mm]	+0.010 to +0.060					-0.025 to +0.025					-0.025 to +0.025				
	A/B phase	64					128					256				
	Z phase	1					1					1				
	Detection resolution [p/rev]	2 million					4 million					8 million				
	Absolute accuracy at stop	150"					100"					95"				
	Tolerable speed [r/min]	40,000					20,000					10,000				
	Signal output	Mitsubishi high-speed serial														

CAUTION

1. Selected encoders must be able to tolerate the maximum rotation speed of the spindle.
2. Please contact your Mitsubishi Electric dealer for the special products not listed above.

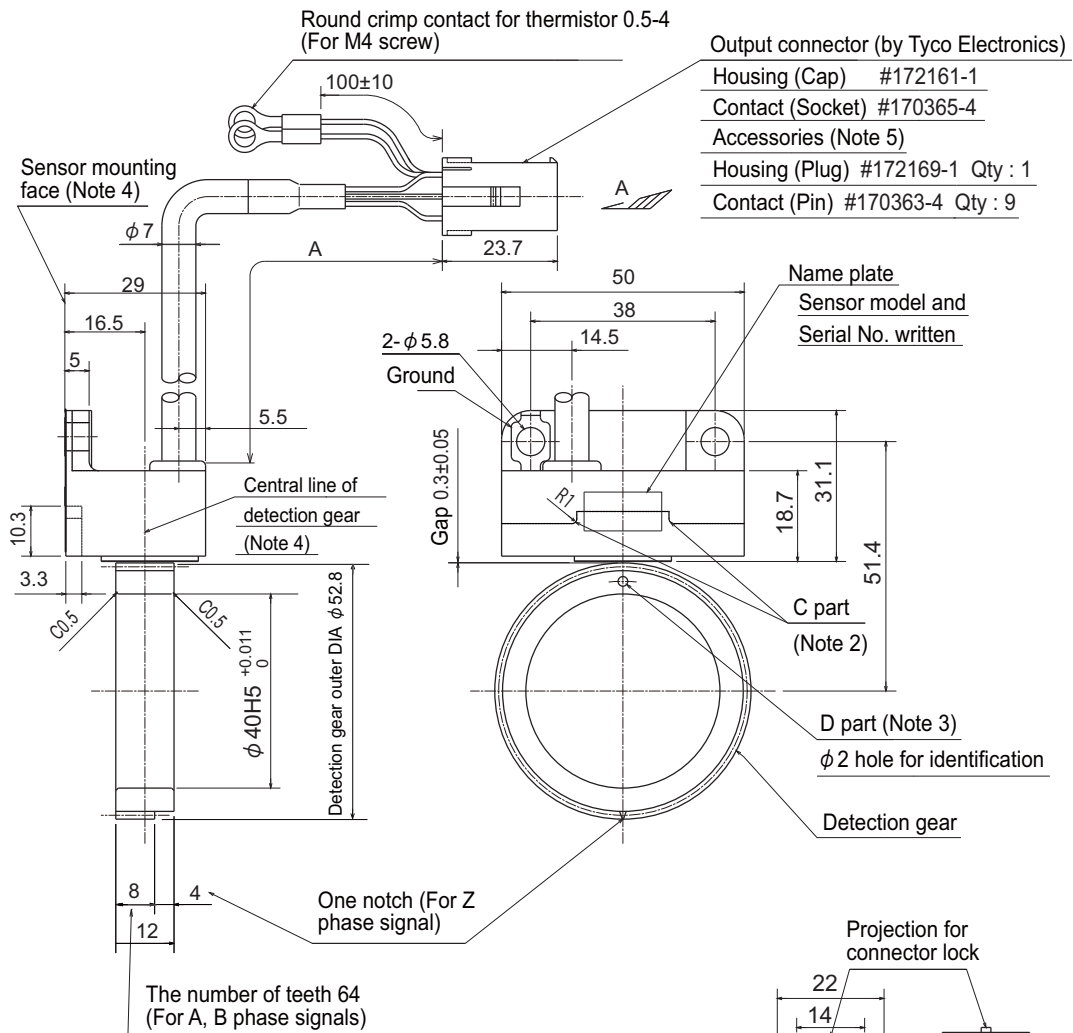
(3) Outline dimension drawings

CAUTION

Always apply the notched fitting section machining with the specified dimensions to the sensor installation surface.

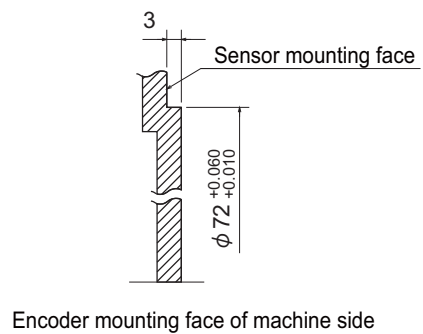
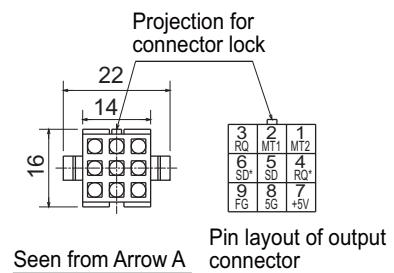
< TS5690N64xx + MU1606N601 >

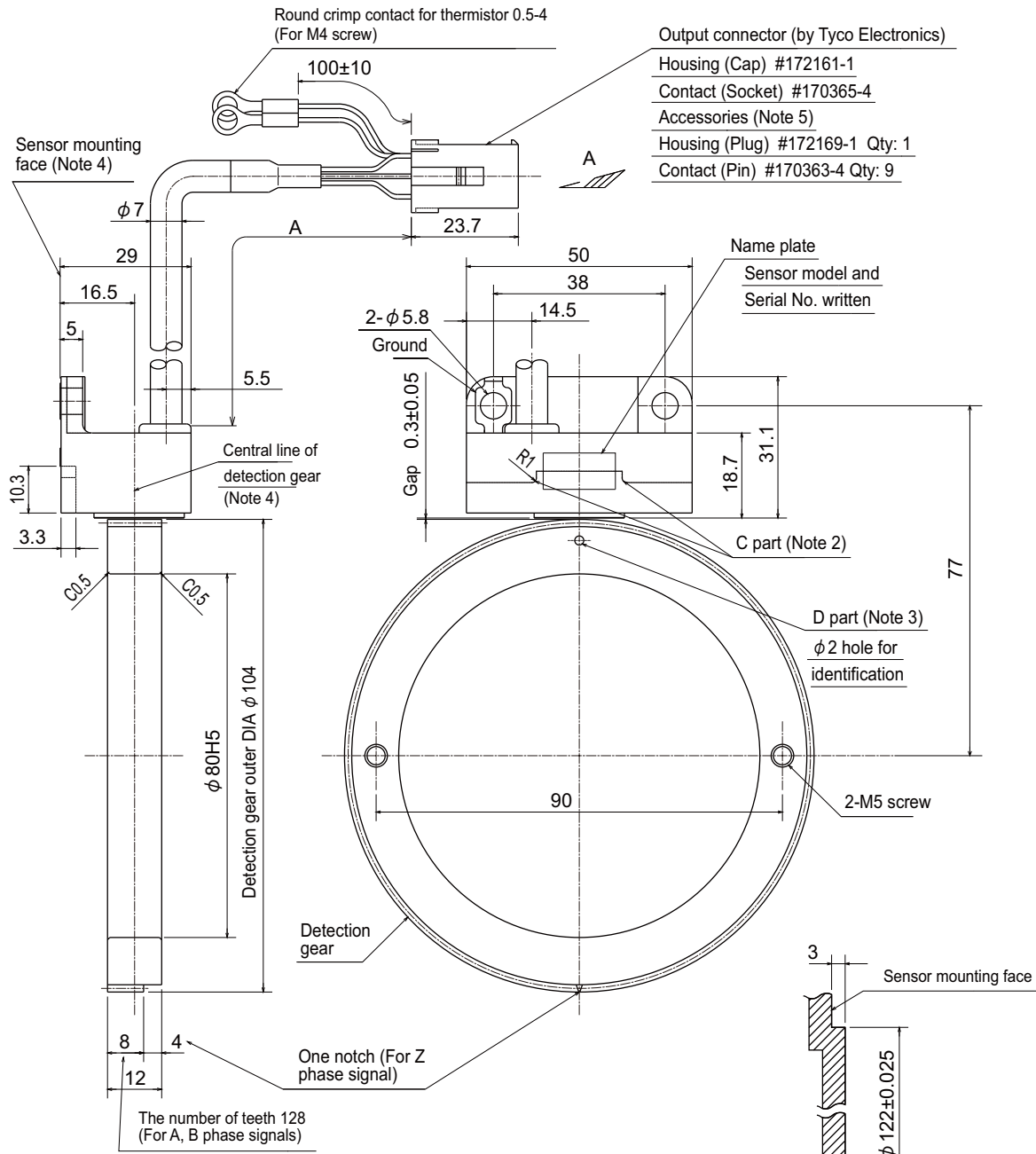
[Unit: mm]



- (Note 1) Handle with care as this is a precision component. Pay special attention not to apply excessive external force on the sensor's detection face. Applying such force will cause a fault.
- (Note 2) In installing the sensor, keep the protruding fitting of $\phi 72^{+0.060}_{+0.010}$ mm on the machine side, and push the C part of the sensor mounting seat against the fitting.
- (Note 3) In installing the detection gear, make sure that the D part side comes the opposite side of the sensor installation side (sensor's lead wire side).
- (Note 4) The deviation of the center of the detection gear is 16.5±0.25mm from the sensor mounting face.
- (Note 5) A connector of the signal cable side (one plug and nine pins) is attached.

