MITSUBISHI ELECTRIC

Changes for the Better

MITSUBISHI CNC
DRIVE SYSTEM

GENERAL CATALOG

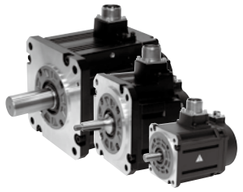
MDS-D2/DH2 Series
MDS-DM2 Series
MDS-DJ Series

BNP-A1227-E[ENG]

for a greener tomorrow

Servo Motors

■ HF Series



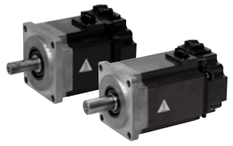
- Medium-inertia, high-accuracy and high-speed motors
- High-inertia machine accuracy is ensured. Suitable for machines requiring quick acceleration.
- Range: 0.5 to 9 [kW]
- Maximum speed: 4,000 or 5,000 [r/min]
- Supports three types of encoder with a resolution of 260,000, 1 million or 16 million p/rev.

■ Linear Servo Motor LM-F Series



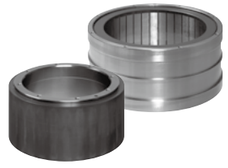
- Use in clean environments is possible since no ball screws are used and therefore contamination from grease is not an issue.
- Elimination of transmission mechanisms which include backlash, enables smooth and quiet operation even at high speeds.
- Dimensions:
  Length: 290 to 1,010 [mm]
  Width: 120 to 240 [mm]

■ HF-KP Series



- Small-capacity, low-inertia motors
- Suitable for an auxiliary axis that require high-speed positioning
- Range: 0.1 to 0.75[kW]
- Maximum speed: 6,000 [r/min]
- Supports an encoder with a resolution of 260,000p/rev.

■ Direct Drive Servo Motor TM-RB Series



- High-torque direct-drive combined motor with a high-gain control system provides quick acceleration and positioning, which makes rotation smoother.
- Suitable for a rotary axis that drives a table or spindle head.
- Compared with a conventional rotary axis with a deceleration gear, this motor has higher accuracy and is maintenance-free, having no wear or backlash.
- Range:
  Maximum torque: 36 to 1,280 [N·m]

Spindle Motors

■ High-performance New Type Spindle Motor SJ-D Series



- Motor energy loss has been significantly reduced by optimizing the magnetic circuit.
- High-speed-specification bearings are equipped as standard, achieving higher-speed, lower vibration and improved durability.
- Product line:

Normal	SJ-D Series	3.7 to 11 [kW]
Compact & light	SJ-DJ Series	5.5 to 15 [kW]

■ High-performance Spindle Motor SJ-V Series



- A vast range of spindle motors is available, including standard, high-speed and wide-range output units, all ready to support diversified machine tool needs.
- Product line:

Normal	SJ-V Series	0.75 to 55 [kW]
Wide-range constant output		
	SJ-V Series	5.5 to 18.5 [kW]
High-speed	SJ-V-Z Series	2.2 to 22 [kW]
Hollow-shaft	SJ-VS Series	5.5 to 18.5 [kW]

■ Low-inertia, High-speed New Type Spindle Motor SJ-DL Series



- Tapping machine-dedicated spindle motors have joined the new spindle motor line SJ-D Series in an effort to speed up drilling and tapping.
- Our cutting-edge design technologies have brought forth higher rigidity and lower vibration of motor despite its light weight.
- The low-inertia reduces acceleration/deceleration time, resulting in higher productivity.
- Product line:

Low-inertia	SJ-DL Series	0.75 to 7.5 [kW]

■ Low-inertia, High-speed Spindle Motor SJ-VL Series



- The spindle dedicated to tapping machines requiring faster drilling and tapping.
- The low-inertia reduces acceleration/deceleration time, resulting in higher productivity. In addition, when driven by a multi-hybrid drive (MDS-DM2 Series), this motor contributes to downsizing of the cabinet, and energy savings.
- Hollow-shaft specifications are also available.
- Product line:

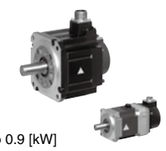
Low-inertia normal	SJ-VL Series	3.0 to 11 [kW]
Low-inertia hollow shaft	SJ-VLS Series	3.7 to 11 [kW]

■ Built-in Spindle Motor



- Electricity loss is minimized by providing better efficiency during high-speed rotation.
- Stator coil-end size has been reduced, realizing a shorter overall motor length.
- As feedback communication is serial, the resolution is significantly enhanced (Max. 4 million p/rev)
- The adjustment PCB has been eliminated to achieve adjustment-free conditions. The standard gap has been reduced to 0.3mm.

■ Tool Spindle Motor HF-KP/HF-SP Series



- Taking advantage of the characteristics of a servo motor such as smallness and high-output, this motor serves as a compact and high-output spindle motor which is capable of high-speed rotation (6,000r/min). This motor contributes to downsizing of spindles, such as the rotary tool spindle.
- Product line:

Small capacity	HF-KP Series	0.4 to 0.9 [kW]
Medium capacity	HF-SP Series	2.2 to 4 [kW]

Drive Units

■ High-performance Servo/Spindle Drive Units MDS-D2/DH2 Series



- With the fastest current control cycle, basic performance is drastically enhanced (high-gain control). A combination of high-speed servo motor and high-accuracy encoder helps enhance overall drive performance.
- High-speed optical communication enables a shorter position interpolation cycle and direct communication between drives, promoting further high-speed and high-accuracy machining.
- A high-efficiency fin and low-loss power module have enabled unit downsizing. A line of drive units driving a maximum of two spindles is available, contributing to a reduction in control panel size.
- STO (safe torque off) is now available. (Note)

■ Multi-hybrid Drive Units MDS-DM2 Series



- A line of high-performance multi-hybrid drive units are available. The multi-hybrid drive unit.
- drives a maximum of three servo axes and one spindle, supporting the ownsizing of units and offering technical advantages.
- A power regeneration system that efficiently uses energy during deceleration as power contributes to highly-frequent acceleration/deceleration and energy savings.
- STO (safe torque off) is now available. (Note)

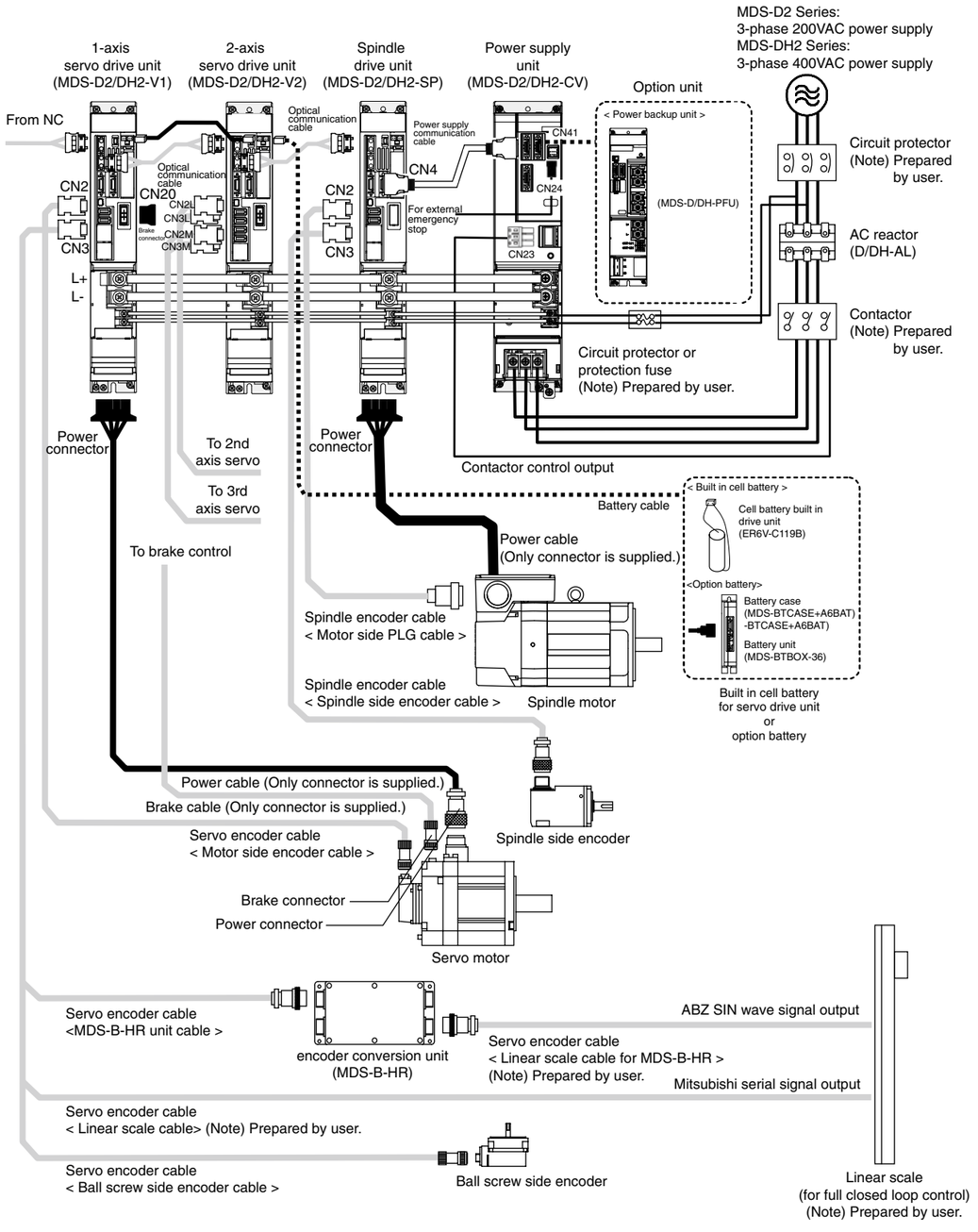
■ All-in-one compact drive units MDS-DJ Series



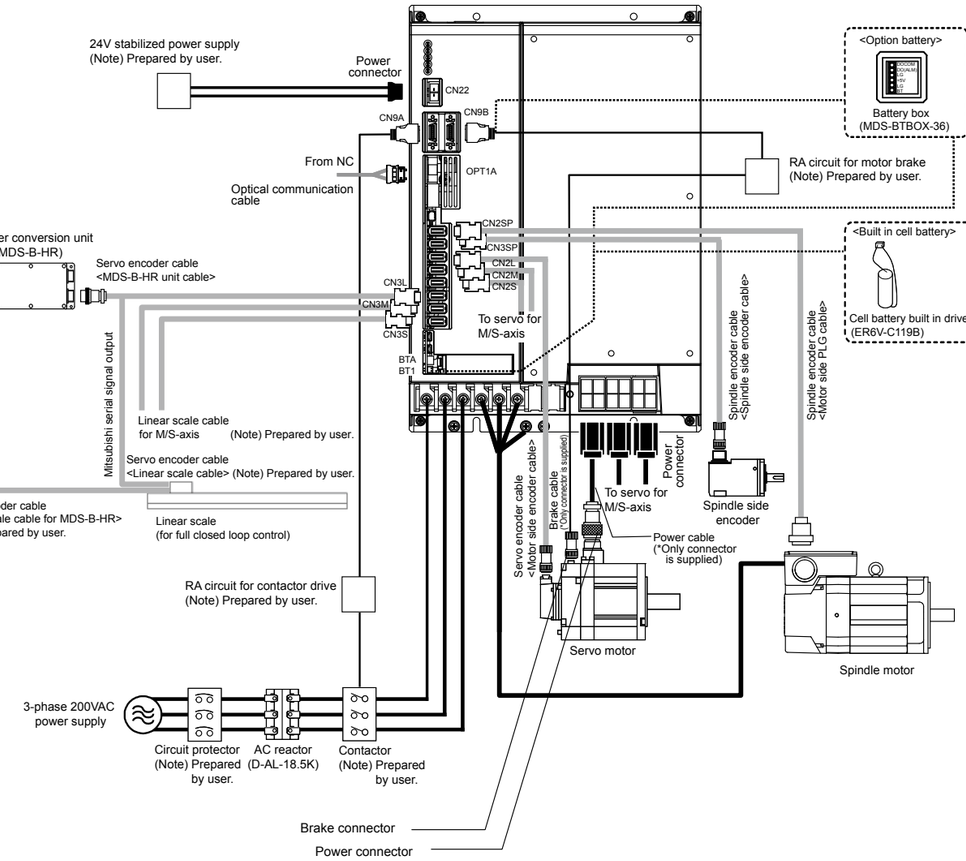
- Ultra-compact drive units with built-in power supplies contribute to reducing control panel size. The 2-axis type is added for further downsizing.
- High-speed optical communication enables a shorter position interpolation cycle and direct communication between drives, promoting further high-speed and high-accuracy machining.
- A high-efficiency fin and low-loss power module have enabled unit downsizing, which also leads to a reduction in control panel size.
- STO (safe torque off) is now available. (Note)

(Note) Please contact us for availability of STO as a whole system.

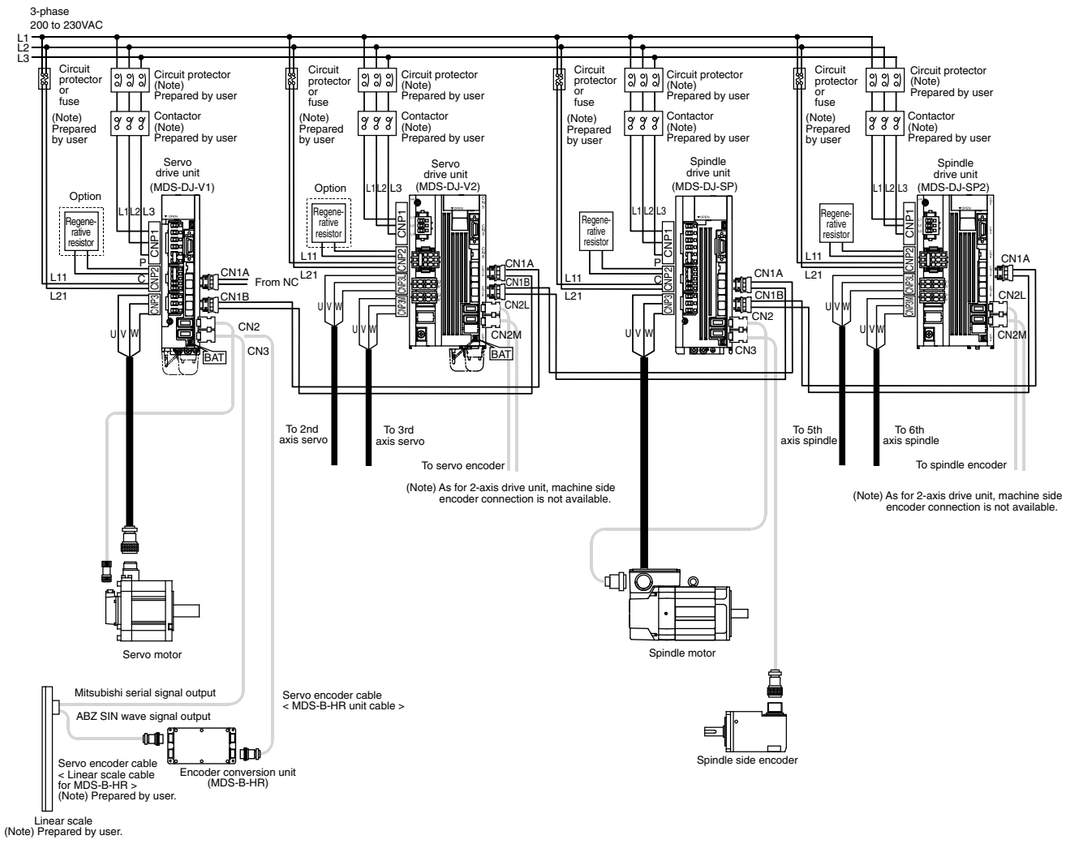
MDS-D2/DH2 Series



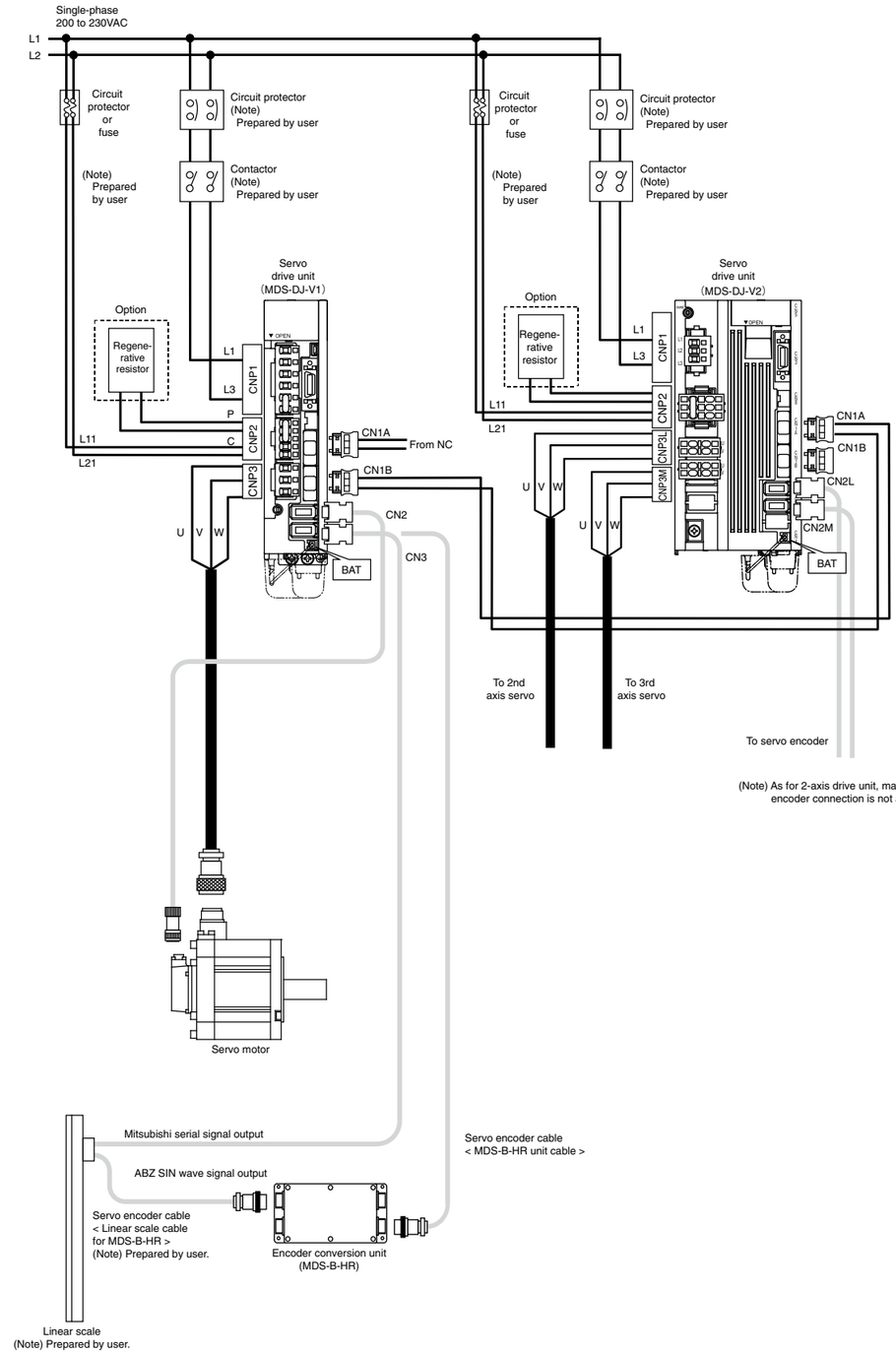
MDS-DM2 Series



MDS-DJ Series



<For single-phase power supply>



Servo / Spindle specifications

<Servo specification>

	Function name	MDS-D2-V1/V2/V3	MDS-DH2-V1/V2	MDS-DM2-SPV2/3, SPHV3	MDS-DJ-V1	MDS-DJ-V2
1 Base control functions	1.1 Full closed loop control	●	●	●	●	–
	1.2 Position command synchronous control	●	●	●	●	●
	1.3 Speed command synchronous control	● (Note 2)	●	–	–	–
	1.4 Distance-coded reference position control	●	●	●	●	–
2 Servo control function	2.1 Torque limit function (stopper function)	●	●	●	●	●
	2.2 Variable speed loop gain control	●	●	●	●	●
	2.3 Gain changeover for synchronous tapping control	●	●	●	●	●
	2.4 Speed loop PID changeover control	●	●	●	●	●
	2.5 Disturbance torque observer	●	●	●	●	●
	2.6 Smooth High Gain control (SHG control)	●	●	●	●	●
	2.7 High-speed synchronous tapping control (OMR-DD control)	●	●	●	●	●
	2.8 Dual feedback control	●	●	●	●	–
	2.9 HAS control	●	●	●	●	●
	2.10 OMR-FF control	●	●	●	●	●
3 Compensation control function	3.1 Jitter compensation	●	●	●	●	●
	3.2 Notch filter	Variable frequency: 4 Fixed frequency: 1	Variable frequency: 4 Fixed frequency: 1	Variable frequency: 4 Fixed frequency: 1	Variable frequency: 4 Fixed frequency: 1	Variable frequency: 4 Fixed frequency: 1
	3.3 Adaptive tracking-type notch filter	●	●	●	●	●
	3.4 Overshooting compensation	●	●	●	●	●
	3.5 Machine end compensation control	●	●	●	●	●
	3.6 Lost motion compensation type 2	●	●	●	●	●
	3.7 Lost motion compensation type 3	●	●	●	●	●
	3.8 Lost motion compensation type 4	●	●	●	●	●
4 Protection function	4.1 Deceleration control at emergency stop	●	●	●	●	●
	4.2 Vertical axis drop prevention/pull-up control	●	●	●	●	●
	4.3 Earth fault detection	●	●	●	●	●
	4.4 Collision detection function	●	●	●	●	●
	4.5 SLS (Safely Limited Speed) function	●	●	●	●	●
	4.6 Fan stop detection	●	●	●	●	●
	4.9 STO (Safe Torque Off) function	●	●	●	●	●
5 Sequence function	5.2 Motor brake control function (Note 1)	●	●	●	●	●
	5.4 Specified speed output	●	●	●	–	–
	5.5 Quick READY ON sequence	●	●	●	–	–
6 Diagnosis function	6.1 Monitor output function	●	●	●	●	●
	6.2 Machine resonance frequency display function	●	●	●	●	●
	6.3 Machine inertia display function	●	●	●	●	●

(Note 1) For the multiaxis drive unit, a control by each axis is not available.
It is required to turn the servo of all axes OFF in the drive unit in order to enable a motor brake output.
(Note 2) Always set L-axis as primary axis and M-axis as secondary axis for the speed command synchronous control using MDS-D2-V3.
Other settings cause the initial parameter error alarm.

<Spindle specification>

	Function name	MDS-D2-SP	MDS-DH2-SP	MDS-D2-SP2	MDS-DM2-SPV2/3, SPHV3	MDS-DJ-SP	MDS-DJ-SP2
1 Base control functions	1.1 Full closed loop control	●	●	●	●	●	–
	1.5 Spindle's continuous position loop control	●	●	●	●	●	●
	1.6 Coil changeover control	●	●	–	●	–	–
	1.7 Gear changeover control	●	●	●	●	●	●
	1.8 Orientation control	●	●	●	●	●	●
	1.9 Indexing control	●	●	●	●	●	●
	1.10 Synchronous tapping control	●	●	●	●	●	●
	1.11 Spindle synchronous control	●	●	●	●	●	●
	1.12 Spindle/C axis control	●	●	●	●	●	●
	1.13 Proximity switch orientation control	●	●	–	●	●	–
2 Spindle control functions	2.1 Torque limit function	●	●	●	●	●	●
	2.2 Variable speed loop gain control	●	●	●	●	●	●
	2.5 Disturbance torque observer	●	●	●	●	●	●
	2.6 Smooth High Gain control (SHG control)	●	●	●	●	●	●
	2.7 High-speed synchronous tapping control (OMR-DD control)	●	●	●	●	●	●
	2.8 Dual feedback control	●	●	●	●	●	–
	2.11 Control loop gain changeover	●	●	●	●	●	●
	2.12 Spindle output stabilizing control	●	●	●	●	●	●
	2.13 High-response spindle acceleration/deceleration function	●	●	●	●	●	●
3 Compensation control function	3.1 Jitter compensation	●	●	●	●	●	●
	3.2 Notch filter	Variable frequency: 4 Fixed frequency: 1	Variable frequency: 4 Fixed frequency: 1	Variable frequency: 4 Fixed frequency: 1	Variable frequency: 4 Fixed frequency: 1	Variable frequency: 4 Fixed frequency: 1	Variable frequency: 4 Fixed frequency: 1
	3.3 Adaptive tracking-type notch filter	●	●	●	●	●	●
	3.4 Overshooting compensation	●	●	●	●	●	●
	3.6 Lost motion compensation type 2	●	●	●	●	●	●
	3.9 Spindle motor temperature compensation function	●	●	●	●	●	●
4 Protection function	4.1 Deceleration control at emergency stop	●	●	●	●	●	●
	4.3 Earth fault detection	●	●	●	●	●	●
	4.5 SLS (Safely Limited Speed) function	●	●	●	●	●	●
	4.6 Fan stop detection	●	●	●	●	●	●
	4.9 STO (Safe Torque Off) function	●	●	●	●	●	●
5 Sequence function	5.4 Specified speed output	●	●	●	●	–	–
	5.5 Quick READY ON sequence	●	●	●	●	–	–
6 Diagnosis function	6.1 Monitor output function	●	●	●	●	●	●
	6.2 Machine resonance frequency display function	●	●	●	●	●	●
	6.3 Machine inertia display function	●	●	●	●	●	●
	6.4 Motor temperature display function	●	●	●	●	●	●
	6.5 Load monitor output function	●	●	●	●	●	●
	6.6 Open loop control function	●	●	●	●	●	●

Power Supply specification

<Power Supply specification>

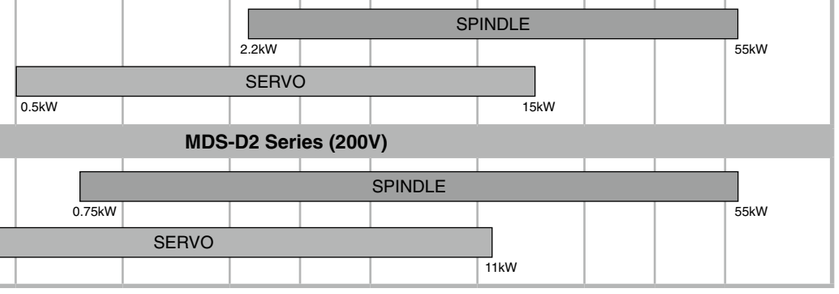
	Function name	MDS-D2-CV	MDS-DH2-CV	MDS-DM2-SPV2/3,SPHV3 built-in converter	MDS-DJ-V1/V2 built-in converter	MDS-DJ-SP/SP2 built-in converter
1 Base control functions	1.14 Power regeneration control	●	●	●	–	–
	1.15 Resistor regeneration control	–	–	–	●	●
4 Protection function	4.6 Fan stop detection	●	●	●	●	●
	4.7 Open-phase detection	●	●	●	–	–
	4.8 Contactor weld detection	●	●	●	●	●
	4.10 Deceleration and stop function at power failure (Note)	●	●	–	–	–
5 Sequence function	5.1 Contactor control function	●	●	●	●	●
	5.3 External emergency stop function	●	●	●	●	●
	5.5 High-speed ready ON sequence	●	●	●	–	–
6 Diagnosis function	6.7 Power supply diagnosis display function	●	●	●	–	–

(Note) The power backup unit and resistor unit option are required.

MITSUBISHI CNC DRIVE SYSTEM LINES

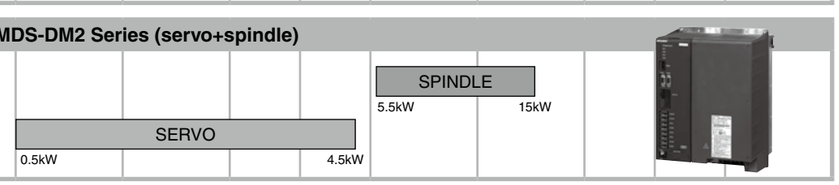
Drive unit to realize complete nano control MDS-DH2 Series (400V)



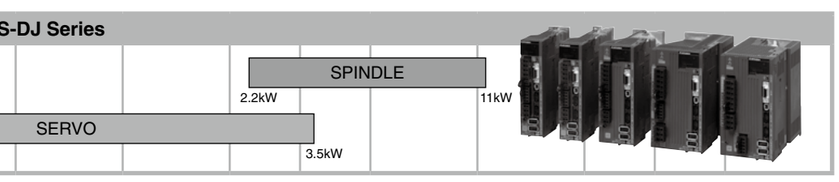


MDS-D2 Series (200V)

Multi-hybrid drive unit MDS-DM2 Series (servo+spindle)



Compact drive unit MDS-DJ Series



0.1 0.2 0.3 0.5 1.0 2.0 3.0 5.0 10 20 30 50 100 (kW)

Compatible motors' rated capacity

200V HF servo motor

<HF Series>

HF ① ② ③ – ④

①Rated output and maximum rotation speed

Symbol	Rated output	Max. 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.

②Magnetic brake

Symbol	Magnetic brake
None	None
B	With magnetic brake

③Shaft 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.

④Encoder

Symbol	Detection method	Resolution
A48	Absolute position	260,000 p/rev
A51		1,000,000 p/rev
A74/A74N		16,000,000 p/rev

* A74 falls under the Export Trade Control Ordinance and Foreign Trade Ordinance.

<HF-KP Series>

HF-KP13 ② J-S17

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

* 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

①Rated output and maximum rotation speed

Symbol	Rated output	Max. 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.

②Magnetic brake

Symbol	Magnetic brake
None	None
B	With magnetic brake

③Encoder

Symbol	Detection method	Resolution
None	Absolute position	260,000 p/rev

(Note) The encoder for HF-KP Series is fixed.

200V Direct-drive motor

<TM-RB Series>

Primary side [coil side]

TM-RBP ① ② ③

Secondary side [magnet side]

TM-RBS ① ② ③

①Rated torque

Symbol	Rated torque
012	12 N · m
036	36 N · m
048	48 N · m
105	105 N · m
150	150 N · m
340	340 N · m
500	500 N · m

②Stator dimensions

Symbol	Dimension
C	DIA 130 mm
E	DIA 180 mm
G	DIA 230 mm
J	DIA 330 mm

③Rated rotation speed

Symbol	Speed
10	100 r/min
20	200 r/min

200V Linear servo motor

<LM-F Series>

Primary side [coil side] LM-FP ① ② – ③ M-1WW0

①Width

Symbol	Width (nominal)
2	120 mm
4	200 mm

②Length

Symbol	Length (nominal)
B	290 mm
D	530 mm
F	770 mm

③Rated thrust

Symbol	Rated thrust
06	600 N
12	1200 N
18	1800 N
24	2400 N
36	3600 N
48	4800 N

Secondary side [magnet side] LM-FS ①0-② -1WW0

①Width

Symbol	Width (nominal)
2	120 mm
4	200 mm

②Length

Symbol	Length (nominal)
480	480 mm
576	576 mm

200V SJ-D spindle motor

<SJ-D Series (for 200V)> SJ-D ① ② / ③ – ④ ⑤ – ⑥

①Motor Series

Symbol	Motor Series
None	Normal specifications
G	High-output specifications
J	Compact & lightweight specifications
L	Low-inertia specifications

②Short-time (or %ED) rated output

Symbol	Short-time rated output
0.75	0.75 kW
1.5	1.5 kW
3.7	3.7 kW
5.5	5.5 kW
7.5	7.5 kW
11	11 kW
15	15 kW

③Maximum rotation speed
Indicates the hundreds place and higher order digits.