Sensor		Detection gear
Parts name	Lead wire length A [mm]	Parts name
TS5690N6410	400±10	MU1606N601
TS5690N6420	800±20	
TS5690N6430	1200±20	
TS5690N6440	1600±30	
TS5690N6460	2000±30	



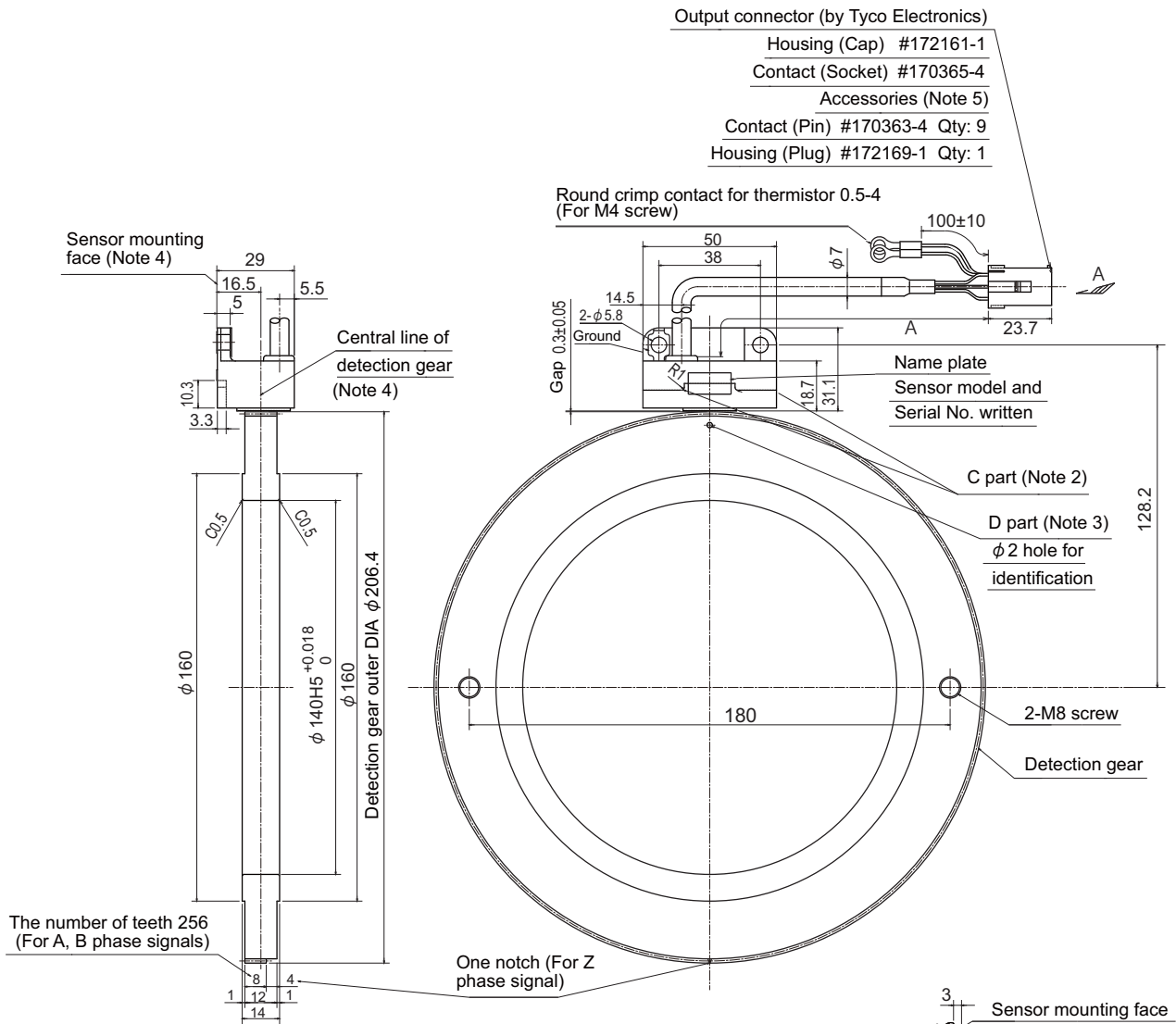


- (Note 1) Handle with care as this is a precision component. Pay special attention not to apply excessive external force on the sensor's detection face. Applying such force will cause a fault.
- (Note 2) In installing the sensor, keep the protruding fitting of $\phi 122 \pm 0.025$ mm on the machine side, and push the C part of the sensor mounting seat against the fitting.
- (Note 3) In installing the detection gear, make sure that the D part side comes the opposite side of the sensor installation side (sensor's lead wire side).
- (Note 4) The deviation of the center of the detection gear is 16.5 ± 0.25 mm from the sensor mounting face.
- (Note 5) A connector of the signal cable side (one plug and nine pins) is attached.

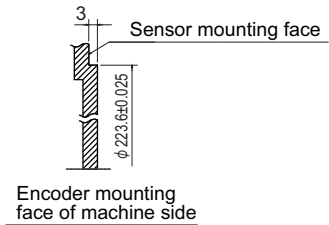
Sensor		Detection gear
Parts name	Lead wire length A [mm]	Parts name
TS5690N1210	400±10	MU1606N709
TS5690N1220	800±20	
TS5690N1230	1200±20	
TS5690N1240	1600±30	
TS5690N1260	2000±30	

< TS5690N25xx + MU1606N805 >

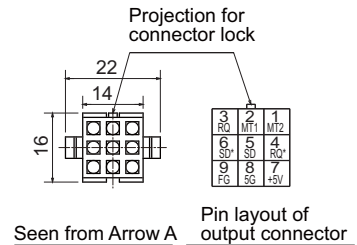
[Unit: mm]



- (Note 1) Handle with care as this is a precision component. Pay special attention not to apply excessive external force on the sensor's detection face. Applying such force will cause a fault.
- (Note 2) In installing the sensor, keep the protruding fitting of $\phi 223.6 \pm 0.025$ mm on the machine side, and push the C part of the sensor mounting seat against the fitting.
- (Note 3) In installing the detection gear, make sure that the D part side comes the opposite side of the sensor installation side (sensor's lead wire side).
- (Note 4) The deviation of the center of the detection gear is 16.5 ± 0.25 mm from the sensor mounting face.
- (Note 5) A connector of the signal cable side (one plug and nine pins) is attached.

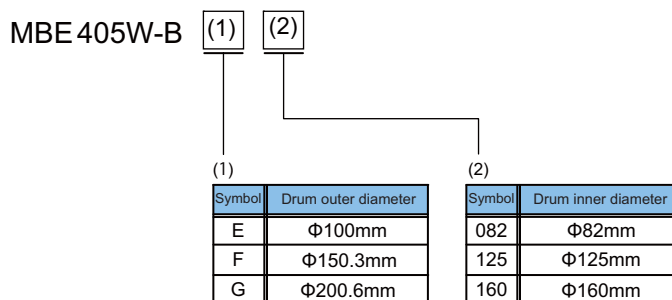


Sensor		Detection gear
Parts name	Lead wire length A [mm]	Parts name
TS5690N2510	400±10	MU1606N805
TS5690N2520	800±20	
TS5690N2530	1200±20	
TS5690N2540	1600±30	
TS5690N2560	2000±30	



Twin-head Magnetic Encoder (MBE Series)

(1) Type description



(2) Specifications

Encoder type		MBE405W-BE082	MBE405W-BF125	MBE405W-BG160
Electrical characteristics	Encoder resolution	4,000,000p/rev		
	Detection method	Incremental		
	Accuracy (*1) (*2)	±4 seconds	±3 seconds	±2 seconds
	Wave number within one rotation	512 waves	768 waves	1024 waves
	Encoder output data	Serial data		
	Power consumption	0.2A or less		
Mechanical characteristics for rotation	Inertia	$0.5 \times 10^{-3} \text{kg} \cdot \text{m}^2$	$2.4 \times 10^{-3} \text{kg} \cdot \text{m}^2$	$8.7 \times 10^{-3} \text{kg} \cdot \text{m}^2$
	Tolerable continuous rotation speed	15000r/min	10000r/min	8000r/min
Mechanical configuration	Drum inner diameter	Φ82mm	Φ125mm	Φ160mm
	Drum outer diameter	Φ100mm	Φ150.3mm	Φ200.6mm
	Drum mass	0.2kg	0.46kg	1.0kg
	Degree of protection (*3)	IP67		
Working environment	Ambient temperature range	0°C to +55°C		
	Storage temperature range	-20°C to +85°C		
	Humidity	95%RH		
	Vibration resistance	Horizontal direction to the axis: 5G or less, Vertical direction to the axis: 5G or less		
	Impact resistance	490m/s ² (50G)		

(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed.

(*2) The user is requested to install the magnetic drum and installation ring in the encoder within the accuracy range specified herein. Even when the accuracy of the encoder when shipped and when installed by the user is both within the specified range, there is a difference in the installation position. Therefore, the accuracy at the time of our shipment may not be acquired.

(*3) It is the degree of protection when fitted with a connector.