④Specification code
Indicates a specification code (01 to 99).

⑤Encoder

Symbol	Type
None	Type 1
T	Type 2

⑥Option (Note)

Symbol	Option
None	Standard (flange type, without oil seal, without key, coil changeover unavailable, air-cooling, solid shaft)
A	With leg
C	With key
J	Oil seal
S	Hollow shaft
X	Reversed cooling air

(Note) If more than one option is included, the symbols are in alphabetical order.

200V SJ-V spindle motor

<SJ-V/VL Series> SJ- ① ② ③ ④ – ⑤ ⑥ T

①Motor Series

Symbol	Motor Series
V	Medium inertia Series
VL	Low inertia Series

②Coil changeover

Symbol	Coil changeover
None	Unavailable
K	Available

③Shaft configuration

Symbol	Shaft configuration
None	Standard
S	Hollow shaft

④Short-time rated output (Normal specification)

Symbol	Short-time rated output
0.75	0.75 kW
1.5	1.5 kW
2.2	2.2 kW
3.7	3.7 kW
5.5	5.5 kW
7.5	7.5 kW
11	11 kW
15	15 kW
18.5	18.5 kW
22	22 kW
26	26 kW
37	37 kW
45	45 kW
55	55 kW

⑤Specification code

The SJ-V/VLSeries is indicated with a specification code (01 to 99).

⑥Special specifications

Symbol	Special specifications
None	Standard
Z	High-speed bearing
FZ	High-speed bearing front-lock

200V Built-in spindle motor

<SJ-B Series> SJ- ① B ② ③ ④ ⑤ ⑥

①Voltage

Symbol	Voltage
2	200V
4	400V

* 400V is available by special order.

②Number of poles

Symbol	Number of poles
2	2 poles
4	4 poles
6	6 poles

③Motor size

Symbol	Stator outline
0	ϕ 110
1	ϕ 128
2	ϕ 160
3	ϕ 180
4	ϕ 210
5	ϕ 230
6	ϕ 255
7	ϕ 300
9	ϕ 370
A	ϕ 90
B	ϕ 115

Stator outline (frame No.) is indicated with 0 to 9, A, B.

④Specification code
Specification code (01 to 99)

⑤Overheat protection sensor

Symbol	Overheat protection sensor
T	Thermistor

⑥Coil changeover

Symbol	Coil changeover
None	Unavailable
D	Available (Δ-2//Δ)
K	Available (人-Δ)

<SJ-PMB Series> SJ- ① PMB ② ③ ④ – ⑤

①Voltage

Symbol	Voltage
None	200V
4	400V

* 400V is available by special order.

②Continuous rated torque
Indicates with 3 digits.
For 1000 [N · m] or more (for 9999 [N · m] or less), the upper digit is indicated by alphabetic character and the others are indicated by the carried number.
Example) 020 : 20 [N · m] A55 : 1550 [N · m]

③Base rotation speed
Indicates the thousands and the hundreds places (the ten places are rounded off.)
Example) 03 : 250 to 349 [r/min] 15 : 1450 to 1549 [r/min]

④Overheat protection sensor

Symbol	Overheat protection sensor
T	Thermistor

⑤Design management No.
Indicates with 2 digits number or alphabetic characters
Example) 00, A1

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

200V Tool spindle motor

<HF-KP Series>

HF-KP ① J ② W09

①Rated output · 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.

②Option

Symbol	Option
None	Without keyway
K	With keyway (with key)

<HF-SP Series>

HF-SP ① J ② W09

①Rated output · Maximum rotation speed

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

②Option

Symbol	Option
None	Without keyway
K	With keyway (without key)

<HF Series>

HF ① ② – ③

①Rated 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.
123	1.2 kW	2000 r/min	130 SQ.
223	2.2 kW	2000 r/min	130 SQ.
303	3.0 kW	2000 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.

②Shaft end structure

Symbol	Shaft end structure
S	Straight

③Encoder

Symbol	Resolution
A48	260,000 p/rev

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

400V HF-H servo motor

<HF-H Series>

HF-H ① ② ③ – ④

①Rated 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.
204	2.0 kW	4000 r/min	176 SQ.
354	3.5 kW	4000 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.

②Magnetic brakes

Symbol	Magnetic brakes
None	None
B	With magnetic brakes

③Shaft 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.

④Encoder

Symbol	Detection method	Resolution
A48	Absolute position	260,000 p/rev
A51		1,000,000 p/rev
A74N		16,000,000 p/rev

400V Linear servo motor

<LM-F Series>

Primary side [coil side] LM-FP ① ② – ③ M-1WW0

①Width

Symbol	Width (nominal)
5	240 mm

②Length

Symbol	Length (nominal)
H	1010 mm

③Rated thrust

Symbol	Rated thrust
60	6000 N

Secondary side [magnet side] LM-FS ① 0- ② -1WW0

①Width

Symbol	Width (nominal)
5	240 mm

②Length

Symbol	Length (nominal)
480	480 mm
576	576 mm

400V SJ-4-V spindle motor

<SJ-V Series>

SJ-4- ① ② ③ ④ – ⑤ ⑥ T

①Motor Series

Symbol	Motor Series
V	Medium-inertia Series

②Coil changeover

Symbol	Coil changeover
None	Unavailable

③Shaft configuration

Symbol	Axis configuration
None	Standard
S	Hollow shaft

④Short time rated output (Normal specification)

Symbol	Short time rated output
2.2	2.2 kW
3.7	3.7 kW
5.5	5.5 kW
7.5	7.5 kW
11	11 kW
15	15 kW
18.5	18.5 kW
22	22 kW
26	26 kW
37	37 kW
45	45 kW
55	55 kW

⑤Specification code

The SJ-4-V Series is indicated with a specification code (01 to 99).

⑥Special specification

Symbol	Special specification
None	Standard
Z	High-speed bearing

(Note 1) The built-in 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.

HF Series

Motor type				HF-KP13□J-S17	HF-KP23□JW04-S6	HF-KP43□JW04-S6	HF-KP73□JW04-S6	HF75	HF105
Compatible drive unit	1-axis type	MDS-D2-V1-		–	20	20	20	20	20
	2-axis type	MDS-D2-V2-		–	2020 4020 (M)	2020 4020 (M)	2020 4020 (M)	2020 4020 (M)	2020 4020 (M)
	3-axis type	MDS-D2-V3-		–	202020	202020	202020	202020 404040	202020 404040
	Multi axis integrated type	MDS-DM2-	SPV2-	–	–	–	–	–	–
			SPV3-	–	–	–	–	–	–
	Regenerative resistor type	MDS-DJ-	V1-	10	10	15	30	30	30
			V2-	–	–	–	3030	3030	3030
Output Stall torque Max. torque			[N · m]	15 10 5 0 0.32 0.95	0.64 1.9	1.3 3.8	2.4 7.2	2.0 8.0	3.0 11.0
Rated output			[kW]	0.1	0.2	0.4	0.75	0.75	1.0
Maximum rotation speed			[r/min]	6000	6000	6000	6000	5000	5000
Motor inertia			[kg · cm²]	0.088	0.23	0.42	1.43	2.6	5.1
Motor inertia with a brake			[kg · cm²]	0.090	0.31	0.50	1.63	2.8	5.3
Degree of protection (The shaft-through portion is excluded.)				IP65	IP65	IP65	IP65	IP67	IP67
Outline dimension drawing (Without a brake, Straight shaft, A48 encoder) (Note) The total length will be 3.5mm longer when using an A51 or A74/A74N encoder. (Note) The encoder specification for the HF-KP series is fixed.			[mm]	40 SQ. 50 SQ. 92.8	60 SQ. 98	60 SQ. 119.9	80 SQ. 134.2	90 SQ. 126.5	90 SQ. 162.5
Flange fitting diameter			[mm]	ϕ 30	ϕ 50	ϕ 50	ϕ 70	ϕ 80	ϕ 80
Shaft diameter			[mm]	ϕ 8	ϕ 14	ϕ 14	ϕ 19	ϕ 14	ϕ 14
Mass (with a brake)			[kg]	0.66 (0.96)	1.2 (1.8)	1.7 (2.3)	2.9 (4.1)	2.5 (3.9)	4.3 (5.7)
Absolute position encoder compatible drive unit	16,000,000 [p/rev] (A74/A74N)			–	–	–	–	D2	D2
	1,000,000 [p/rev] (A51)			–	–	–	–	D2, DJ	D2, DJ
	260,000 [p/rev] (A48)			DJ	D2, DJ	D2, DJ	D2, DJ		

Motor type				HF54	HF104	HF154		HF224	HF204	
Compatible drive unit	1-axis type	MDS-D2-V1-		40	40	–	80	80	–	80
	2-axis type	MDS-D2-V2-		4020 (L) 4040 8040 (M)	4020 (L) 4040 8040 (M)	–	8040 (L) 8080 16080 (M)	8040 (L) 8080 16080 (M)	–	8040 (L) 8080 16080 (M)
	3-axis type	MDS-D2-V3-		404040	404040	404040	–	–	–	–
	Multi axis integrated type	MDS-DM2-	SPV2-	xxx80*	xxx80*	–	xxx80*	xxx80*	–	xxx80*
			SPV3-	xxx80*	xxx80*	–	xxx80* 200120	xxx80* 200120	–	xxx80* 200120
			SPHV3-	20080	20080	–	20080	20080	–	20080
	Regenerative resistor type	MDS-DJ-	V1-	30	40	–	80	80	80	–
			V2-	3030	–	–	–	–	–	–
Output Stall torque Max. torque			[N · m]	50 40 30 20 10 0 2.9 13.0	5.9 23.3	7.0 23.7	9.0 42.0	12.0 46.5	13.7 42.0	13.7 47.0
Rated output			[kW]	0.5	1.0	1.5		2.2	2.0	
Maximum rotation speed			[r/min]	4000	4000	4000		4000	4000	
Motor inertia			[kg · cm²]	6.1	11.9	17.8		23.7	38.3	
Motor inertia with a brake			[kg · cm²]	8.3	14.1	20.0		25.9	48.0	
Degree of protection (The shaft-through portion is excluded.)				IP67	IP67	IP67		IP67	IP67	
Outline dimension drawing (Without a brake, Straight shaft, A48 encoder) (Note) The total length will be 3.5mm longer when using an A51 or A74/A74N encoder.			[mm]	130 SQ. 118.5	130 SQ. 140.5	130 SQ. 162.5		130 SQ. 184.5	176 SQ. 143.5	
Flange fitting diameter			[mm]	ϕ 110	ϕ 110	ϕ 110		ϕ 110	ϕ 114.3	
Shaft diameter			[mm]	ϕ 24	ϕ 24	ϕ 24		ϕ 24	ϕ 35	
Mass (with a brake)			[kg]	4.8 (6.8)	6.5 (8.5)	8.3 (10.3)		10.0 (12.0)	12.0 (18.0)	
Absolute position encoder compatible drive unit	16,000,000 [p/rev] (A74/A74N)			D2	D2	D2-V3	D2	D2	–	D2
	1,000,000 [p/rev] (A51)			D2 DM2, DJ	D2 DM2, DJ		D2 DM2, DJ	D2 DM2, DJ	DJ	D2 DM2
	260,000 [p/rev] (A48)									

*Refer to "MDS-DM2 Series Multi-hybrid drive" in this book for compatible drive unit type.
(Note) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

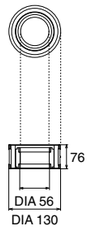
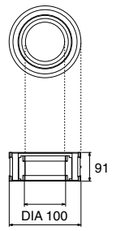
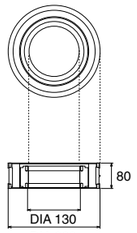
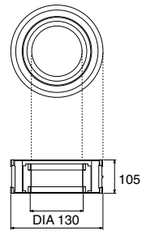
HF Series

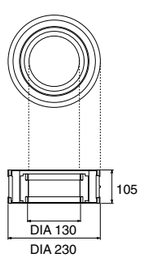
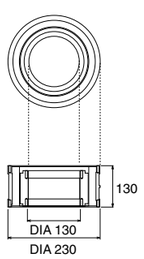
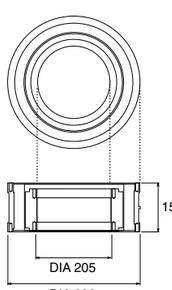
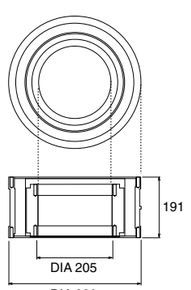
Motor type				HF354			HF123	HF223		HF303
Compatible drive unit	1-axis type	MDS-D2-V1-		–	–	160	20	–	40	80
	2-axis type	MDS-D2-V2-		–	–	16080 (L) 160160 160160W	2020 (L, M) 4020 (M)	–	4020 (L) 4040 8040 (M)	8040 (L) 8080 16080 (M)
	3-axis type	MDS-D2-V3-		–	–	–	202020 404040	404040 (M, S)	404040 (L)	–
	Multi axis integrated type	MDS-DM2-	SPV2-	–	–	–	–	–	xxx80*	xxx80*
			SPV3-	–	200120	–	–	–	xxx80*	xxx80* 200120
			SPHV3-	–	–	–	–	–	20080	20080
	Regenerative resistor type	MDS-DJ-V1-		100	–	–	40	–	40	80
Output Stall torque Max. torque			[N · m]	100 80 60 40 20 0 22.5 65.0	22.5 75.0	22.5 90.0	7.0 17.0	10.0 32.0	12.0 32.0	22.5 64.0
Rated output			[kW]	3.5			1.2	2.1	2.2	3.0
Maximum rotation speed			[r/min]	3500	4000		3000	3000		3000
Motor inertia			[kg · cm²]	75.0			11.9	23.7		75.0
Motor inertia with a brake			[kg · cm²]	84.7			14.1	25.9		84.7
Degree of protection (The shaft-through portion is excluded.)				IP67			IP67	IP67		IP67
Outline dimension drawing (Without a brake, Straight shaft, A48 encoder) (Note) The total length will be 3.5mm longer when using an A51 or A74/A74N encoder.			[mm]	176 SQ. 183.5			130 SQ. 140.5	130 SQ. 184.5		176 SQ. 183.5
Flange fitting diameter			[mm]	ϕ 114.3			ϕ 110	ϕ 110		ϕ 114.3
Shaft diameter			[mm]	ϕ 35			ϕ 24	ϕ 24		ϕ 35
Mass (with a brake)			[kg]	19.0 (25.0)			6.5 (8.5)	10.0 (12.0)		19.0 (25.0)
Absolute position encoder compatible drive unit	16,000,000 [p/rev] (A74/A74N)			–	–	D2	D2	–	D2	D2
	1,000,000 [p/rev] (A51)			DJ	DM2		D2, DJ	D2-V3	D2 DM2, DJ	D2 DM2, DJ
	260,000 [p/rev] (A48)									