(3) Specifications of preamplifier

Item	Specified value
Output communication style	High-speed serial communication I/F
Working ambient temperature	0°C to +55°C
Working ambient humidity	90%RH or less (with no dew condensation)
Atmosphere	No toxic gases
Tolerable vibration	Horizontal direction to the axis: 5G or less, Vertical direction to the axis: 5G or less
Tolerable impact	490m/s ² (50G)
Tolerable power voltage	DC5V±10%
Mass	0.33kg
Degree of protection (*2)	IP67

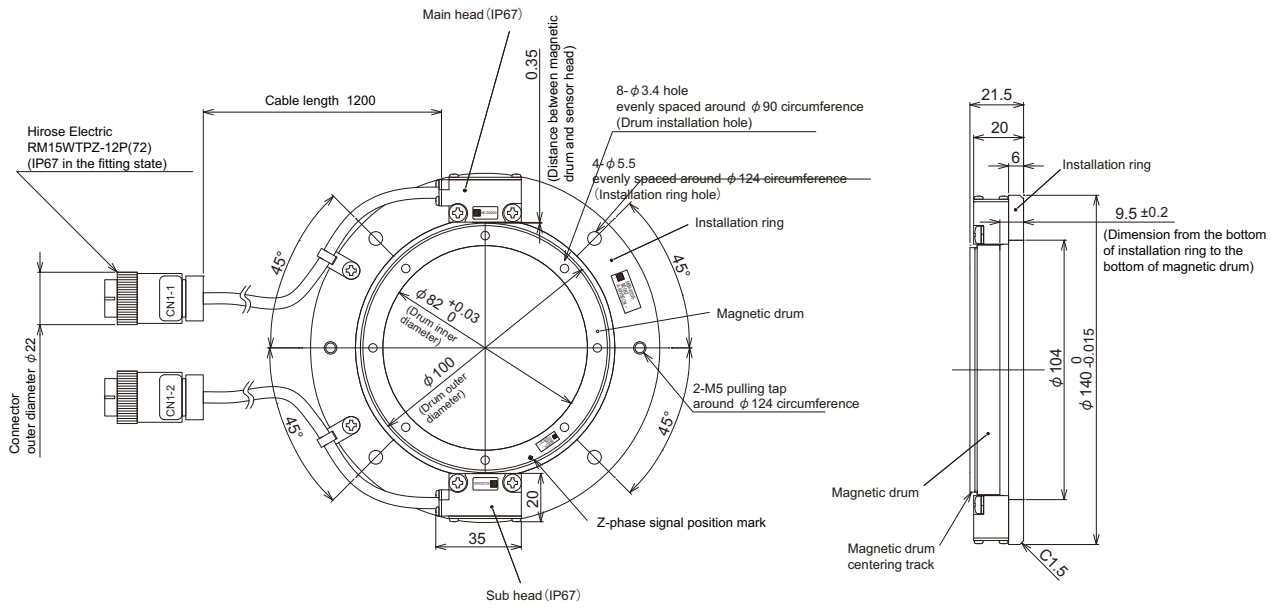
(*1) The values above are the specified values for the preamplifier provided with a twin-head magnetic encoder.

(*2) It is the degree of protection when fitted with a connector.

(4) Outline dimension drawing

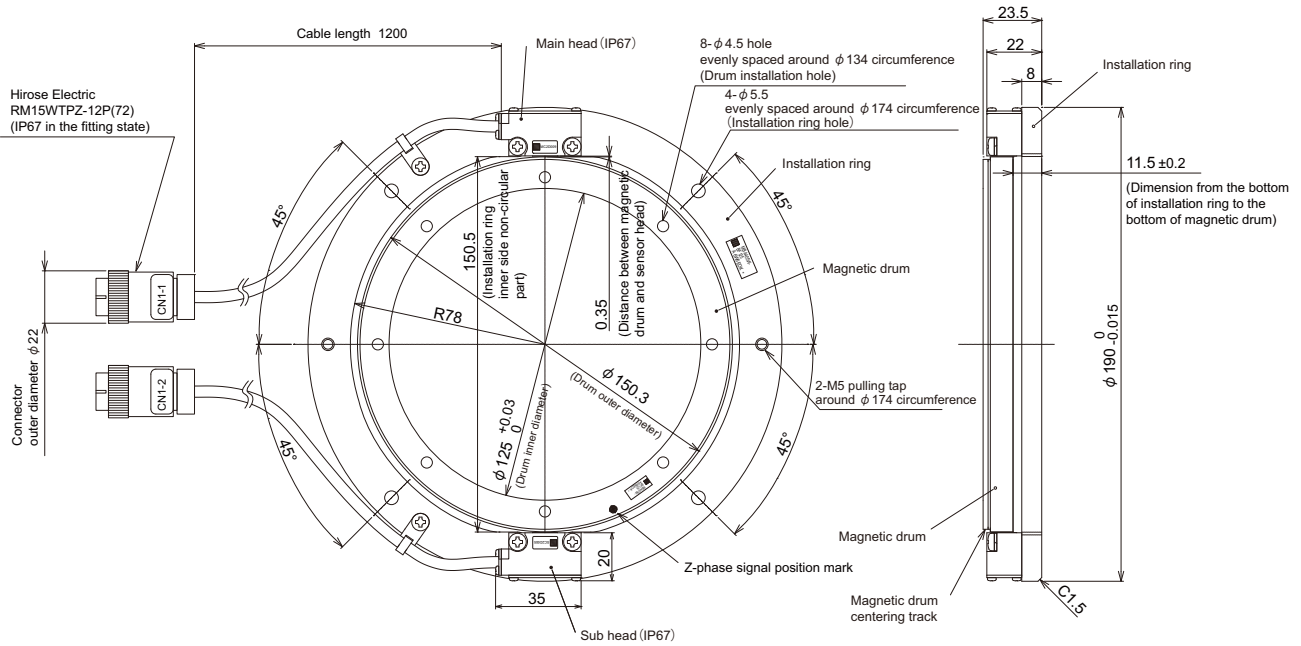
< MBE405W-BE082 >

[Unit: mm]



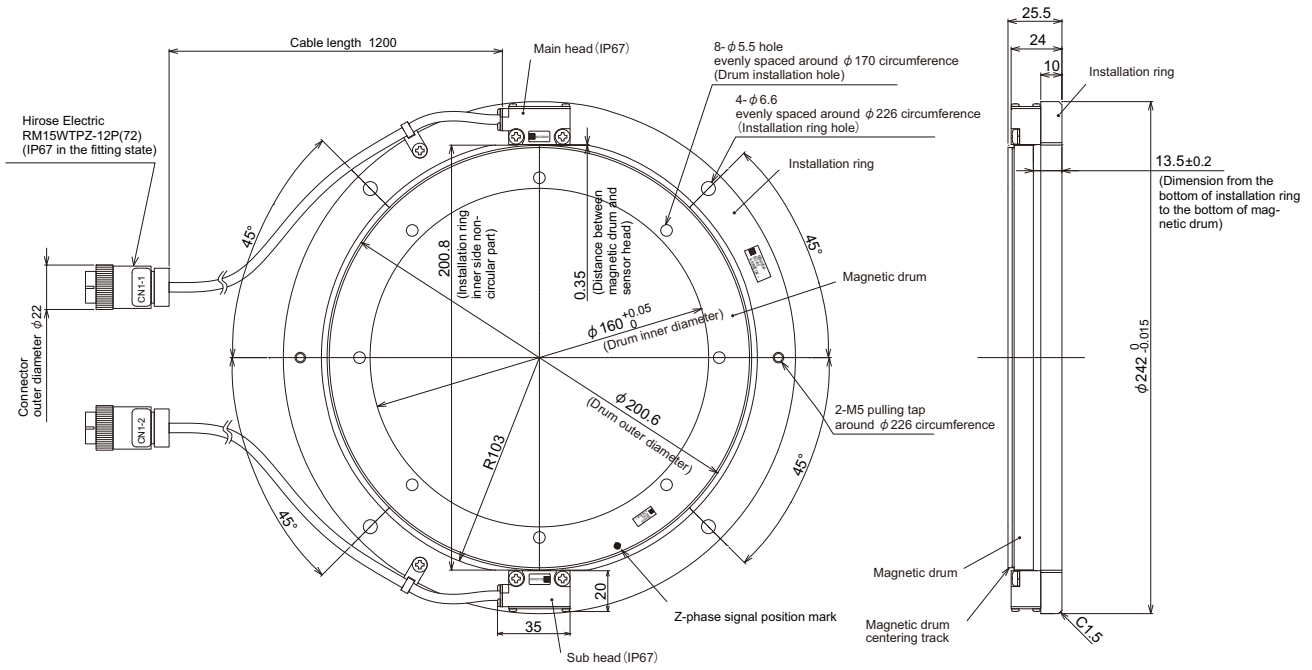
< MBE405W-BF125 >

[Unit: mm]



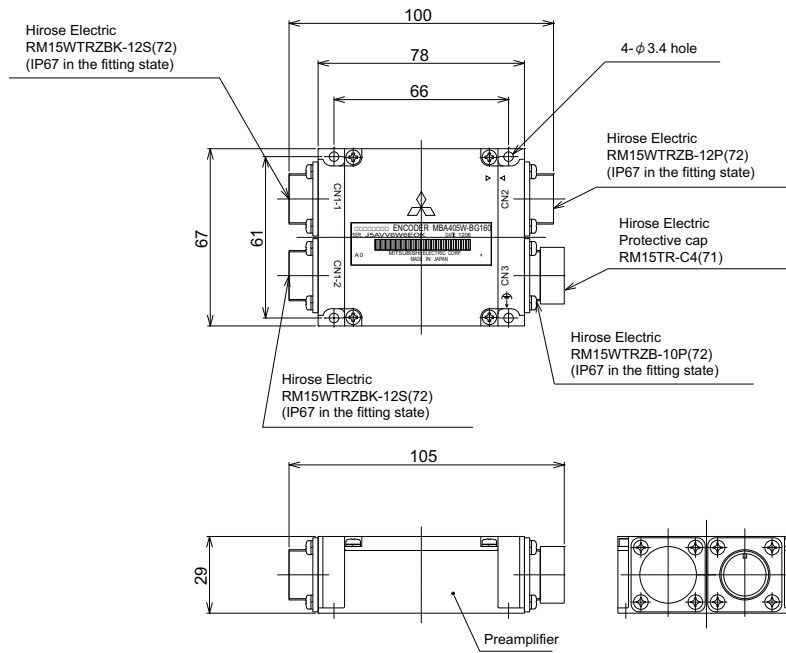
< MBE405W-BG160 >

[Unit: mm]



< Preampifier (common) >

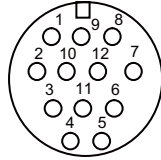
[Unit: mm]



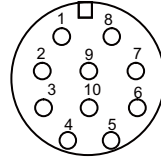
< Explanation of connectors >

Connector name	Application
CN1-1	For connection with scale (main head)
CN1-2	For connection with scale (sub head)
CN2	For connection with spindle drive unit
CN3	For connection with motor thermistor

< Connector pin layout >



CN2 < Drive unit >



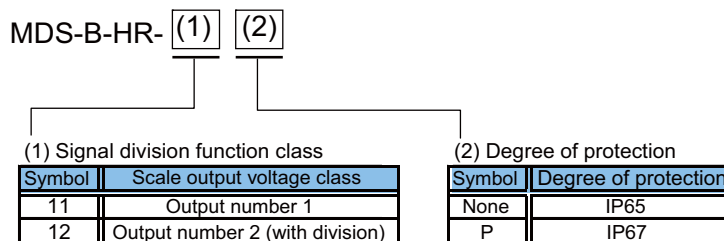
CN3 < Thermistor >

Pin No.	Function	Pin No.	Function
1	-	1	-
2	-	2	-
3	SD	3	MT1-i
4	SD*	4	-
5	SHD	5	-
6	MT1	6	-
7	RQ	7	-
8	RQ*	8	-
9	P5	9	MT2-i
10	LG	10	-
11	MT2	11	-
12	CNT	12	-

Serial Output Interface Unit for ABZ Analog Encoder MDS-B-HR

This unit superimposes the scale analog output raw waves, and generates high resolution position data. Increasing the encoder resolution is effective for the servo high-gain. MDS-B-HR-12(P) is used for the synchronous control system that 1-scale 2-drive operation is possible.