Motor type				HF453		HF703	HF903	HF142	HF302	
Compatible drive unit	1-axis type	MDS-D2-V1-		–	160	160W	320	20	–	40
	2-axis type	MDS-D2-V2-		–	16080 (L) 160160 160160W	160160W	–	2020 4020 (M)	–	4020 (L) 4040 8040 (M)
	3-axis type	MDS-D2-V3-		–	–	–	–	202020 404040	404040 (M, S)	404040 (L)
	Multi axis integrated type	MDS-DM2-	SPV2-	–	–	–	–	–	–	xxx80*
			SPV3-	200120	–	–	–	–	–	xxx80*
			SPHV3-	–	–	–	–	–	–	20080
	Regenerative resistor type	MDS-DJ-V1-		–	–	–	–	40	–	40
Output Stall torque Max. torque			[N · m]	200 150 100 50 0 37.2 90.0	37.2 122.0	49.0 152.0	58.8 208.0	11.0 26.5	15.6 50.0	20.0 50.0
Rated output			[kW]	4.5		7.0	9.0	1.4	2.2	3.0
Maximum rotation speed			[r/min]	3500		3000	3000	2000	2000	
Motor inertia			[kg · cm²]	112.0		154.0	196.0	17.8	75.0	
Motor inertia with a brake			[kg · cm²]	121.7		163.7	205.7	20.0	84.7	
Degree of protection (The shaft-through portion is excluded.)				IP67		IP67	IP67	IP67	IP67	
Outline dimension drawing (Without a brake, Straight shaft, A48 encoder) (Note) The total length will be 3.5mm longer when using an A51 or A74/A74N encoder.			[mm]	176 SQ. 223.5		176 SQ. 263.5	204 SQ. 330	130 SQ. 162.5	176 SQ. 183.5	
Flange fitting diameter			[mm]	ϕ 114.3		ϕ 114.3	ϕ 180	ϕ 110	ϕ 114.3	
Shaft diameter			[mm]	ϕ 35		ϕ 35	ϕ 42	ϕ 24	ϕ 35	
Mass (with a brake)			[kg]	26.0 (32.0)		32.0 (38.0)	45.0 (51.0)	8.3 (10.3)	19.0 (25.0)	
Absolute position encoder compatible drive unit	16,000,000 [p/rev] (A74/A74N)			–				D2		D2
	1,000,000 [p/rev] (A51)			DM2	D2	D2	D2	D2, DJ	D2-V3	D2, DM2, DJ
	260,000 [p/rev] (A48)									

*Refer to "MDS-DM2 Series Multi-hybrid drive" in this book for compatible drive unit type.
(Note) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

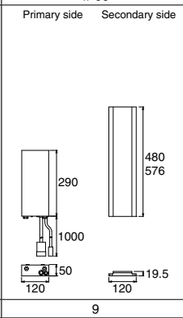
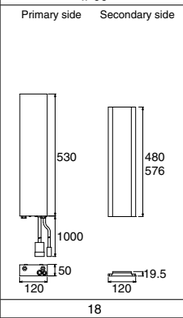
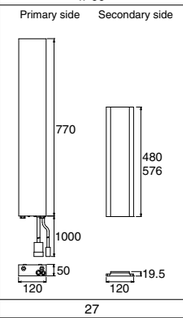
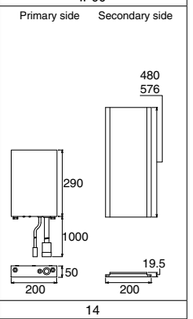
TM-RB Series

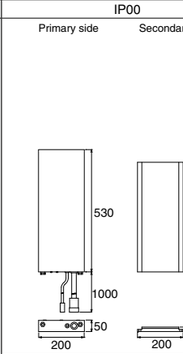
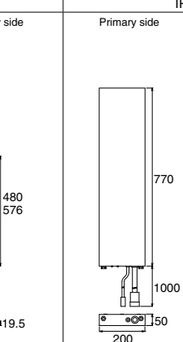
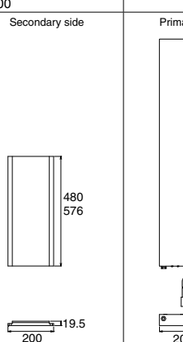
Direct-drive motor type	Primary side type		TM-RBP012C20	TM-RBP036E20	TM-RBP048G20	TM-RBP105G10
	Secondary side type		TM-RBS012C20	TM-RBS036E20	TM-RBS048G20	TM-RBS105G10
Compatible drive unit	1-axis type	MDS-D2-V1-	40	80	80	160
	2-axis type	MDS-D2-V2-	4020 (L) 4040 8040 (M)	8040 (L) 8080 16080 (M)	8040 (L) 8080 16080 (M)	16080 (L) 160160
	3-axis type	MDS-D2-V3-	404040	–	–	–
	Regenerative resistor type	MDS-DJ-V1-	40	80	80	100
Output Rated torque (liquid-cooling) Max. torque	[N · m]		12 / 36	36 / 108	48 / 144	105 / 260
Rated output	[W]		252	754	1005	1100
Maximum rotation speed	[r/min]		500	500	500	250
Motor inertia	[kg · cm²]		22	127	280	395
Degree of protection			IP00	IP00	IP00	IP00
Outline dimension drawing	[mm]					
Mass [kg]	Primary side (coil)		3.9	7.1	10	13
	Secondary side (magnet)		1.7	3.7	5	7

Direct-drive motor type	Primary side type		TM-RBP105G20	TM-RBP150G20	TM-RBP340J20	TM-RBP500J20
	Secondary side type		TM-RBS105G20	TM-RBS150G20	TM-RBS340J20	TM-RBS500J20
Compatible drive unit	1-axis type	MDS-D2-V1-	160	160	320	320W
	2-axis type	MDS-D2-V2-	16080 (L) 160160	160160	–	–
	Regenerative resistor type	MDS-DJ-V1-	–	–	–	–
Output Rated torque (liquid-cooling) Max. torque	[N · m]		105 / 260	150 / 375	340 / 850	500 / 1280
Rated output	[W]		2199	3141	7120	10471
Maximum rotation speed	[r/min]		500	500	400	400
Motor inertia	[kg · cm²]		395	510	2778	3538
Degree of protection			IP00	IP00	IP00	IP00
Outline dimension drawing	[mm]					
Mass [kg]	Primary side (coil)		13	16	33	41
	Secondary side (magnet)		7	9	20	26

(Note 1) The encoder should be procured by the user.
(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

LM-F Series

Linear servo motor type	Primary side type		LM-FP2B-06M-1WW0	LM-FP2D-12M-1WW0	LM-FP2F-18M-1WW0	LM-FP4B-12M-1WW0
	Secondary side type		LM-FS20-□-1WW0	LM-FS20-□-1WW0	LM-FS20-□-1WW0	LM-FS40-□-1WW0
Compatible drive unit	1-axis type	MDS-D2-V1-	40	80	160	80
	2-axis type	MDS-D2-V2-	4020 (L) 4040 8040 (M)	8040 (L) 8080 16080 (M)	16080 (L) 160160	8040 (L) 8080 16080 (M)
	3-axis type	MDS-D2-V3-	404040	–	–	–
	Regenerative resistor type	MDS-DJ-V1-	40	80	–	80
Thrust force Continuous (natural-cooling) Continuous (liquid-cooling) Maximum	[N]		300 / 600 / 1800	600 / 1200 / 3600	900 / 1800 / 5400	600 / 1200 / 3600
Rated thrust force	[N]		600	1200	1800	1200
Maximum speed (Note 1)	[m/s]		2.0	2.0	2.0	2.0
Magnetic attraction force	[N]		4500	9000	13500	9000
Degree of protection			IP00	IP00	IP00	IP00
Outline dimension drawing	[mm]					
Mass [kg]	Primary side (coil)		9	18	27	14
	Secondary side (magnet)		7.1 (480mm) 9.0 (576mm)	7.1 (480mm) 9.0 (576mm)	7.1 (480mm) 9.0 (576mm)	13.5 (480mm) 16.0 (576mm)

Linear servo motor type	Primary side type		LM-FP4D-24M-1WW0	LM-FP4F-36M-1WW0	LM-FP4H-48M-1WW0
	Secondary side type		LM-FS40-□-1WW0	LM-FS40-□-1WW0	LM-FS40-□-1WW0
Compatible drive unit	1-axis type	MDS-D2-V1-	160	320	320
	2-axis type	MDS-D2-V2-	16080 (L) 160160	–	–
	Regenerative resistor type	MDS-DJ-V1-	–	–	–
Thrust force Continuous (natural-cooling) Continuous (liquid-cooling) Maximum	[N]		1200 / 2400 / 7200	1800 / 3600 / 10800	2400 / 4800 / 14400
Rated thrust force	[N]		2400	3600	4800
Maximum speed (Note 1)	[m/s]		2.0	2.0	2.0
Magnetic attraction force	[N]		18000	27000	36000
Degree of protection			IP00	IP00	IP00
Outline dimension drawing	[mm]				
Mass [kg]	Primary side (coil)		28	42	56
	Secondary side (magnet)		13.5 (480mm) 16.0 (576mm)	13.5 (480mm) 16.0 (576mm)	13.5 (480mm) 16.0 (576mm)

(Note 1) The maximum speed in actual use is either the linear scale's maximum speed or this specified value, whichever is smaller.
(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

LM-F Series (One unit and two motor)

Linear servo motor type			LM-FP2B-06M-1WW0	LM-FP2D-12M-1WW0	LM-FP2F-18M-1WW0
	Secondary side type		LM-FS20-□-1WW0	LM-FS20-□-1WW0	LM-FS20-□-1WW0
Compatible drive unit	1-axis type	MDS-D2-V1-	80	160	320
	2-axis type	MDS-D2-V2-	8040 (L) 8080 16080 (M)	16080 (L) 160160	–
	Regenerative resistor type	MDS-DJ-V1-	80	–	–
Thrust force Continuous (natural-cooling) Continuous (liquid-cooling) Maximum		[N]	600 1200 3600	1200 2400 7200	1800 3600 10800
Rated thrust force		[N]	1200	2400	3600
Maximum speed (Note 1)		[m/s]	2.0	2.0	2.0
Magnetic attraction force (per motor)		[N]	4500	9000	13500
Degree of protection			IP00	IP00	IP00
Outline dimension drawing		[mm]	Primary side / Secondary side 290 1000 480 576 50 19.5 120 120	Primary side / Secondary side 530 1000 480 576 50 19.5 120 120	Primary side / Secondary side 770 1000 480 576 50 19.5 120 120
Mass	Primary side (coil)	[kg]	9×2	18×2	27×2
	Secondary side (magnet)		7.1 (480mm) 9.0 (576mm)	7.1 (480mm) 9.0 (576mm)	7.1 (480mm) 9.0 (576mm)

Linear servo motor type			LM-FP4B-12M-1WW0	LM-FP4D-24M-1WW0
	Secondary side type		LM-FS40-□-1WW0	LM-FS40-□-1WW0
Compatible drive unit	1-axis type	MDS-D2-V1-	160	320
	2-axis type	MDS-D2-V2-	160160	–
	Regenerative resistor type	MDS-DJ-V1-	–	–
Thrust force Continuous (natural-cooling) Continuous (liquid-cooling) Maximum		[N]	1200 2400 7200	2400 4800 14400
Rated thrust force		[N]	2400	4800
Maximum speed (Note 1)		[m/s]	2.0	2.0
Magnetic attraction force (per motor)		[N]	9000	18000
Degree of protection			IP00	IP00
Degree of protection		[mm]	Primary side / Secondary side 290 1000 480 576 50 19.5 200 200	Primary side / Secondary side 530 1000 480 576 50 19.5 200 200
Mass	Primary side (coil)	[kg]	14×2	28×2
	Secondary side (magnet)		13.5 (480mm) 16.0 (576mm)	13.5 (480mm) 16.0 (576mm)

(Note 1) The maximum speed in actual use is either the linear scale's maximum speed or this specified value, whichever is smaller.
(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

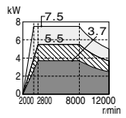
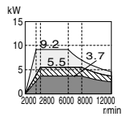
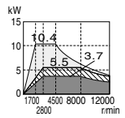
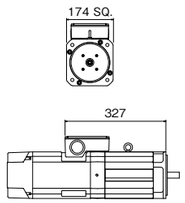
SJ-D Series (Normal specifications)

Motor type			SJ-D3.7/100-01	SJ-D5.5/100-01	SJ-D5.5/120-01	SJ-D7.5/100-01	SJ-D7.5/120-01
Compatible drive unit	1-axis type	MDS-D2-SP-	80	80	80	160	160
	2-axis type	MDS-D2-SP2-	8040 (L) 8080 16080S (M)	8040 (L) 8080 (L, M) 16080S (M)	8040 (L) 8080 16080S (M)	16080S (L)	16080S (L)
	Multi axis integrated type	MDS-DM2- SPV2-	–	10080	10080	10080	10080
		MDS-DM2- SPV3-	–	10080	10080	10080	10080
	Regenerative resistor type	MDS-DJ-SP-	80	100	100	120	120
Output Short-time rating Continuous rating			kW 6 4 2 0 3.7 2.2 1500 6000 10000 r/min Short-time rating (15min)	kW 6 4 2 0 5.5 3.7 1500 6000 10000 r/min Short-time rating (30min)	kW 6 4 2 0 5.5 3.7 1500 6000 12000 r/min Short-time rating (30min)	kW 8 6 4 2 0 7.5 5.5 1500 6000 10000 r/min Short-time rating (30min)	kW 8 6 4 2 0 7.5 5.5 1500 6000 12000 r/min Short-time rating (30min)
Standard output during acceleration/deceleration		[kW]	3.7	5.5	5.5	7.5	7.5
Actual acceleration/deceleration output (Note 2)		[kW]	4.44	6.6	6.6	9	9
Base rotation speed		[r/min]	1500	1500	1500	1500	1500
Max. rotation speed in constant output range		[r/min]	6000	6000	6000	6000	6000
Maximum rotation speed		[r/min]	10000	10000	12000	10000	12000
Continuous rated torque		[N · m]	14.0	23.6	23.6	35.0	35.0
Motor inertia		[kg · m²]	0.0074	0.013	0.013	0.023	0.023
Degree of protection (The shaft-through portion is excluded.)			IP54	IP54	IP54	IP54	IP54
Outline dimension drawing (flange type)		[mm]	174 SQ. 327	174 SQ. 417	174 SQ. 417	204 SQ. 439	204 SQ. 439
Flange fitting diameter		[mm]	ϕ 150	ϕ 150	ϕ 150	ϕ 180	ϕ 180
Shaft diameter		[mm]	ϕ 28	ϕ 28	ϕ 28	ϕ 32	ϕ 32
Mass		[kg]	26	39	39	53	53