(1) Type configuration



(2) Specifications

Type	MDS-B-HR-	11	12	11P	12P
Compatible scale (example)		LS186 / LS486 / LS186C / LS486C (HEIDENHAIN)			
Signal 2-division function		-	*	-	*
Analog signal input specifications		A-phase, B-phase, Z-phase (Amplitude 1Vp-p)			
Compatible frequency		Analog raw waveform max. 200kHz			
Scale resolution		Analog raw waveform/512 division			
Input/output communication style		High-speed serial communication I/F, RS485 or equivalent			
Working ambient temperature		0 to 55°C			
Working ambient humidity		90%RH or less (with no dew condensation)			
Atmosphere		No toxic gases			
Tolerable vibration		98.0 m/s ² (10G)			
Tolerable impact		294.0 m/s ² (30G)			
Tolerable power voltage		5VDC±5%			
Maximum heating value		2W			
Mass		0.5kg or less			
Degree of protection		IP65		IP67	

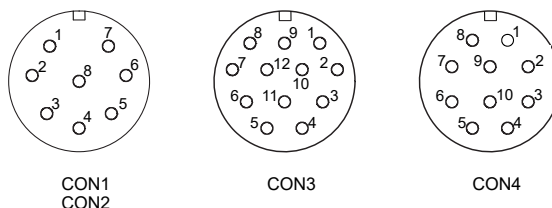
(3) Explanation of connectors

Connector name	Application	Remarks
CON1	For connection with servo drive unit (2nd system)	Not provided for 1-part system specifications
CON2	For connection with servo drive unit	
CON3	For connection with scale	
CON4	For connection with pole detection unit (MDS-B-MD)	*Used for linear servo system

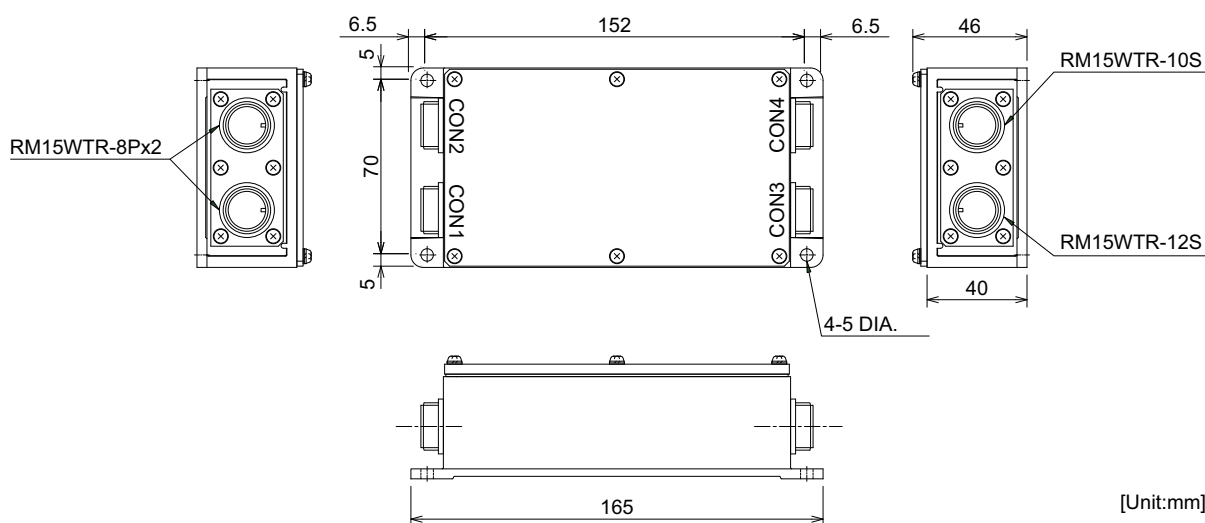
CON1		CON2		CON3		CON4	
Pin No.	Function	Pin No.	Function	Pin No.	Function	Pin No.	Function
1	RQ+ signal	1	RQ+ signal	1	A+ phase signal	1	A phase signal
2	RQ- signal	2	RQ- signal	2	A- phase signal	2	REF signal
3	SD+ signal	3	SD+ signal	3	B+ phase signal	3	B phase signal
4	SD- signal	4	SD- signal	4	B- phase signal	4	REF signal
5	P5	5	P5	5	Z+ phase signal	5	P24
6	P5	6	P5	6	Z- phase signal	6	MOH signal
7	GND	7	GND	7	-	7	P5
8	GND	8	GND	8	-	8	P5
				9	-	9	TH signal
				10	-	10	GND
				11	P5		
				12	GND		

<Connector pin layout >

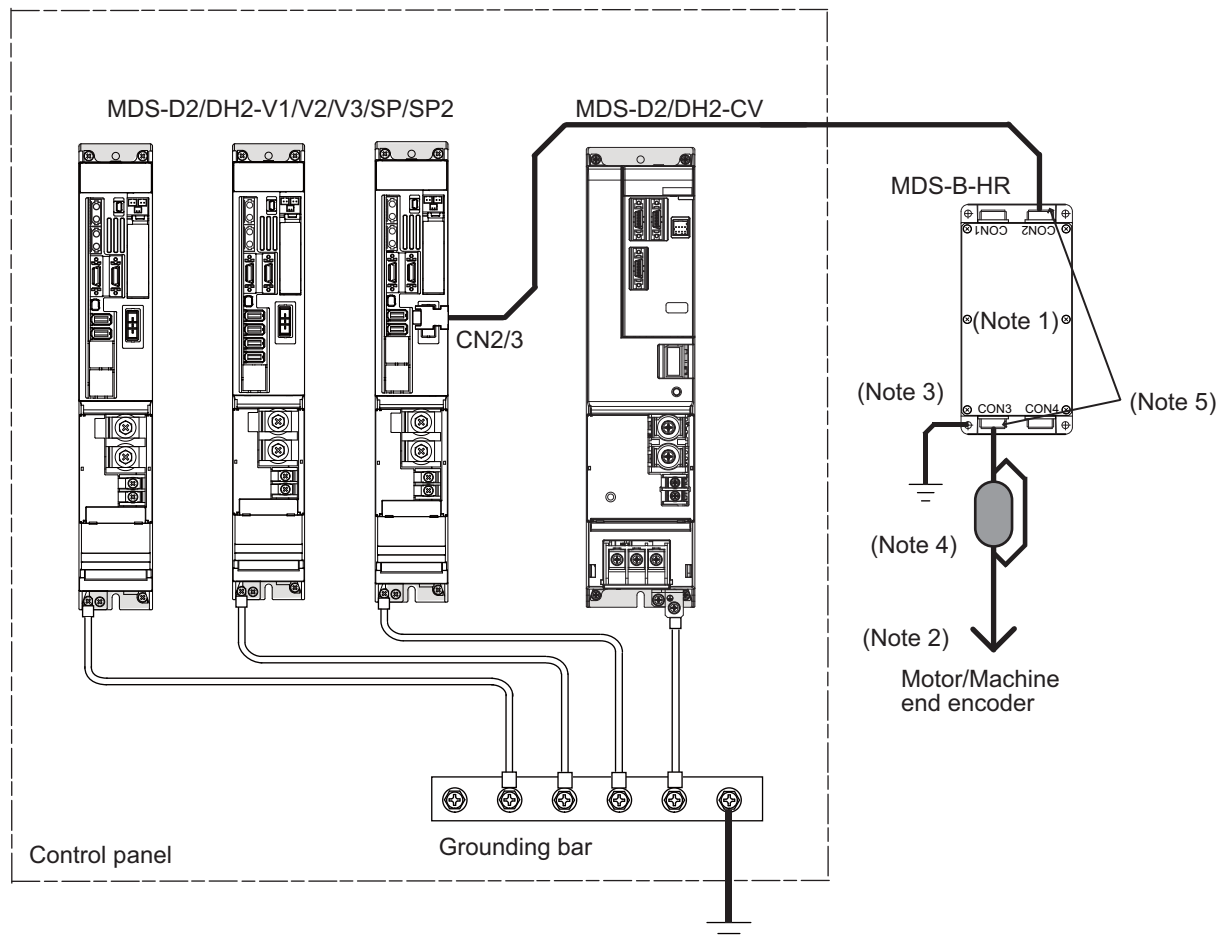
Connector	Type
CON1	RM15WTR- 8P(Hirose Electric)
CON2	
CON3	RM15WTR-12S(Hirose Electric)
CON4	RM15WTR-10S(Hirose Electric)



(4) Outline dimension drawings



(5) Example of wiring



- (Note 1) Install the MDS-B-HR unit outside the control panel.
- (Note 2) For connections between an encoder and MDS-B-HR unit, keep the cable length as short as possible.
- (Note 3) Ground the MDS-B-HR unit.
- (Note 4) Place a ferrite core as close as possible to the MDS-B-HR unit.
Wind the cable around the unit one time when installing a ferrite core.
- (Note 5) Use shielded cables and join the shield to the connector shell.

Serial Signal Division Unit MDS-B-SD

This unit has a function to divide the position and speed signals fed back from the high-speed serial encoder and high-speed serial linear scale. This unit is used to carry out synchronized control of the motor with two MDS-D2/DH2-V1 drive units.