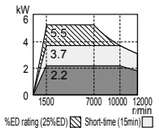
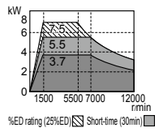
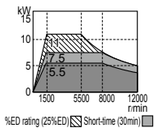
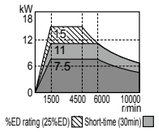
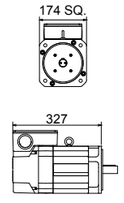
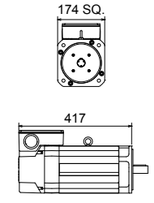
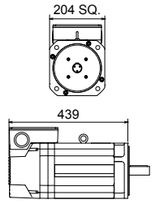
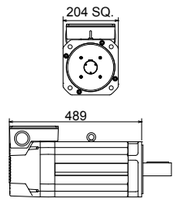
Motor type			SJ-D11/100-01	SJ-D5.5/120-02		
Compatible drive unit	1-axis type	MDS-D2-SP-	160	–	160	200
	2-axis type	MDS-D2-SP2-	16080S (L)	–	16080S (L)	–
	Multi axis integrated type	MDS-DM2- SPV2-	16080	10080	16080	20080
		MDS-DM2- SPV3-	16080	10080	16080	20080
	Regenerative resistor type	MDS-DJ-SP-	160	–	–	–
Output Acceleration/Deceleration %ED rating Short-time rating Continuous rating			kW 15 10 5 0 11 7.5 1500 4500 10000 r/min Short-time rating (30min)	kW 8 6 4 2 0 7.5 5.5 3.7 2000 2800 8000 12000 r/min %ED rating (25%ED)	kW 15 10 5 0 9.2 5.5 3.7 2000 2800 6000 8000 12000 r/min %ED rating (25%ED)	kW 15 10 5 0 10.4 5.5 3.7 1700 2800 4500 8000 12000 r/min %ED rating (25%ED)
Standard output during acceleration/deceleration		[kW]	11	7.5	9.2	10.4
Actual acceleration/deceleration output (Note 2)		[kW]	13.2	9	11.04	12.48
Base rotation speed		[r/min]	1500	2800		
Max. rotation speed in constant output range		[r/min]	4500	8000		
Maximum rotation speed		[r/min]	10000	12000		
Continuous rated torque		[N · m]	47.7	12.6		
Motor inertia		[kg · m²]	0.031	0.0074		
Degree of protection (The shaft-through portion is excluded.)			IP54	IP54		
Outline dimension drawing (flange type)		[mm]	204 SQ. 489	174 SQ. 327		
Flange fitting diameter		[mm]	ϕ 180	ϕ 150		
Shaft diameter		[mm]	ϕ 48	ϕ 28		
Mass		[kg]	64	26		

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

SJ-D Series (Hollow shaft specifications)

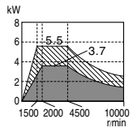
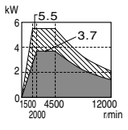
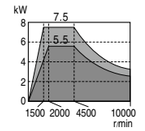
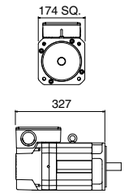
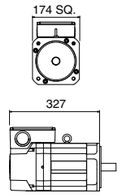
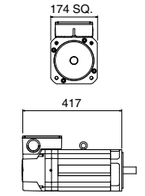
Motor type				SJ-D5.5/120-02T-S		
Compatible drive unit	1-axis type	MDS-D2-SP-		–	160	200
	2-axis type	MDS-D2-SP2-		–	16080S(L)	–
	Multi axis integrated type	MDS-DM2-	SPV2-	10080	16080	20080
			SPV3-	10080	16080	20080
	Regenerative resistor type	MDS-DJ-SP-		–	–	–
Output Acceleration/Deceleration %ED rating Short-time rating Continuous rating				 %ED rating (25%ED)	 %ED rating (25%ED)	 %ED rating (25%ED)
Standard output during acceleration/deceleration			[kW]	7.5	9.2	10.4
Actual acceleration/deceleration output (Note 2)			[kW]	9	11.04	12.48
Base rotation speed			[r/min]	2800		
Max. rotation speed in constant output range			[r/min]	8000		
Maximum rotation speed			[r/min]	12000		
Continuous rated torque			[N · m]	12.6		
Motor inertia			[kg · m²]	0.0075		
Degree of protection(The shaft-through portion is excluded.)				IP54		
Outline dimension drawing (flange type)			[mm]			
Flange fitting diameter			[mm]	ϕ150		
Shaft diameter			[mm]	ϕ28		
Mass			[kg]	24		

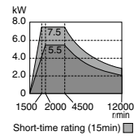
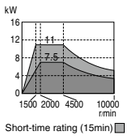
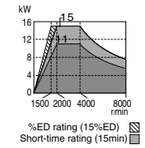
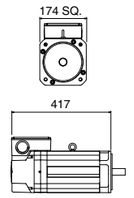
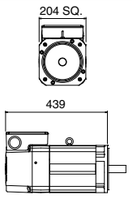
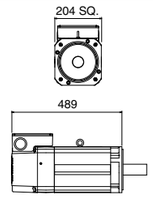
SJ-DG Series (High-output specifications)

Motor type				SJ-DG3.7/120-03T	SJ-DG5.5/120-04T	SJ-DG7.5/120-05T	SJ-DG11/100-03T
Compatible drive unit	1-axis type	MDS-D2-SP-		160	160	160	200
	2-axis type	MDS-D2-SP2-		–	–	–	–
	Multi axis integrated type	MDS-DM2-	SPV2-	16080	16080	16080	16080
			SPV3-	16080	16080	16080	16080
	Regenerative resistor type	MDS-DJ-SP-		–	–	–	–
Output %ED rating Short-time rating Continuous rating				 %ED rating (25%ED) Short-time (15min)	 %ED rating (25%ED) Short-time (30min)	 %ED rating (25%ED) Short-time (30min)	 %ED rating (25%ED) Short-time (30min)
Standard output during acceleration/deceleration			[kW]	5.5	7.5	11.0	15.0
Actual acceleration/deceleration output (Note 2)			[kW]	6.6	9.0	13.2	18.0
Base rotation speed			[r/min]	1500	1500	1500	1500
Max. rotation speed in constant output range			[r/min]	10000	7000	8000	6000
Maximum rotation speed			[r/min]	12000	12000	12000	10000
Continuous rated torque			[N · m]	14.0	23.6	35.0	47.7
Motor inertia			[kg · m²]	0.0066	0.012	0.022	0.029
Degree of protection (The shaft-through portion is excluded.)				IP54	IP54	IP54	IP54
Outline dimension drawing (flange type)			[mm]				
Flange fitting diameter			[mm]	ϕ150	ϕ150	ϕ180	ϕ180
Shaft diameter			[mm]	ϕ28	ϕ28	ϕ32	ϕ48
Mass			[kg]	24	37	50	61

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

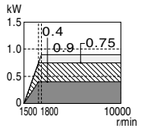
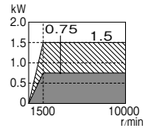
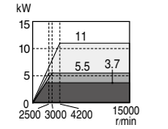
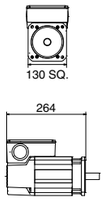
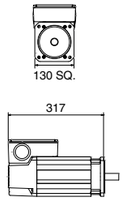
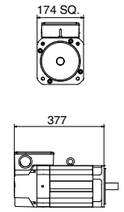
SJ-DJ Series (Compact & lightweight specifications)

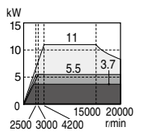
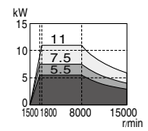
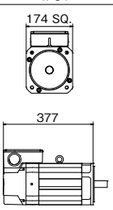
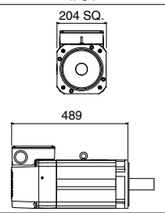
Motor type				SJ-DJ5.5/100-01	SJ-DJ5.5/120-01	SJ-DJ7.5/100-01
Compatible drive unit	1-axis type	MDS-D2-SP-		80	80	160
	2-axis type	MDS-D2-SP2-		8040 (L) 8080 (L, M) 16080S (M)	8040 (L) 8080 16080S (M)	16080S (L)
	Multi axis integrated type	MDS-DM2-	SPV2-	10080	10080	10080
			SPV3-	10080	10080	10080
	Regenerative resistor type	MDS-DJ-SP-		100	100	120
Output %ED rating Short-time rating Continuous rating				 %ED rating (25%ED)	 %ED rating (25%ED)	 Short-time rating (15min)
Standard output during acceleration/deceleration			[kW]	5.5	5.5	7.5
Actual acceleration/deceleration output (Note 2)			[kW]	6.6	6.6	9
Base rotation speed	Short-time		[r/min]	1500	1500	1500
	Continuous		[r/min]	2000	2000	2000
Max. rotation speed in constant output range			[r/min]	4500	4500	4500
Maximum rotation speed			[r/min]	10000	12000	10000
Continuous rated torque			[N · m]	17.7	17.7	26.3
Motor inertia			[kg · m²]	0.0074	0.0074	0.013
Degree of protection(The shaft-through portion is excluded.)				IP54	IP54	IP54
Outline dimension drawing (flange type)			[mm]			
Flange fitting diameter			[mm]	ϕ 150	ϕ 150	ϕ 150
Shaft diameter			[mm]	ϕ 28	ϕ 28	ϕ 28
Mass			[kg]	26	26	39

Motor type				SJ-DJ7.5/120-01	SJ-DJ11/100-01	SJ-DJ15/80-01
Compatible drive unit	1-axis type	MDS-D2-SP-		160	160	200
	2-axis type	MDS-D2-SP2-		16080S(L)	16080S (L)	–
	Multi axis integrated type	MDS-DM2-	SPV2-	10080	16080	20080
			SPV3-	10080	16080	20080
	Regenerative resistor type	MDS-DJ-SP-		120	160	–
Output %ED rating Short-time rating Continuous rating				 Short-time rating (15min)	 Short-time rating (15min)	 %ED rating (15%ED) Short-time rating (15min)
Standard output during acceleration/deceleration			[kW]	7.5	11	15
Actual acceleration/deceleration output (Note 2)			[kW]	9	13.2	18
Base rotation speed	Short-time		[r/min]	1500	1500	1500
	Continuous		[r/min]	2000	2000	2000
Max. rotation speed in constant output range			[r/min]	4500	4500	4000
Maximum rotation speed			[r/min]	12000	10000	8000
Continuous rated torque			[N · m]	26.3	35.8	52.5
Motor inertia			[kg · m²]	0.013	0.023	0.031
Degree of protection(The shaft-through portion is excluded.)				IP54	IP54	IP54
Outline dimension drawing (flange type)			[mm]			
Flange fitting diameter			[mm]	ϕ 150	ϕ 180	ϕ 180
Shaft diameter			[mm]	ϕ 28	ϕ 32	ϕ 48
Mass			[kg]	39	53	64

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".
(Note 3) %ED is a load time ratio of operating time relative to a 10-minute cycle time. At 25%ED, for example, the operating time is 2.5 minutes and non-operation time is 7.5 minutes of a 10-minute cycle time.

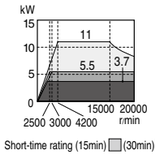
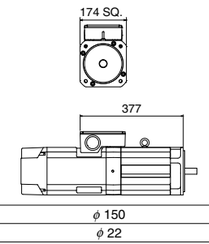
SJ-DL Series (Low-inertia specification)

Motor type				SJ-DL0.75/100-01	SJ-DL1.5/100-01	SJ-DL5.5/150-01T
Compatible drive unit	1-axis type	MDS-D2-SP-		20	40	160
	2-axis type	MDS-D2-SP2-		2020 4020 (M)	4020 (L) 4040S 8040 (M)	16080S (L)
	Multi axis integrated type	MDS-DM2-	SPV2-	–	–	16080
			SPV3-	–	–	16080
			SPHV3-	–	–	–
	Regenerative resistor type	MDS-DJ-SP-		–	–	–
Output Acceleration/Deceleration □ Short-time rating ▨□■ Continuous rating ■				 Short-time rating (10min) ▨	 Short-time rating (10min) ▨	 Short-time rating (15min) □ (30min) ■
Standard output during acceleration/deceleration			[kW]	0.9	1.5	11
Actual acceleration/deceleration output (Note 2)			[kW]	1.08	1.8	13.2
Base rotation speed			[r/min]	1500	1500	2500
Max. rotation speed in constant output range			[r/min]	10000	10000	15000
Maximum rotation speed			[r/min]	10000	10000	15000
Continuous rated torque			[N · m]	2.55	4.77	14.1
Motor inertia			[kg · m²]	0.011	0.019	0.0046
Degree of protection(The shaft-through portion is excluded.)				IP54	IP54	IP54
Outline dimension drawing (flange type)			[mm]			
Flange fitting diameter			[mm]	ϕ 110	ϕ 110	ϕ 150
Shaft diameter			[mm]	ϕ 22	ϕ 22	ϕ 28
Mass			[kg]	10	14	30

Motor type				SJ-DL5.5/200-01T	SJ-DL7.5/150-01T
Compatible drive unit	1-axis type	MDS-D2-SP-		160	160
	2-axis type	MDS-D2-SP2-		16080S (L)	16080S (L)
	Multi axis integrated type	MDS-DM2-	SPV2-	–	16080
			SPV3-	–	16080
			SPHV3-	–	–
	Regenerative resistor type	MDS-DJ-SP-		–	–
Output Acceleration/Deceleration □ Short-time rating □■ Continuous rating ■				 Short-time rating (15min) □ (30min) ■	 Short-time rating (30min) ■
Standard output during acceleration/deceleration			[kW]	11	11
Actual acceleration/deceleration output (Note 2)			[kW]	13.2	13.2
Base rotation speed			[r/min]	2500	1500
Max. rotation speed in constant output range			[r/min]	20000	8000
Maximum rotation speed			[r/min]	20000	15000
Continuous rated torque			[N · m]	14.1	35.0
Motor inertia			[kg · m²]	0.0046	0.016
Degree of protection(The shaft-through portion is excluded.)				IP54	IP54
Outline dimension drawing (flange type)			[mm]		
Flange fitting diameter			[mm]	ϕ 150	ϕ 180
Shaft diameter			[mm]	ϕ 28	ϕ 32
Mass			[kg]	30	56

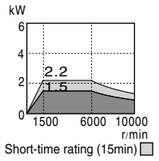
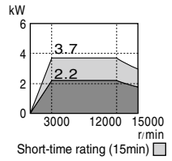
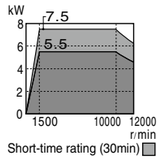
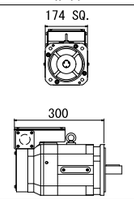
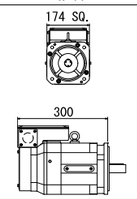
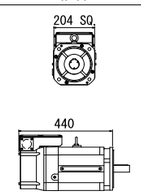
(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

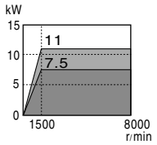
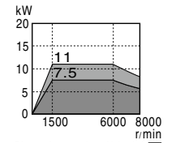
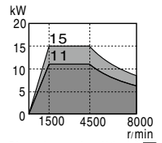
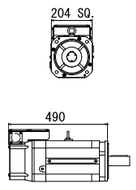
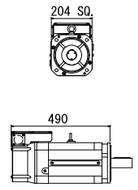
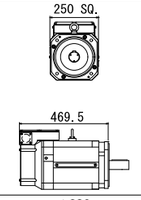
SJ-DL Series (Hollow shaft specifications)

Motor type				SJ-DL5.5/200-01T-S
Compatible drive unit	1-axis type	MDS-D2-SP-		160
	2-axis type	MDS-D2-SP2-		16080S(L)
	Multi axis integrated type	MDS-DM2-	SPV2-	–
			SPV3-	–
			SPHV3-	–
	Regenerative resistor type	MDS-DJ-SP-		–
Output Acceleration/Deceleration □ Short-time rating □■ Continuous rating ■				 Short-time rating (15min) □ (30min) ■
Standard output during acceleration/deceleration			[kW]	11
Actual acceleration/deceleration output (Note 2)			[kW]	13.2
Base rotation speed			[r/min]	2500
Max. rotation speed in constant output range			[r/min]	20000
Maximum rotation speed			[r/min]	20000
Continuous rated torque			[N · m]	14.1
Motor inertia			[kg · m²]	0.0046
Degree of protection(The shaft-through portion is excluded.)				IP54
Outline dimension drawing (flange type)			[mm]	
Flange fitting diameter			[mm]	ϕ 150
Shaft diameter			[mm]	ϕ 22
Mass			[kg]	28

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

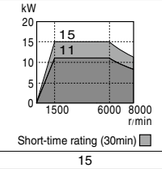
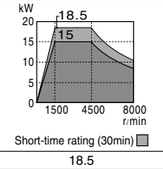
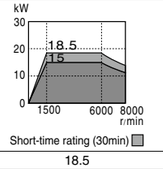
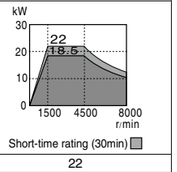
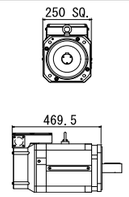
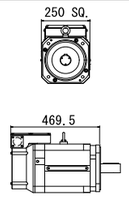
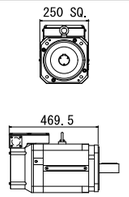
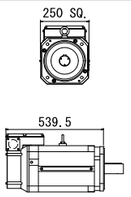
SJ-V Series (Normal specification)

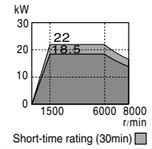
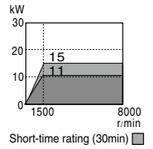
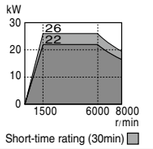
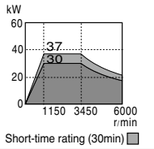
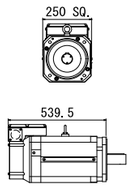
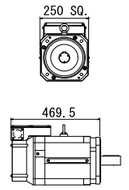
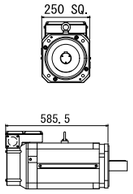
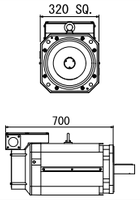
Motor type				SJ-V2.2-01T	SJ-V3.7-02ZT	SJ-V7.5-03ZT
Compatible drive unit	1-axis type	MDS-D2-SP-		40	80	160
	2-axis type	MDS-D2-SP2-		4020 (L) 4040S 8040 (M)	8040 (L) 8080 16080S (M)	16080S (L)
	Multi axis integrated type	MDS-DM2-	SPV2-	–	–	16080
			SPV3-	–	–	16080
			SPHV3-	–	–	–
	Regenerative resistor type	MDS-DJ-SP-		40	–	160 *1
Output Short-time rating Continuous rating				 Short-time rating (15min)	 Short-time rating (15min)	 Short-time rating (30min)
Standard output during acceleration/deceleration			[kW]	2.2	3.7	7.5
Actual acceleration/deceleration output (Note 2)			[kW]	2.64	4.44	9
Base rotation speed			[r/min]	1500	3000	1500
Max. rotation speed in constant output range			[r/min]	6000	12000	10000
Maximum rotation speed			[r/min]	10000	15000	12000
Continuous rated torque			[N · m]	9.5	7.0	35
Motor inertia			[kg · m²]	0.00675	0.00675	0.0245
Degree of protection				IP44	IP44	IP44
Outline dimension drawing (Flange type)			[mm]			
Flange fitting diameter			[mm]	ϕ 150	ϕ 150	ϕ 180
Shaft diameter			[mm]	ϕ 28	ϕ 28	ϕ 32
Mass			[kg]	25	25	60

Motor type				SJ-V11-08ZT	SJ-V11-13ZT	SJ-V15-01ZT
Compatible drive unit	1-axis type	MDS-D2-SP-		200	200	200
	2-axis type	MDS-D2-SP2-		–	–	–
	Multi axis integrated type	MDS-DM2-	SPV2-	–	20080	20080
			SPV3-	–	20080	20080
			SPHV3-	20080		
	Regenerative resistor type	MDS-DJ-SP-		–	–	–
Output Short-time rating Continuous rating				 Short-time rating (30min)	 Short-time rating (30min)	 Short-time rating (30min)
Standard output during acceleration/deceleration			[kW]	11	11	15
Actual acceleration/deceleration output (Note 2)			[kW]	13.2	13.2	18
Base rotation speed			[r/min]	1500	1500	1500
Max. rotation speed in constant output range			[r/min]	8000	6000	4500
Maximum rotation speed			[r/min]	8000	8000	8000
Continuous rated torque			[N · m]	47.7	47.7	70
Motor inertia			[kg · m²]	0.03	0.03	0.0575
Degree of protection				IP44	IP44	IP44
Outline dimension drawing (Flange type)			[mm]			
Flange fitting diameter			[mm]	ϕ 180	ϕ 180	ϕ 230
Shaft diameter			[mm]	ϕ 48	ϕ 48	ϕ 48
Mass			[kg]	70	70	110

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

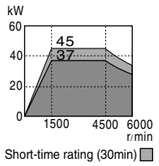
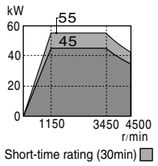
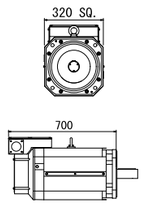
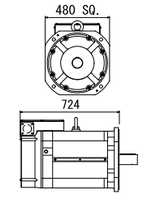
SJ-V Series (Normal specification)

Motor type				SJ-V15-09ZT	SJ-V18.5-01ZT	SJ-V18.5-04ZT	SJ-V22-01ZT
Compatible drive unit	1-axis type	MDS-D2-SP-		200	200	240	240
	2-axis type	MDS-D2-SP2-		–	–	–	–
	Multi axis integrated type	MDS-DM2-	SPV2-	–	–	–	–
			SPV3-	–	–	–	–
			SPHV3-	20080	–	–	–
	Regenerative resistor type	MDS-DJ-SP-		–	–	–	–
Output Short-time rating Continuous rating				 Short-time rating (30min)	 Short-time rating (30min)	 Short-time rating (30min)	 Short-time rating (30min)
Standard output during acceleration/deceleration			[kW]	15	18.5	18.5	22
Actual acceleration/deceleration output (Note 2)			[kW]	18	22.2	22.2	26.4
Base rotation speed			[r/min]	1500	1500	1500	1500
Max. rotation speed in constant output range			[r/min]	6000	4500	6000	4500
Maximum rotation speed			[r/min]	8000	8000	8000	8000
Continuous rated torque			[N · m]	70	95.5	95.5	118
Motor inertia			[kg · m²]	0.0575	0.0575	0.0575	0.08
Degree of protection				IP44	IP44	IP44	IP44
Outline dimension drawing (Flange type)			[mm]				
Flange fitting diameter			[mm]	ϕ 230	ϕ 230	ϕ 230	ϕ 230
Shaft diameter			[mm]	ϕ 48	ϕ 48	ϕ 48	ϕ 55
Mass			[kg]	110	110	110	135

Motor type				SJ-V22-04ZT	SJ-V22-06ZT	SJ-V26-01ZT	SJ-V37-01ZT
Compatible drive unit	1-axis type	MDS-D2-SP-		320	240	320	400
	2-axis type	MDS-D2-SP2-		–	–	–	–
	Multi axis integrated type	MDS-DM2-	SPV2-	–		–	–
			SPV3-	–		–	–
			SPHV3-	–	–	–	–
	Regenerative resistor type	MDS-DJ-SP-		–	–	–	–
Output Short-time rating Continuous rating				 Short-time rating (30min)	 Short-time rating (30min)	 Short-time rating (30min)	 Short-time rating (30min)
Standard output during acceleration/deceleration			[kW]	22	15	26	37
Actual acceleration/deceleration output (Note 2)			[kW]	26.4	18	31.2	44.4
Base rotation speed			[r/min]	1500	1500	1500	1150
Max. rotation speed in constant output range			[r/min]	6000	8000	6000	3450
Maximum rotation speed			[r/min]	8000	8000	8000	6000
Continuous rated torque			[N · m]	118	70.0	140	249
Motor inertia			[kg · m²]	0.08	0.0575	0.0925	0.34
Degree of protection				IP44	IP44	IP44	IP44
Outline dimension drawing (Flange type)			[mm]				
Flange fitting diameter			[mm]	ϕ 230	ϕ 230	ϕ 230	ϕ 300
Shaft diameter			[mm]	ϕ 55	ϕ 48	ϕ 55	ϕ 60
Mass			[kg]	135	110	155	300

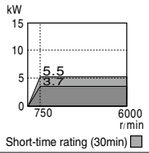
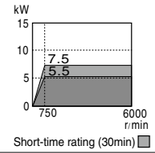
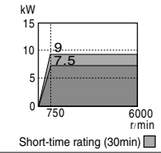
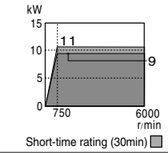
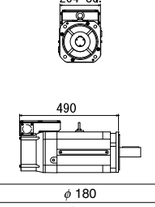
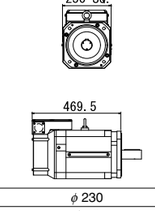
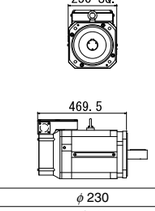
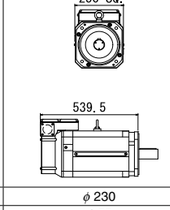
(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

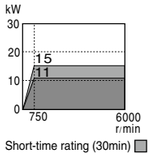
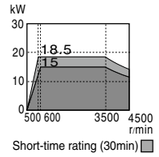
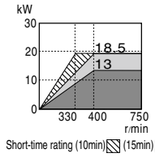
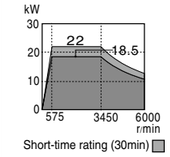
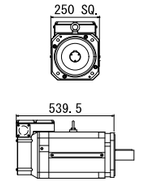
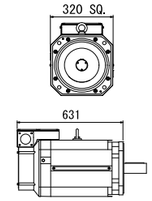
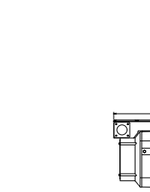
SJ-V Series (Normal specification)

Motor type			SJ-V45-01ZT	SJ-V55-01ZT
Compatible drive unit	1-axis type	MDS-D2-SP-	640	640
	2-axis type	MDS-D2-SP2-	–	–
	Multi axis integrated type	MDS-DM2-	–	–
	Regenerative resistor type	MDS-DJ-SP-	–	–
Output Short-time rating ☐ Continuous rating ☐			 Short-time rating (30min) ☐	 Short-time rating (30min) ☐
Standard output during acceleration/deceleration [kW]			45	55
Actual acceleration/deceleration output (Note 2) [kW]			54	66
Base rotation speed [r/min]			1500	1150
Max. rotation speed in constant output range [r/min]			4500	3450
Maximum rotation speed [r/min]			6000	4500
Continuous rated torque [N · m]			236	374
Motor inertia [kg · m²]			0.34	0.8475
Degree of protection			IP44	IP44
Outline dimension drawing (Flange type) [mm]				
Flange fitting diameter [mm]			ϕ 300	ϕ 450
Shaft diameter [mm]			ϕ 60	ϕ 75
Mass [kg]			300	450

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

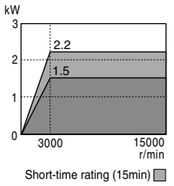
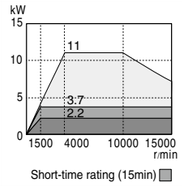
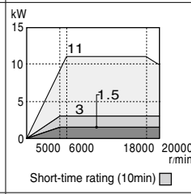
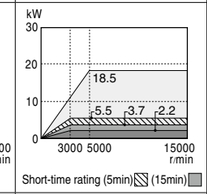
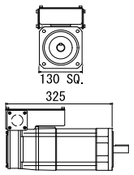
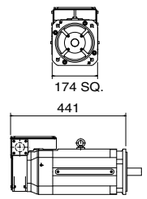
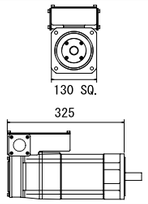
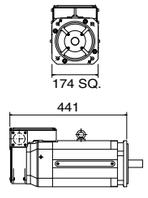
SJ-V Series (Wide range constant output specification)

Motor type				SJ-V11-01T	SJ-V11-09T	SJ-V15-03T	SJ-V18.5-03T
Compatible drive unit	1-axis type	MDS-D2-SP-		160	160	200	240
	2-axis type	MDS-D2-SP2-		16080S (L)	16080S (L)	–	–
	Multi axis integrated type	MDS-DM2-	SPV2-	16080	16080	–	–
			SPV3-	16080	16080	–	–
			SPHV3-	–	–	20080	–
	Regenerative resistor type	MDS-DJ-SP-		–	–	–	–
Output Short-time rating ☐ Continuous rating ☐				 Short-time rating (30min) ☐	 Short-time rating (30min) ☐	 Short-time rating (30min) ☐	 Short-time rating (30min) ☐
Standard output during acceleration/deceleration [kW]				5.5	7.5	9	11
Actual acceleration/deceleration output (Note 2) [kW]				6.6	9	10.8	13.2
Base rotation speed [r/min]				750	750	750	750
Max. rotation speed in constant output range [r/min]				6000	6000	6000	6000
Maximum rotation speed [r/min]				6000	6000	6000	6000
Continuous rated torque [N · m]				47.1	70.0	95.5	115
Motor inertia [kg · m²]				0.03	0.0575	0.0575	0.08
Degree of protection				IP44	IP44	IP44	IP44
Outline dimension drawing (Flange type) [mm]							
Flange fitting diameter [mm]				ϕ 180	ϕ 230	ϕ 230	ϕ 230
Shaft diameter [mm]				ϕ 48	ϕ 48	ϕ 48	ϕ 55
Mass [kg]				70	110	110	135

Motor type			SJ-V22-05T	SJ-V22-09T	SJ-VK22-19ZT	
Compatible drive unit	1-axis type	MDS-D2-SP-	320	320	320	
	2-axis type	MDS-D2-SP2-	–	–	–	
	Multi axis integrated type	MDS-DM2-	–	–	–	
	Regenerative resistor type	MDS-DJ-SP-	–	–	–	
Output Short-time rating ▨ ☐ ☐ Continuous rating ☐			 Short-time rating (30min) ☐	 Short-time rating (30min) ☐	 Short-time rating (10min) ▨ (15min) ☐	 Short-time rating (30min) ☐
Standard output during acceleration/deceleration [kW]			15	18.5	18.5	22
Actual acceleration/deceleration output (Note 2) [kW]			18	22.2	22.2	26.4
Base rotation speed [r/min]			750	500	330	575
Max. rotation speed in constant output range [r/min]			6000	3500	750	3450
Maximum rotation speed [r/min]			6000	4500	750	6000
Continuous rated torque [N · m]			140	239	310	307.3
Motor inertia [kg · m²]			0.08	0.31	0.34	
Degree of protection			IP44	IP44	IP44	
Outline dimension drawing (Flange type) [mm]						
Flange fitting diameter [mm]			ϕ 230	ϕ 300	ϕ 300	
Shaft diameter [mm]			ϕ 55	ϕ 60	ϕ 60	
Mass [kg]			135	280	300	

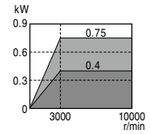
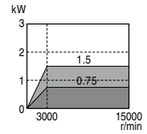
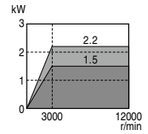
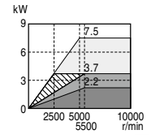
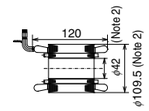
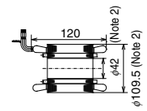
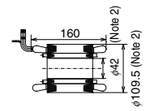
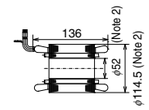
(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