(1) Specifications

Type	MDS-B-SD
Compatible servo drive unit	MDS-D2/DH2-V1-□
Input/output communication style	High-speed serial communication I/F, RS485 or equivalent
Working ambient temperature	0 to 55°C
Working ambient humidity	90%RH or less (with no dew condensation)
Atmosphere	No toxic gases
Tolerable vibration	98.0 m/s ² (10G)
Tolerable impact	294.0 m/s ² (30G)
Tolerable power voltage	5VDC±10%
Maximum heating value	4W
Mass	0.5kg or less
Degree of protection	IP20



POINT

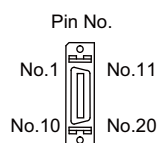
Always provide one MDS-B-SD unit for one speed command synchronous control operation.
The CN2 system's CN2A and the CN3 system's CN3A cannot be connected to different servo drive units.

(2) Explanation of connectors

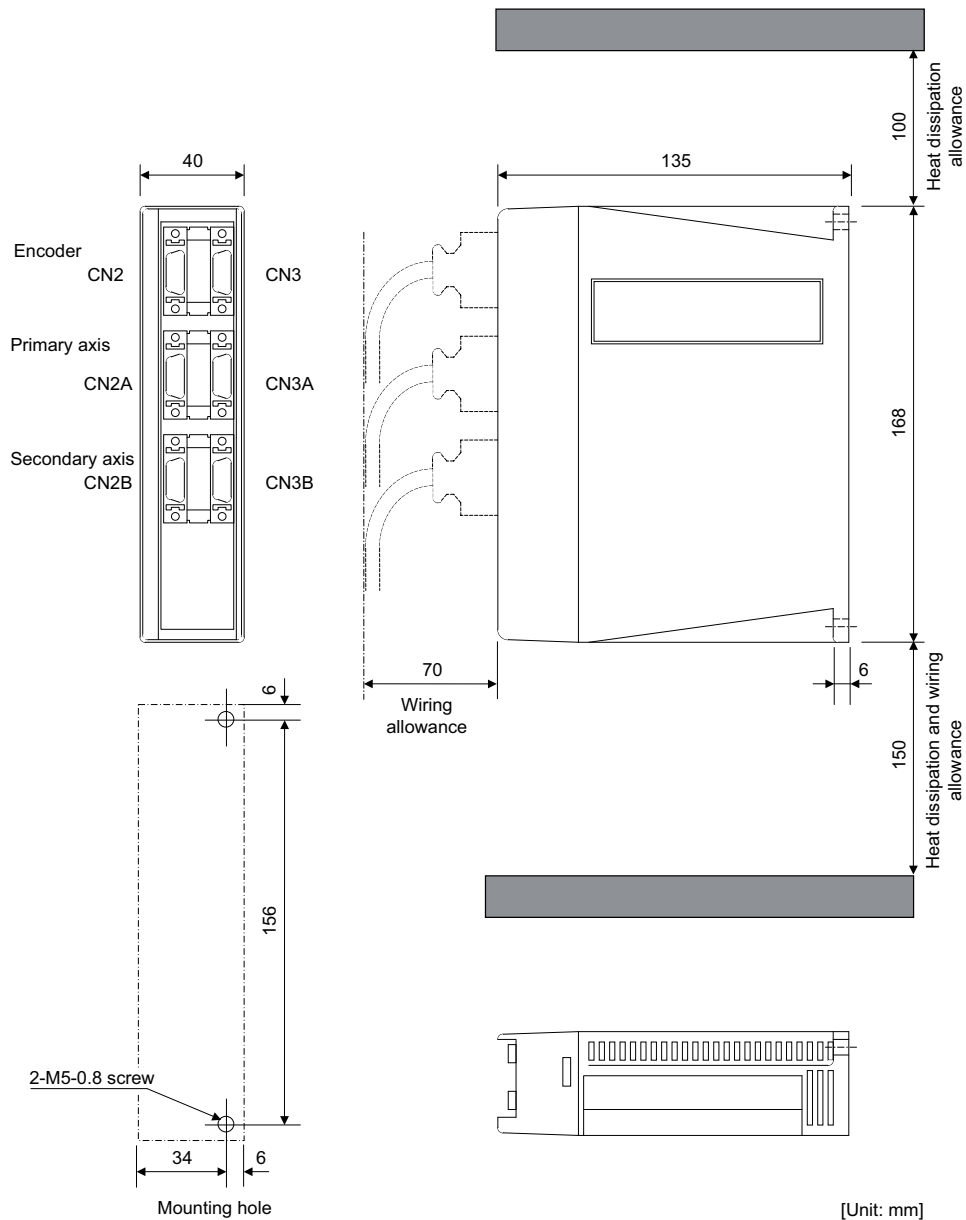
Encoder connector : CN2			
Pin No.	Name	Pin No.	Name
1	LG	11	LG
2		12	
3		13	
4		14	
5		15	
6	SD	16	SD*
7	RQ	17	RQ*
8		18	
9	BAT	19	
10	P5 (+5V)	20	P5 (+5V)

< Connector pin layout >

Encoder connector : CN2



(3) Outline dimension drawings



Optical Communication Repeater Unit (FCU7-EX022)

When the distance of the optical communication cable between NC control unit and drive unit is over 30m (M700V/M70V/E70 Series: maximum 30m, M700/M70/C70 Series: maximum 20m), the communication can be performed by relaying the optical signal. Using up to two units, relay of the total length of up to 90m can be performed.

<Product features>

- (a) When the distance of the optical communication cable between NC control unit and drive unit is over 30m, the communication can be performed by relaying the optical signal.
- (b) The relay between NC control unit and drive unit can be performed for up to two channels.
- (c) If the distance between NC control unit and drive unit is even within 30m, the cable can be divided by the relay in transporting the machine.
- (d) Same mounting dimension as the remote I/O unit (DX unit).

**CAUTION**

This unit can not be used between drive units.

(1) Specifications

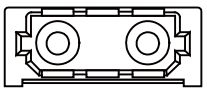
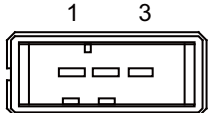
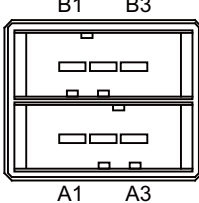

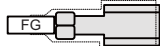
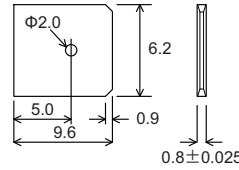
Item		FCU7-EX022		
24VDC input	Input voltage	24V±10% (21.6V to 26.4V)		
	Inrush current	35A		
	Power consumption	10W		
	Consumption current	0.4A		
Optical interface	Channel number	2 channels		
	Connectable number	Maximum 2		
Environment	Ambient temperature	Operation	0°C to +55°C	
		Storage	-20°C to +60°C	
	Ambient humidity	Operation (long term)	+10%RH to +75%RH (with no dew condensation)	
		Operation (short term)	+10%RH to +95%RH (with no dew condensation. Short term is within about one month.)	
		Storage	+10%RH to +75%RH (with no dew condensation)	
	Vibration	Operation	4.9m/s ²	
		Transportation	34.3m/s ²	
	Impact resistance	Operation	29.4m/s ²	
Atmosphere	No corrosive gas, oil mist, or dust			
Dimension	Dimension	(depth)135mm × (width)40mm × (height)168mm		
	Mounting method	Screw cramp with M5 2 screw cramps		
Mass	0.42kg			

(2) Explanation of connectors

Connector name	Application	Remarks
OPT1IN, OPT1OUT, OPT2IN, OPT2OUT	Optical connector	
DCIN	24VDC Power connector	
DCOUT	24VDC/ Power OFF detection output connector	Relays the PD25/27 output to NC control unit.
ACFAIL	Power OFF detection connector	Relays the power OFF detection signal (ACFAIL) when sharing 24V power from PD25/PD27 for NC control unit and optical communication repeater unit. It will not be used when dedicated general-purpose power supply for optical communication repeater unit is prepared.
FG	FG Faston terminal	

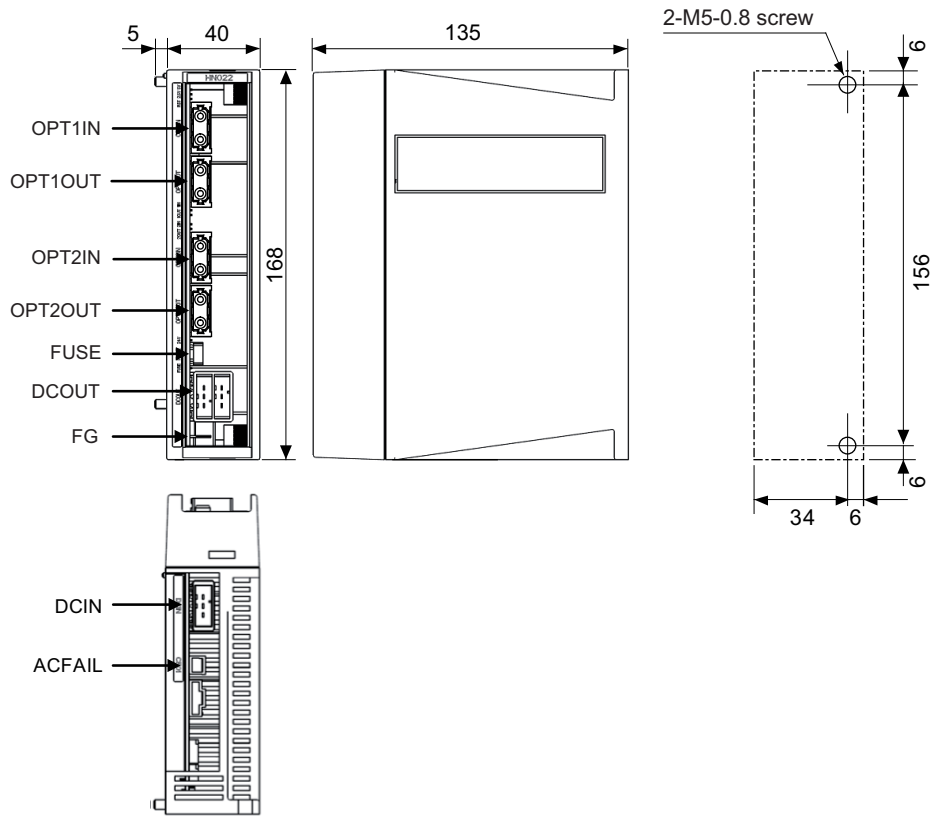
DCIN		DCOUT			ACFAIL		
Pin No.	Name	Pin No.	Name	Pin No.	Name	Pin No.	Name
1	24VDC	A1	ACFAIL	B1	24VDC	1	COM
2	0V (RG)	A2	COM	B2	0V (RG)	2	ACFAIL
3	FG	A3	NC	B3	FG		

< Connector pin layout >

Optical communication I/F (OPT1IN, OPT1OUT, OPT2IN, OPT2OUT)	DC24V input (DCIN)	DC24V output (DCOUT)	Power OFF input ACFAIL (Terminal name:CF01)	FG terminal (FG)
				
<p><Cable side connector type> (PCF type) Connector: CF-2D101-S Recommended manufacturer: Japan Aviation Electronics</p> <p><Cable side connector type> (POF type) Connector: PF-2D101 Recommended manufacturer: Japan Aviation Electronics</p>	<p><PCB side connector type> Connector: 2-178293-5 Recommended manufacturer: Tyco Electronics</p> <p><Cable side connector type> Connector: 2-178288-3 Contact: 1-175218-5 Recommended manufacturer: Tyco Electronics</p>	<p><PCB side connector type> Connector: 3-178137-5 Recommended manufacturer: Tyco Electronics</p> <p><Cable side connector type> Connector: 2-178127-6 Contact: 1-175218-5 Recommended manufacturer: Tyco Electronics</p>	<p><PCB side connector type> Connector: 53103-0230 Recommended manufacturer: MOLEX</p> <p><Cable side connector type> Connector: 005057-9402 Contact: 0016020103 Recommended manufacturer: MOLEX</p>	<p><Cable side faston terminal type name> Type name: 175022-1 (For AWG20-14 250 series) Recommended manufacturer: Tyco Electronics</p> <p>Terminal protection tube: 174817-2 (Yellow) [Unit: mm]</p>  <p>Unit side tab terminal shape (Note) The faston terminal "175022-1" of the cable side is a simple lock type. Make sure to insert until the simple lock pin is in the Φsecond hole. Firmly press the simple lock release tab when unplugging it.</p>

(3) Outline dimension drawings

[Unit: mm]



DC Connection Bar

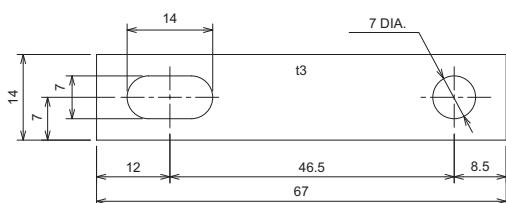
When connecting a large capacity drive unit with L+L- terminal of power supply unit, DC connection bar is required. In use of the following large capacity drive units, use a dedicated DC connection bar. The DC connection bar to be used depends on the connected power supply, so make a selection according to the following table.

Large capacity drive unit	Power supply unit	Required connection bar
MDS-DH2-SP-200 MDS-DH2-SP-320 MDS-DH2-SP-480	MDS-DH2-CV-550 MDS-DH2-CV-750	DH-BAR-A0606 (Two-parts set)
MDS-DH2-V1-200 MDS-DH2-SP-200 MDS-DH2-SP-320	MDS-DH2-CV-300 MDS-DH2-CV-370 MDS-DH2-CV-450	DH-BAR-B0606
MDS-DH2-V1-200	MDS-DH2-CV-185	DH-BAR-C0606

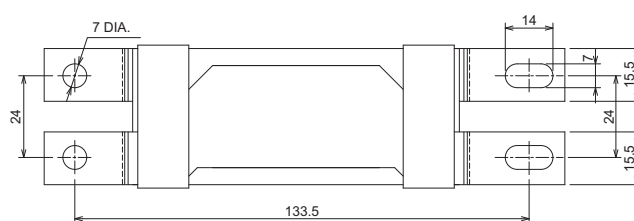
(1) Outline dimension drawings

[Unit:mm]

DH-BAR-A0606

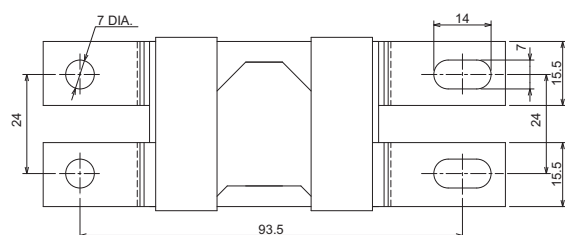


DH-BAR-B0606



(Note) DH-BAR-A0606 is a set of two DC connection bars.

DH-BAR-C0606



POINT

Always install a large capacity drive unit in the left side of power supply unit, and connect with DC connection bar.

Power Backup Unit (MDS-DH-PFU)

MDS-DH-PFU unit is a system to protect the machine and the drive units safely by decelerating and stopping the motor at power failure.

(1) Type configuration

MDS- (1) -PFU

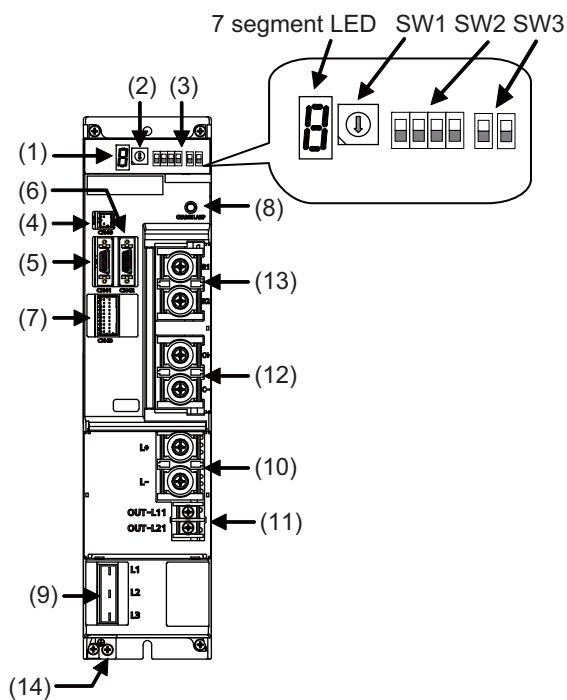
(1)

Symbol	Voltage class
D	200V
DH	400V

(2) Specifications

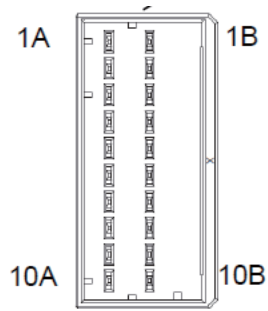
Model Name		MDS-DH-PFU
AC Input	Rated voltage [V]	380 to 480AC (50/60Hz) (Exclusively for earthed-star supply system) Tolerable fluctuation : between +10% and -10%
	Frequency [Hz]	50/60 Tolerable fluctuation : between +3% and -3%
	Rated current [A]	2
DC Input and output	Rated voltage [V]	513 to 648DC
	Rated current [A]	Regenerating Input: MAX 200A Powering Output: MAX 160A
AC output for control power supply backup	Voltage [V]	Single phase 380 to 480VAC (50Hz or 60Hz) 50Hz at backup
	Current [A]	MAX 2
	Maximum number of connectable drive units	6 (excluding power supply units)
	Changeover time	100ms or less after instantaneous interruption of AC input
	Minimum backup time	75ms or longer (When 380VAC is input and the maximum number of connectable drive units is connected)
Degree of protection		IP20 (Except for Terminal block and Connector)
Environment	Ambient temperature	Operation: 0 to 55°C (with no freezing) Storage / Transportation: -15°C to 70°C (with no freezing)
	Ambient humidity	Operation / Storage / Transportation: 90%RH or less (with no dew condensation)
	Atmosphere	Indoors (no direct sunlight) With no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
	Altitude	Operation/Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level
	Vibration	Operation / Storage: 4.9m/s ² (0.5G) or less
Cooling method		Natural air cooling
Mass [kg]		4

(4) Explanation of each part
< MDS-DH-PFU >



		Name	Application	Screw size	Compatible wire
(1)	Control circuit	LED	Unit status indication 7 segment LED	---	---
(2)		SW1	Function setting rotary switch	---	---
(3)		SW2,SW3	Function setting DIP switch	---	---
(4)		CN40	(Not used)	---	---
(5)		CN41	For connecting MDS-D2/DH2-CV	---	---
(6)		CN42	Maintenance	---	---
(7)		CN43	DIO	---	---
(8)		Charge LED	---	Voltage status indication between TE4 terminals	---
(9)	Main circuit	TE1	L1 L2 L3 Control power input terminal (Three-phase AC input)	---	AWG#14 (2mm ²)
(10)		TE2	L+ L- Power backup unit voltage input/output terminal Connected to the L+ and L- terminals of the power supply unit	M6×18 Tightening torque 4.0Nm	AWG#4 (22 mm ²) or above
(11)		TE3	OUT-L11 OUT-L21 Power backup unit voltage output terminal (AC output) Connected to the L11 and L21 terminals of the power supply unit and drive unit	M4×10 Tightening torque 1.2Nm	AWG#14 (2mm ²)
(12)		TE4	C+ C- Capacitor unit connection terminal	M6×18 Tightening torque 4.0Nm	AWG#10 (5.5 mm ²)
(13)		TE5	R1 R2 Regenerative resistor connection terminal	M6×18 Tightening torque 4.0Nm	AWG#10 (5.5 mm ²)
(14)		PE	Grounding terminal	M4×12 Tightening torque 1.2Nm	AWG#14 (2mm ²)

(5) Explanation of connectors
 < CN43 connector >



No.	Signal name	Function	Description
1B	24VOUT	Internal 24V output	Internal 24V output. This enables connection to the 24V input power supply for DO. (Note that the DO output current should be 100mA or less.)
2B	DO_COM	DO common terminal	Common terminal for DO output circuit
5B	DO2	Tool escape request	ON:Normal, OFF: Tool escape request
10B	THM1	Thermal error detection	Shorted: Normal, Open: Error detection
1A	24GOUT	Internal 24V output GND	
2A	DO_COM2	DO common terminal 2	
3A	DO_COM2	DO common terminal 2	
10A	THM2(24GOUT)	Thermal error detection	GND for internal 24V input

Regenerative Resistor for Power Backup Unit (R-UNIT-6)

Check the availability of connection of the power backup unit and the regenerative resistor for the power backup unit. The regenerative resistor generates heats, so wire and install the unit while taking care to safety.