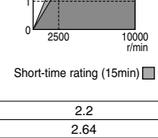
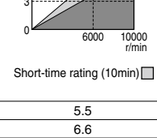
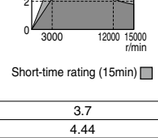
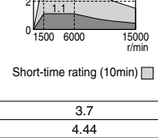
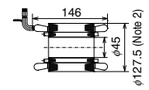
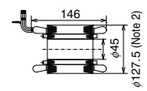
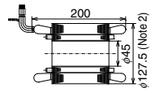
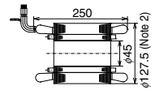
SJ-VL Series (Low-inertia specification)

Motor type				SJ-VL2.2-02ZT	SJ-VL11-02FZT	SJ-VL11-05FZT-S01 *1	SJ-VL18.5-05FZT
Compatible drive unit	1-axis type	MDS-D2-SP-		40	160	160	240
	2-axis type	MDS-D2-SP2-		4020 (L) 4040S 8040 (M)	16080S (L)	16080S (L)	–
	Multi axis integrated type	MDS-DM2-	SPV2-	–	16080	16080 *2	–
			SPV3-	–	16080	16080 *2	–
	Regenerative resistor type	MDS-DJ-SP-		80	–	160 *3	–
Output Acceleration/Deceleration □ Short-time rating ▨□■ Continuous rating ■				 Short-time rating (15min) ■	 Short-time rating (15min) ■	 Short-time rating (10min) ■	 Short-time rating (5min) ▨ (15min) ■
Standard output during acceleration/deceleration [kW]				2.2	11	11	18.5
Actual acceleration/deceleration output (Note 2) [kW]				2.6	13.2	13.2	22.2
Base rotation speed [r/min]				3000	1500	5000	3000
Max. rotation speed in constant output range [r/min]				15000	15000	20000	15000
Maximum rotation speed [r/min]				15000	15000	20000	15000
Continuous rated torque [N · m]				4.8	14.0	2.8	7.0
Motor inertia [kg · m²]				0.0024	0.003	0.0024	0.00525
Degree of protection				IP44	IP44	IP44	IP44
Outline dimension drawing (Flange type) [mm]							
Flange fitting diameter [mm]				ϕ 110	ϕ 150	ϕ 110	ϕ 150
Shaft diameter [mm]				ϕ 22	ϕ 28	ϕ 22	ϕ 28
Mass [kg]				20	42	20	40

*1 The acceleration/deceleration frequency is limited by the regenerative resistor.
*2 The maximum rotation speed is 15000r/min.
*3 The maximum rotation speed is 12000r/min.
*4 The output can be changed by parameter.
(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

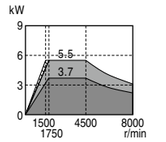
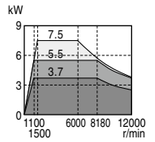
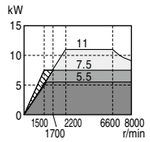
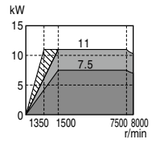
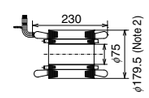
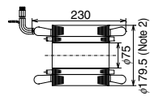
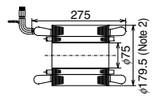
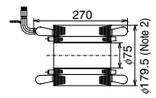
SJ-B Series

Built-in spindle motor type (Note 1)			SJ-2B4002T	SJ-2B4004T	SJ-2B4003T	SJ-2B4B03T
Compatible spindle drive unit	MDS-D2-SP-		20	40	40	160
Output Acceleration/Deceleration □ Short-time rating ▨□■ Continuous rating ■			 Short-time rating (15min) ■	 Short-time rating (15min) ■	 Short-time rating (15min) ■	 Short-time rating (3min) ▨ (15min) ■
Standard output during acceleration/deceleration [kW]			0.75	1.5	2.2	7.5
Actual acceleration/deceleration output (Note 4) [kW]			0.9	1.8	2.64	9
Continuous base rotation speed [r/min]			3000	3000	3000	5500
Maximum rotation speed [r/min]			10000	15000	12000	10000
Continuous rated torque [N · m]			1.27	2.39	4.77	3.82
Rotor inertia [kg · m²]			0.00078	0.00078	0.00138	0.00163
Outline dimension drawing [mm]						
Mass	Stator	[kg]	2.2	2.2	3.9	3.0
	Rotor	[kg]	0.9	0.9	1.7	1.5

Built-in spindle motor type (Note 1)			SJ-2B4112T	SJ-2B4111T	SJ-2B4105T	SJ-2B4102T
Compatible spindle drive unit	MDS-D2-SP-		40	80	80	80
Output Acceleration/Deceleration □ Short-time rating ▨□■ Continuous rating ■			 Short-time rating (15min) ■	 Short-time rating (10min) ■	 Short-time rating (15min) ■	 Short-time rating (10min) ■
Standard output during acceleration/deceleration [kW]			2.2	5.5	3.7	3.7
Actual acceleration/deceleration output (Note 4) [kW]			2.64	6.6	4.44	4.44
Continuous base rotation speed [r/min]			2500	6000	3000	1500
Maximum rotation speed [r/min]			10000	10000	15000	15000
Continuous rated torque [N · m]			5.73	5.89	7.00	7.00
Rotor inertia [kg · m²]			0.00168	0.00168	0.003	0.00425
Outline dimension drawing [mm]						
Mass	Stator	[kg]	4.1	4.1	7.4	10
	Rotor	[kg]	1.7	1.7	3.0	4.3

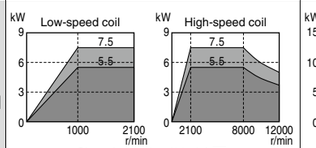
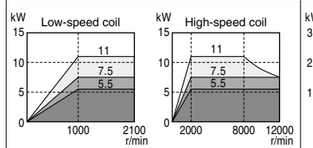
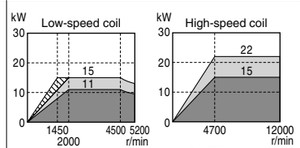
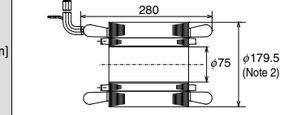
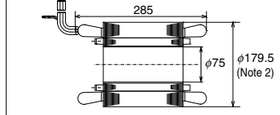
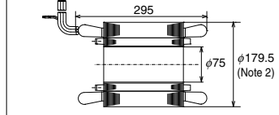
(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above.
(Note 2) These dimensions are the dimensions after machine machining.
(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

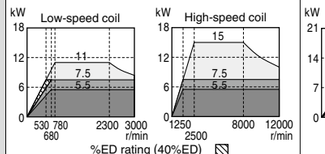
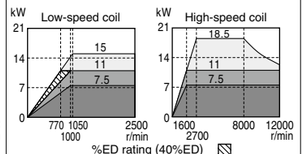
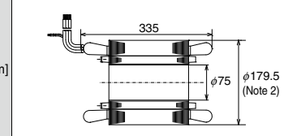
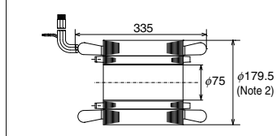
SJ-B Series

Built-in spindle motor type (Note 1)		SJ-2B4310T	SJ-2B4301T	SJ-2B4327T	SJ-2B4340T
Compatible spindle drive unit	MDS-D2-SP-	80	160	160	200
Output Acceleration/Deceleration Short-time rating Continuous rating		 Short-time rating (15min) (30min)	 Short-time rating (30min)	 Short-time rating (15min) (30min)	 Short-time rating (15min) (30min)
Standard output during acceleration/deceleration [kW]		5.5	7.5	11	11
Actual acceleration/deceleration output (Note 4) [kW]		6.6	9	13.2	13.2
Continuous base rotation speed [r/min]		1750	1100	1700	1500
Maximum rotation speed [r/min]		8000	12000	8000	8000
Continuous rated torque [N · m]		20.2	32.1	30.9	47.7
Rotor inertia [kg · m²]		0.0128	0.0128	0.0175	0.0175
Outline dimension drawing [mm]					
Mass	Stator [kg]	15	15	20	20
	Rotor [kg]	5.6	5.6	7.6	7.6

(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above.
(Note 2) These dimensions are the dimensions after machine machining.
(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

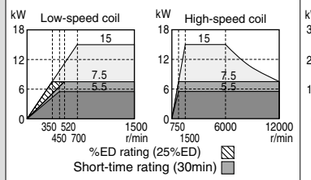
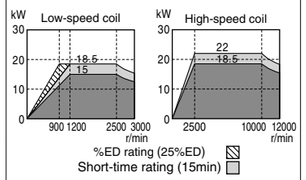
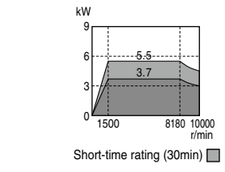
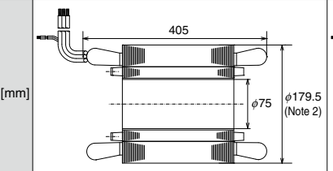
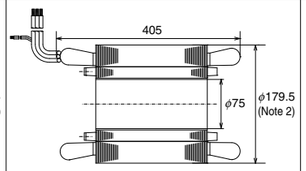
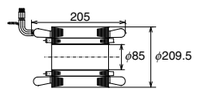
SJ-B Series

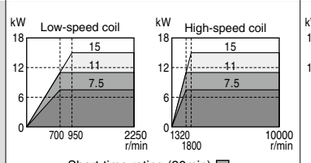
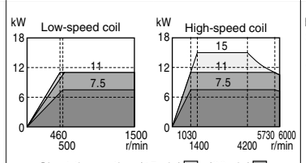
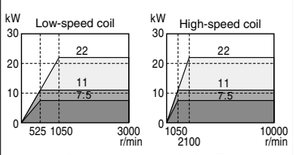
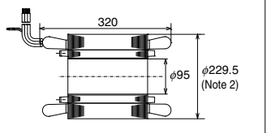
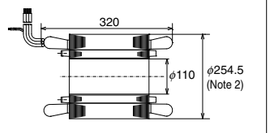
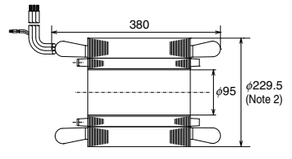
Built-in spindle motor type (Note 1)		SJ-2B4313TK		SJ-2B4323TK		SJ-2B4325TK	
Compatible spindle drive unit	MDS-D2-SP-	160		200		240	
Output %ED rating Short-time rating Continuous rating		 Short-time rating (30min)		 Short-time rating (10min) (30min)		 %ED rating (25%ED) Short-time rating (15min)	
Standard output during acceleration/deceleration [kW]		7.5	7.5	11	11	15	22
Actual acceleration/deceleration output (Note 4) [kW]		9	9	13.2	13.2	18	26.4
Continuous base rotation speed [r/min]		1000	2100	1000	2000	2000	4700
Maximum rotation speed [r/min]		2100	12000	2000	12000	5200	12000
Continuous rated torque [N · m]		52.5	25.0	52.5	26.3	52.5	30.5
Rotor inertia [kg · m²]		0.0175		0.0175		0.0175	
Outline dimension drawing [mm]							
Mass	Stator [kg]	20		20		20	
	Rotor [kg]	7.6		7.6		7.6	

Built-in spindle motor type (Note 1)		SJ-2B4303TK		SJ-2B4326TK	
Compatible spindle drive unit	MDS-D2-SP-	200		240	
Output Acceleration/Deceleration %ED rating Short-time rating Continuous rating		 %ED rating (40%ED) Short-time rating (30min)		 %ED rating (40%ED) Short-time rating (30min)	
Standard output during acceleration/deceleration [kW]		11	15	15	18.5
Actual acceleration/deceleration output (Note 4) [kW]		13.2	18	18	22.2
Continuous base rotation speed [r/min]		680	1250	1000	1600
Maximum rotation speed [r/min]		3000	12000	2500	12000
Continuous rated torque [N · m]		77.2	42.0	71.6	44.8
Rotor inertia [kg · m²]		0.0225		0.0225	
Outline dimension drawing [mm]					
Mass	Stator [kg]	26		26	
	Rotor [kg]	9.8		9.8	

(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above.
(Note 2) These dimensions are the dimensions after machine machining.
(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

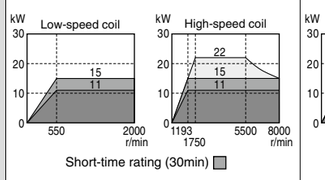
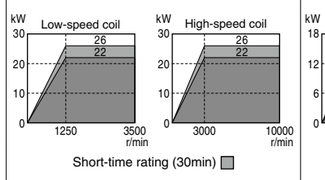
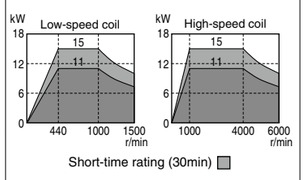
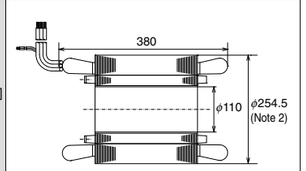
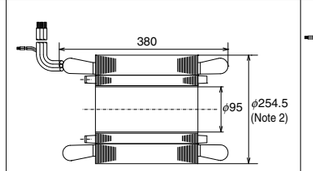
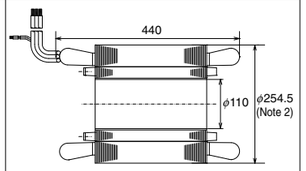
SJ-B Series

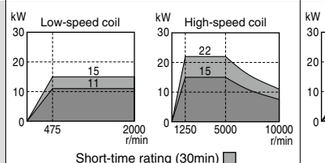
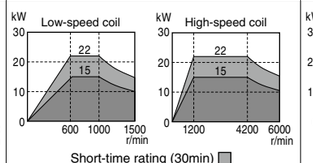
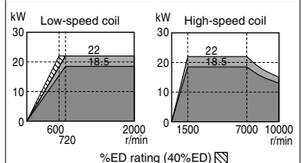
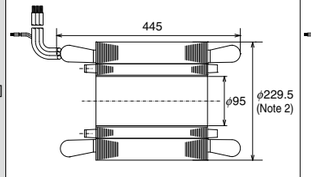
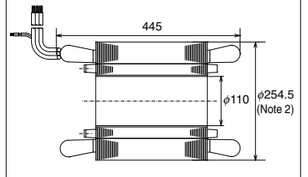
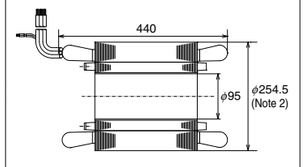
Built-in spindle motor type (Note 1)		SJ-2B4304TK		SJ-2B4318TK		SJ-2B4412T
Compatible spindle drive unit	MDS-D2-SP-	320		320		160
Output Acceleration/Deceleration □ %ED rating ▨ Short-time rating □ ■ Continuous rating ■					
Standard output during acceleration/deceleration [kW]		15	15	18.5	22	5.5
Actual acceleration/deceleration output (Note 4) [kW]		18	18	22.2	26.4	6.6
Continuous base rotation speed	[r/min]	450	750	1200	2500	1500
Maximum rotation speed	[r/min]	1500	12000	3000	12000	10000
Continuous rated torque	[N · m]	117	70.0	119	70.7	23.6
Rotor inertia	[kg · m²]	0.028		0.028		0.0193
Outline dimension drawing	[mm]					
Mass	Stator [kg]	33		33		15
	Rotor [kg]	12		12		6.2