(1) Specifications

Model Name		R-UNIT-6
Compatible power backup unit name		MDS-DH-PFU
Resistance value [Ω]		5
Instantaneous regeneration capacity [kW]		128
Allowable regeneration workload [kJ]		180
Environment	Ambient temperature	Operation: 0 to 55°C (with no freezing) Storage / Transportation: -15°C to 70°C (with no freezing)
	Ambient humidity	Operation / Storage / Transportation: 90%RH or less (with no dew condensation)
	Atmosphere	Indoors (no direct sunlight) With no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
	Altitude	Operation/Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level
	Vibration	Operation / Storage: 4.9m/s ² (0.5G) or less
Cooling method		Natural air cooling
Mass [kg]		10

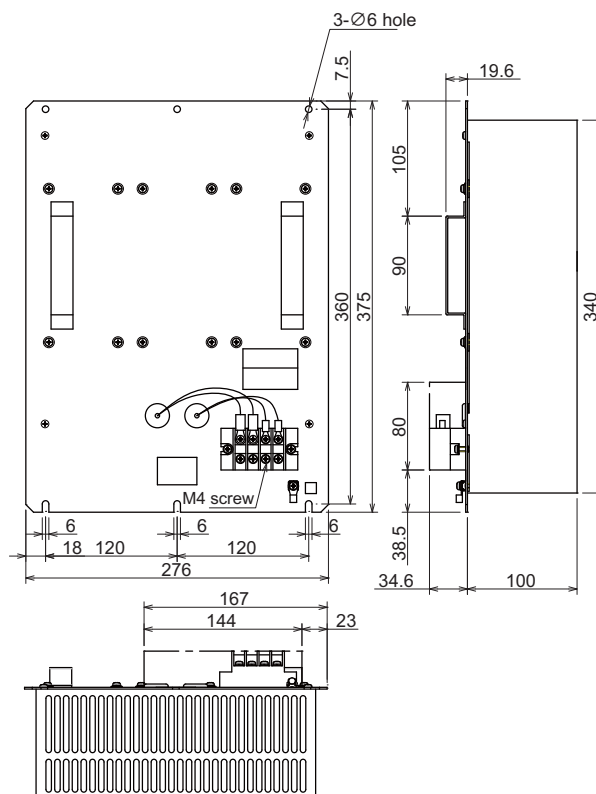
CAUTION

- Only the designated combination can be used for the power backup unit and the regenerative resistor for the power backup unit.
There is a risk of fire, so always use the designated combination.
- Select the function selection rotary switch (SW1) of the power backup unit according to the regenerative resistor for the power backup unit to be used.

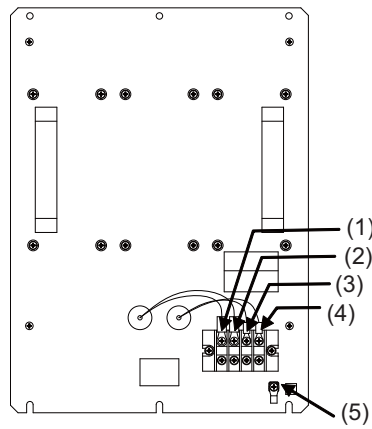
(2) Outline dimension drawings

< R-UNIT-6 >

[Unit : mm]



(3) Explanation of each part
< R-UNIT-6 >



Name		Function	Compatible wire	Terminal specification
(1)	R1	PFU connection terminal	AWG10 (5.5 mm ²)	M4 screw
(2)	R2			Compatible crimp terminal: Round: Up to 5.5-4
(3)	AL1	Thermal connection output terminal	AWG#18 to AWG#24 (0.75mm ² to 0.2mm ²)	M4 screw
(4)	AL2			Compatible crimp terminal: Round: Up to 1.25-4
(5)	E	Grounding terminal	AWG10 (5.5 mm ²)	M4 screw Compatible crimp terminal: Round: Up to 5.5-4

Capacitor Unit for Power Backup Unit (MDS-DH-CU)

Check the availability of connection of the power backup unit and the capacitor unit. The powering energy at retraction/tool escape is supplied to the capacitor unit.

(1) Specifications

Model Name		MDS-DH-CU
Compatible power backup unit name		MDS-DH-PFU
Capacity [μ F]		7000
DC Input and output	Rated voltage [V]	DC513 to 648
	Ambient temperature	Operation: 0 to 55°C (with no freezing) Storage / Transportation: -15°C to 70°C (with no freezing)
Environment	Ambient humidity	Operation / Storage / Transportation: 90%RH or less (with no dew condensation)
	Atmosphere	Indoors (no direct sunlight) With no corrosive gas, inflammable gas, oil mist, dust or conductive fine particles
	Altitude	Operation/Storage: 1000 meters or less above sea level, Transportation: 13000 meters or less above sea level
	Vibration	Operation / Storage: 4.9m/s ² (0.5G) or less
Cooling method		Natural air cooling
Mass [kg]		11

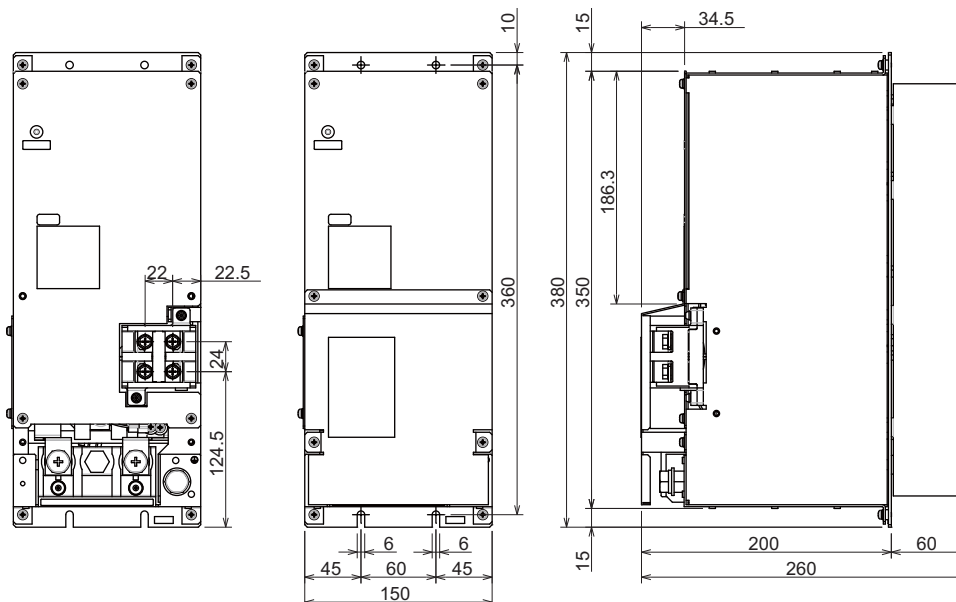
CAUTION

1. Only the designated combination can be used for the power backup unit and the capacitor unit.
There is a risk of fire, so always use the designated combination.
2. Do not reverse the polarity when connecting.
3. When using the retraction/tool escape function, the supported software version for the power backup unit is A1 or later.
4. Select the function setting dip switch (SW2) of the power backup unit according to the capacitor unit to be used.

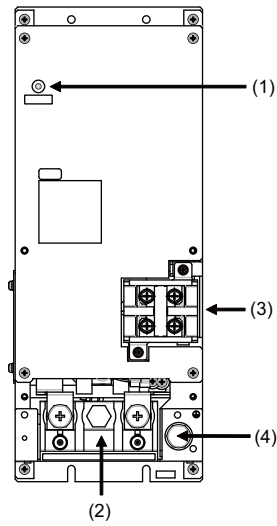
(2) Outline dimension drawings

< MDS-DH-CU >

[Unit : mm]



(3) Explanation of each part
< MDS-DH-CU >



	Name		Function	Compatible wire	Terminal specification
(1)	Charge LED	---	Voltage status indication between TE1 terminals	---	---
(2)	TE1	C+ C-	PFU connection terminal	AWG#4 (22 mm ²)	M10 screw Compatible crimp terminal: Round Up to 8-10
(3)	TE2	C+ C-	Capacitor unit connection terminal (for extension)	AWG#4 (22 mm ²)	M6 screw Compatible crimp terminal: Round Up to 8-6
(4)	PE		Grounding terminal	AWG#10 (5.5mm ²)	M10 screw Compatible crimp terminal: Round Up to 8-10

Revision History

Date of revision	Manual No.	Revision details
Oct. 2013	IB(NA)1501142-A	First edition created.
Sep. 2014	IB(NA)1501142-B	<ul style="list-style-type: none"> - "Explanation of Type" was revised. - MDS-DJ-SP-160 was added. - Note was added to the servo moter HF-KP13. - Items for Specifications and note were added to "Spindle Motor" and "Built-in Spindle Motor". - MDS-D2-SP2-16080(M) was deleted from compatible drive unit in "Spindle Motor". - SJ-DL0.75/100-01T was replaced by SJ-DL0.75/100-01. - SJ-DL1.5/100-01T was replaced by SJ-DL1.5/100-01. - Following spindle motors were added. SJ-D5.5/120-02T-S,SJ-DJ7.5/120-01,SJ-DL5.5/200-01T-S, SJ-VS7.5-14FZT,SJ-VKS26-09FZT,SJ-VKS30-16FZT,SJ-VL18.5-05FZT, SJ-VLS15-11FZT,SJ-VL11-02FZT - Following spindle motors were deleted. SJ-D11/80-01,SJ-DJ5.5/120-02,SJ-VL0.75-01T,SJ-VL1.5-01T, SJ-V3.7-01T,SJ-V5.5-01T,SJ-V5.5-01ZT,SJ-V7.5-01T,SJ-V7.5-01ZT, SJ-V11-01T(Normal),SJ-V11-01ZT,SJ-V15-01T,SJ-V18.5-01T,SJ-V22-01T, SJ-V26-01T,SJ-V37-01T,SJ-V45-01T,SJ-V55-01T, SJ-V7.5-03ZT(High-speed),SJ-V11-06ZT,SJ-V18.5-04ZT(High-speed), SJ-V30-02ZT,SJ-VL11-10FZT,SJ-VL11-07ZT,SJ-PMF01830T-00, SJ-PMF03530T-00,SJ-4-V11-18T(Wide range constant output), SJ-4-V11-22ZT - The specifications of following spindle motor is changed to normal specifications. SJ-VL2.2-02ZT,SJ-V3.7-02ZT,SJ-V11-08ZT,SJ-V22-06ZT, SJ-4-V3.7-05ZT,SJ-4-V7.5-13ZT,SJ-4-V11-23ZT,SJ-4-V22-18ZT, SJ-4-V30-15ZT - Output characteristics of "Built-in Spindle Motor" were revised. - Built-in spindle motor SJ-2B4207T,SJ-2B4211T,SJ-2B6702TK, SJ-2B6904TK were deleted. - Maximum torque and Torque characteristics of Tool spindle motor HF Series were revised. - Tool spindle motor HF123,HF223,HF303 were deleted. - "Dynamic Brake Unit (MDS-D-DBU)" was revised. - "Twin-head Magnetic Encoder (MBA Series)/(MBE Series)" were revised. - "Encoder for Spindle Motor" was revised. - "Power Backup Unit (MDS-D-PFU)/(MDS-DH-PFU)" were revised. - "Capacitor Unit for Power Backup Unit (MDS-D-CU)/(MDS-DH-CU)" were added. - SJ-4-V11-18T was replaced by SJ-4-V11-18ZT. - SJ-4-V26-08T was replaced by SJ-4-V26-08ZT. - SJ-4-V37-04T was replaced by SJ-4-V37-04ZT.
Apr. 2017	IB(NA)1501142-C	<ul style="list-style-type: none"> - "Multi axis integrated drive unit" was replaced by "Multi axis unit". - "System Configuration" was revised. - Direct-drive motor and linear servo motor were added. - "Explanation of Type" was revised. - Rated current, stall current, inertia, and mass of servo motor and tool spindle motor were revised. - Max. deceleration torque of dynamic brake of HF354 was revised. - Specifications for 3-axis type was added to HF142. - Actual acceleration/deceleration output and continuous rated output of the following spindle motors were revised. SJ-D3.7/100-01,SJ-D5.5/120-02,SJ-D5.5/120-02T-S,SJ-DL0.75/100-01,SJ-DL1.5/100-01,SJ-V2.2-01T,SJ-V3.7-02ZT,SJ-VL11-05FZT-S01 - SJ-VL2.2-02ZT was changed to low-inertia specifications. - Compatible drive unit of the following spindle motors were revised. SJ-V11-08ZT,SJ-V15-09ZT,SJ-V15-03T - The following spindle motors were deleted. SJ-VS7.5-14FZT,SJ-VKS26-09FZT,SJ-VKS30-16FZT,SJ-VLS15-11FZT SJ-4-V3.7-05ZT,SJ-4-V11-23ZT,SJ-4-V15-18T,SJ-4-V30-15ZT,SJ-4-V11-21T,SJ-4-V18.5-17T - The following built-in spindle motors were deleted. SJ-2B4A01T,SJ-2B4201T,SJ-2B4218T,SJ-2B4202T,SJ-2B4215T,SJ-2B4203T,SJ-2B4219T,SJ-2B4311TK,SJ-2B6802TK

Date of revision	Manual No.	Revision details
Apr. 2017	IB(NA)1501142-C	<ul style="list-style-type: none"> - SJ-2B4B01T was replaced by SJ-2B4B03T. - Output current, input current, and recommended wire of servo drive unit, multi axis unit, spindle drive unit and power supply unit were revised. - Mounting hole machining drawings were added to outline dimension drawings of MDS-DJ-V1/V2. - MDS-D2-CV-37 and 75 were added. - Specifications items for power supply unit were added. - Compatible contactors for the following power supply units were revised. MDS-D2-CV-110, MDS-D2-CV-185, MDS-D2-CV-300 MDS-DH2-CV-37, MDS-DH2-CV-75, MDS-DH2-CV-110, MDS-DH2-CV-185, MDS-DH2-CV-300, MDS-DH2-CV-370, MDS-DH2-CV-450, MDS-DH2-CV-550 - "Dynamic Brake Unit (MDS-D-DBU)" was revised. - "Battery" was revised. - "Ball Screw Side Encoder (OSA105ET2A, OSA166ET2NA)" was revised. - "Regenerative Option" was revised. - Example of wiring was added in "Serial Output Interface Unit for ABZ Analog Encoder MDS-B-HR". - "Optical Communication Repeater Unit (FCU7-EX022)" was revised. - SJ-4-V11-18ZT was replaced by SJ-4-V11-18T. - Outline dimension drawings of SJ-4-V37-04ZT was revised. - Specifications and output characteristics of SJ-4-V45-02T were revised. - Miswrite was corrected.
Oct. 2022	IB(NA)1501142-D	<ul style="list-style-type: none"> - "System Configuration" was revised. - "Explanation of Type" was revised. - Specifications tables of spindle motors were revised. - "Maximum power consumption 50/60Hz" were deleted. - Notes for IP degree of protection were added. - Output characteristics for the following spindle motors were revised. SJ-D5.5/120-01, SJ-D11/100-01, SJ-DG3.7/120-03T, SJ-DG5.5/120-04T, SJ-DG7.5/120-05T, SJ-DG11/100-03T, SJ-DL5.5/200-01T, SJ-DL5.5/200-01T-S - Tolerable radial load for the following spindle motors were revised. SJ-D5.5/120-02T-S, SJ-DL5.5/200-01T-S - Degree of protection for the following spindle motors were revised. SJ-DG3.7/120-03T, SJ-DG5.5/120-04T, SJ-DG7.5/120-05T, SJ-DG11/100-03T - Mass for the following spindle motors were revised. SJ-DG3.7/120-03T, SJ-DG5.5/120-04T, SJ-DG7.5/120-05T, SJ-DG11/100-03T - GD2 for the following spindle motors were revised. SJ-DL0.75/100-01, SJ-DL1.5/100-01, SJ-V22-05T - Base rotation speed for SJ-VK22-19ZT was revised. - Screw sizes for the servo drive unit, spindle drive unit, and power supply unit were revised. - Maximum earth leakage current for the following servo drive unit were revised. MDS-D2-V3-202020, MDS-DJ-V1-10, - Descriptions of "5V power supply capacity" were added for encoder connectors for the following servo drive unit were added. MDS-DJ-V1-10, MDS-DJ-V1-15, MDS-DJ-V1-30, MDS-DJ-V1-40, MDS-DJ-V1-80, MDS-DJ-V1-100, MDS-DJ-V2-3030 - Selection example of contactor for the following servo drive unit were revised. MDS-DJ-V1-10, MDS-DJ-V1-15, MDS-DJ-V1-30, MDS-DJ-V1-40, MDS-DJ-V1-80, MDS-DJ-V1-100, MDS-DJ-V2-3030 - Mass for the following servo drive unit were revised. MDS-DJ-V1-40, MDS-DJ-V1-80, MDS-DJ-V2-3030 - Max. earth leakage current for the following multi axis unit were revised. MDS-DM2-SPV2-10080, MDS-DM2-SPV2-16080, MDS-DM2-SPV2-20080, MDS-DM2-SPV3-10080, MDS-DM2-SPV3-16080, MDS-DM2-SPV3-20080, MDS-DM2-SPV3-200120, MDS-DM2-SPHV3-20080 - Descriptions of "5V power supply capacity" were added for encoder connectors for the following spindle drive unit were added. MDS-DJ-SP-20, MDS-DJ-SP-40, MDS-DJ-SP-80, MDS-DJ-SP-100, MDS-DJ-SP-120, MDS-DJ-SP-160, MDS-DJ-SP2-2020

Date of revision	Manual No.	Revision details
Oct. 2022	IB(NA)1501142-D	<ul style="list-style-type: none"> - Selection example of contactor for the following spindle drive unit were revised. MDS-DJ-SP-20, MDS-DJ-SP-40, MDS-DJ-SP-80, MDS-DJ-SP-100, MDS-DJ-SP-120, MDS-DJ-SP-160, MDS-DJ-SP2-2020 - Max. earth leakage current for MDS-DJ-SP2-2020 was revised. - Battery (ER6V-C119B, A6BAT, MDS-BTBOX-36, MR-BAT6V1SET) was revised. - Encoder for Spindle Motor was revised. - Spindle Side ABZ Pulse Output Encoder (OSE-1024 Series) was revised. - Power Backup Unit (MDS-D-PFU) was revised.

Notice

Every effort has been made to keep up with software and hardware revisions in the contents described in this manual. However, please understand that in some unavoidable cases simultaneous revision is not possible.

Please contact your Mitsubishi Electric dealer with any questions or comments regarding the use of this product.

Duplication Prohibited

This manual may not be reproduced in any form, in part or in whole, without written permission from Mitsubishi Electric Corporation.

© 2013-2022 Mitsubishi Electric Corporation
ALL RIGHTS RESERVED

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BLDG.,2-7-3 MARUNOUCHI,CHIYODA-KU,TOKYO 100-8310,JAPAN

MODEL	MDS-D2/DH2/DM2/DJ
MODEL CODE	100-363
Manual No.	IB-1501142