Built-in spindle motor type (Note 1)		SJ-2B4501TK		SJ-2B6611TK		SJ-2B4502TK	
Compatible spindle drive unit	MDS-D2-SP-	200		200		320	
Output Acceleration/Deceleration □ Short-time rating □ ■ Continuous rating ■						
Standard output during acceleration/deceleration [kW]		15	15	11	15	22	22
Actual acceleration/deceleration output (Note 4) [kW]		18	18	13.2	18	26.4	26.4
Continuous base rotation speed	[r/min]	700	1320	500	1030	525	1050
Maximum rotation speed	[r/min]	2250	10000	1500	6000	3000	10000
Continuous rated torque	[N · m]	102	54.3	143	69.5	136	68.2
Rotor inertia	[kg · m²]	0.08		0.102		0.105	
Outline dimension drawing	[mm]						
Mass	Stator [kg]	29		37		37	
	Rotor [kg]	18		19		24	

(Note 1) Please contact your Mitsubishi Electric dealer for the special products not listed above.
(Note 2) These dimensions are the dimensions after machine machining.
(Note 3) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

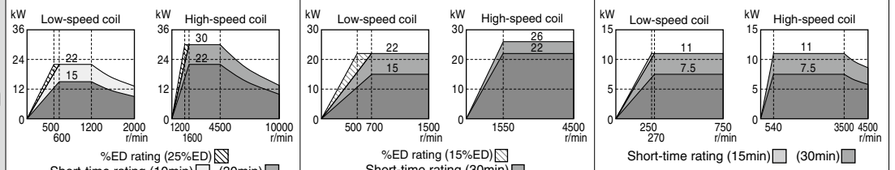
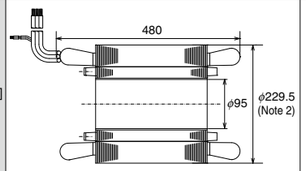
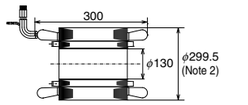
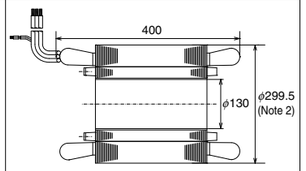
SJ-B Series

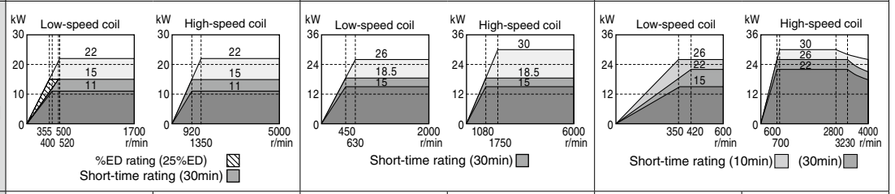
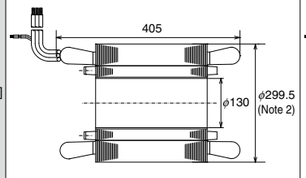
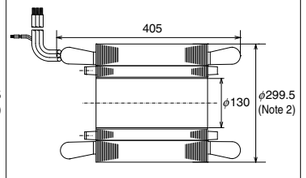
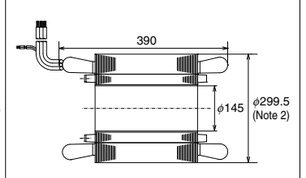
Built-in spindle motor type (Note 1)		SJ-2B6602TK		SJ-2B4601TK		SJ-2B6605TK	
Compatible spindle drive unit	MDS-D2-SP-	320		320		240	
Output Acceleration/Deceleration □ Short-time rating ■ Continuous rating ■					
Standard output during acceleration/deceleration [kW]		15	22	26	26	15	15
Actual acceleration/deceleration output (Note 4) [kW]		18	26.4	31.2	31.2	18	18
Continuous base rotation speed	[r/min]	550	1193	1250	3000	440	1000
Maximum rotation speed	[r/min]	2000	8000	3500	10000	1500	6000
Continuous rated torque	[N · m]	191	88.0	168	70.0	239	105
Rotor inertia	[kg · m²]	0.133		0.105		0.173	
Outline dimension drawing	[mm]						
Mass	Stator [kg]	49		55		63	
	Rotor [kg]	25		24		33	

Built-in spindle motor type (Note 1)		SJ-2B4503TK		SJ-2B6603TK		SJ-2B4602TK	
Compatible spindle drive unit	MDS-D2-SP-	320		320		320	
Output %ED rating ▨ Short-time rating □ Continuous rating ■						
Standard output during acceleration/deceleration [kW]		15	22	22	22	22	22
Actual acceleration/deceleration output (Note 4) [kW]		18	26.4	26.4	26.4	26.4	26.4
Continuous base rotation speed	[r/min]	475	1250	600	1200	720	1500
Maximum rotation speed	[r/min]	2000	10000	1500	6000	2000	10000
Continuous rated torque	[N · m]	221	115	239	119	245	118
Rotor inertia	[kg · m²]	0.135		0.173		0.135	
Outline dimension drawing	[mm]						
Mass	Stator [kg]	48		63		71	
	Rotor [kg]	31		33		31	

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(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

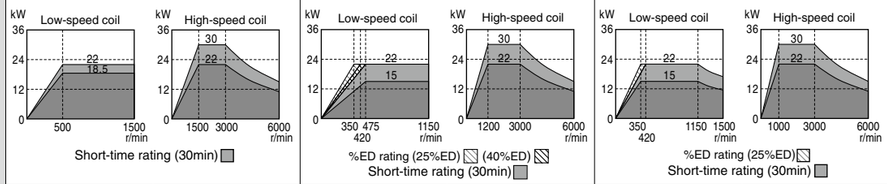
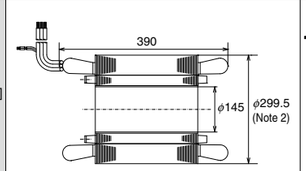
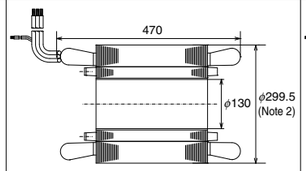
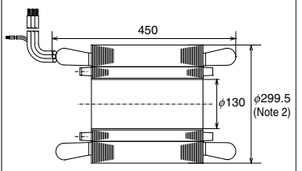
SJ-B Series

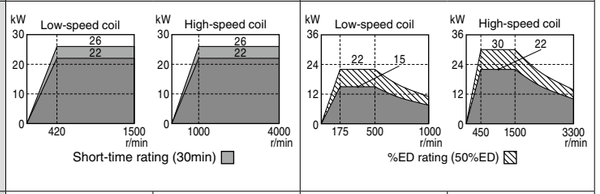
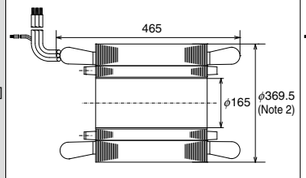
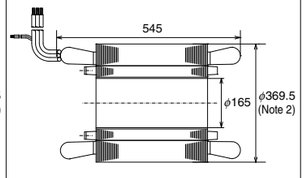
Built-in spindle motor type (Note 1)		SJ-2B4511TK		SJ-2B6720TK		SJ-2B6705TK	
Compatible spindle drive unit	MDS-D2-SP-	320		320		200	
Output %ED rating Short-time rating Continuous rating							
Standard output during acceleration/deceleration	[kW]	22	30	22	26	11	11
Actual acceleration/deceleration output (Note 4)	[kW]	26.4	36	26.4	31.2	13.2	13.2
Continuous base rotation speed	[r/min]	600	1600	700	1550	270	540
Maximum rotation speed	[r/min]	2000	10000	1500	4500	750	4500
Continuous rated torque	[N · m]	239	131	205	136	265	133
Rotor inertia	[kg · m^2]	0.15		0.20		0.288	
Outline dimension drawing	[mm]						
Mass	Stator [kg]	54		45		65	
	Rotor [kg]	34		26		38	

Built-in spindle motor type (Note 1)		SJ-2B6711TK		SJ-2B6706TK		SJ-2B6716TK	
Compatible spindle drive unit	MDS-D2-SP-	320		400		400	
Output Acceleration/Deceleration %ED rating Short-time rating Continuous rating							
Standard output during acceleration/deceleration	[kW]	22	22	26	30	26	30
Actual acceleration/deceleration output (Note 4)	[kW]	26.4	26.4	31.2	36	31.2	36
Continuous base rotation speed	[r/min]	400	920	450	1080	350	600
Maximum rotation speed	[r/min]	1700	5000	2000	6000	600	4000
Continuous rated torque	[N · m]	263	114	318	133	409	350
Rotor inertia	[kg · m^2]	0.280		0.288		0.283	
Outline dimension drawing	[mm]						
Mass	Stator [kg]	65		65		70	
	Rotor [kg]	37		38		35	

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(Note 4) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".

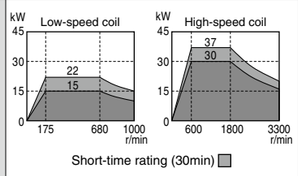
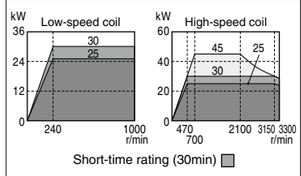
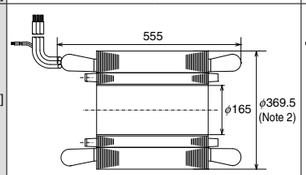
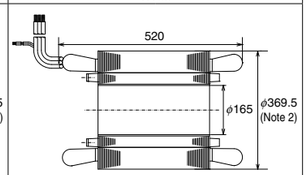
SJ-B Series

Built-in spindle motor type (Note 1)		SJ-2B6721TK		SJ-2B6704TK		SJ-2B6709TK	
Compatible spindle drive unit	MDS-D2-SP-	320		320		400	
Output Acceleration/Deceleration %ED rating Short-time rating Continuous rating							
Standard output during acceleration/deceleration	[kW]	22	30	22	30	22	30
Actual acceleration/deceleration output (Note 4)	[kW]	26.4	36	26.4	36	26.4	36
Continuous base rotation speed	[r/min]	500	1500	475	1200	350	1000
Maximum rotation speed	[r/min]	1500	6000	1150	6000	1500	6000
Continuous rated torque	[N · m]	353	140	302	175	409	210
Rotor inertia	[kg · m^2]	0.283		0.37		0.37	
Outline dimension drawing	[mm]						
Mass	Stator [kg]	70		83		83	
	Rotor [kg]	35		49		49	

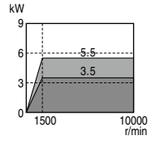
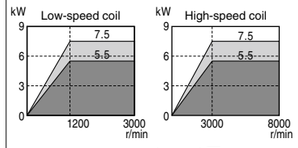
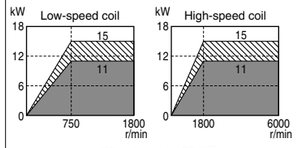
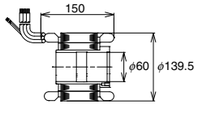
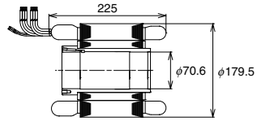
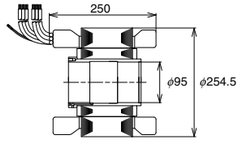
Built-in spindle motor type (Note 1)		SJ-2B6905TK		SJ-2B6908TK	
Compatible spindle drive unit	MDS-D2-SP-	320		320	
Output %ED rating Short-time rating Continuous rating					
Standard output during acceleration/deceleration	[kW]	26	26	22	30
Actual acceleration/deceleration output (Note 4)	[kW]	31.2	31.2	26.4	36
Continuous base rotation speed	[r/min]	420	1000	175	450
Maximum rotation speed	[r/min]	1500	4000	1000	3300
Continuous rated torque	[N · m]	500	210	819	467
Rotor inertia	[kg · m^2]	0.853		1.105	
Outline dimension drawing	[mm]				
Mass	Stator [kg]	110		143	
	Rotor [kg]	70		91	

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SJ-B Series

Built-in spindle motor type (Note 1)		SJ-2B6906TK		SJ-2B6914TK	
Compatible spindle drive unit	MDS-D2-SP-	400		640	
Output Acceleration/Deceleration □ Short-time rating ■ Continuous rating ■		 Short-time rating (30min) ■		 Short-time rating (30min) ■	
Standard output during acceleration/deceleration [kW]		22	37	30	45
Actual acceleration/deceleration output (Note 4) [kW]		26.4	44.4	36	54
Continuous base rotation speed	[r/min]	175	600	240	470
Maximum rotation speed	[r/min]	1000	3300	1000	3300
Continuous rated torque	[N · m]	819	477	995	508
Rotor inertia	[kg · m^2]	1.105		1.105	
Outline dimension drawing	[mm]				
Mass	Stator [kg]	143		143	
	Rotor [kg]	91		91	

SJ-PMB Series

Built-in spindle motor type (Note 1)		SJ-PMB02215T-02	SJ-PMB04412T-B0		SJ-PMB14007T-01	
Compatible spindle drive unit	MDS-D2-SP-	240	200		320	
Output %ED rating □■ Continuous rating ■		 %ED rating (50%ED) ■	 %ED rating (25%ED) □		 %ED rating (15%ED) ▨	
Standard output during acceleration/deceleration [kW]		5.5	7.5	7.5	15	15
Actual acceleration/deceleration output (Note 4) [kW]		6.6	9	9	18	18
Continuous base rotation speed	[r/min]	1500	1200	3000	750	1800
Maximum rotation speed	[r/min]	10000	3000	8000	1800	6000
Continuous rated torque	[N · m]	22.3	43.8	17.5	140	58.4
Rotor inertia	[kg · m^2]	0.006	0.0162		0.0633	
Outline dimension drawing	[mm]					
Mass	Stator [kg]	4.4	14.0		30	
	Rotor [kg]	3.7	8.0		15	

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MEMO

HF-KP Series (Small capacity)

Motor type			HF-KP46J□W09	HF-KP56J□W09	HF-KP96J□W09
Compatible drive unit	1-axis type	MDS-D2-SP-	20	20	20
	2-axis type (Note 2)	MDS-D2-SP2-	2020 4020 (M)	2020 4020 (M)	2020 4020 (M)
	Regenerative resistor type	MDS-DJ-SP-	20	20	20
		SP2-	2020	2020	2020
Output Rated torque Max. torque		[N · m]	0.64 / 2.50	0.80 / 5.00	1.43 / 6.50
Rated output		[kW]	0.40	0.50	0.90
Maximum rotation speed		[r/min]	6000	6000	6000
Motor inertia		[kg · cm²]	0.24	0.42	1.43
Degree of protection(The shaft-through portion is excluded.)			IP67	IP67	IP67
Outline dimension drawing		[mm]	60, 118.7	60, 140.6	80, 149.1
Flange fitting diameter		[mm]	ϕ 50	ϕ 50	ϕ 70
Shaft diameter		[mm]	ϕ 14	ϕ 14	ϕ 19
Mass		[kg]	1.2	1.7	2.9

HF-SP Series (Medium capacity)

Motor type			HF-SP226J□W09	HF-SP406J□W09
Compatible drive unit	1-axis type	MDS-D2-SP-	80	160
	2-axis type (Note 2)	MDS-D2-SP2-	8040 (L) 8080 16080S (M)	16080S (L)
	Regenerative resistor type	MDS-DJ-SP-	–	–
Output Rated torque Max. torque		[N · m]	3.50 / 22.0	6.37 / 50.0
Rated output		[kW]	2.2	4.0
Maximum rotation speed		[r/min]	6000	6000
Motor inertia		[kg · cm²]	11.9	23.7
Degree of protection (The shaft-through portion is excluded.)			IP67	IP67
Outline dimension drawing		[mm]	130, 140.5	130, 184.5
Flange fitting diameter		[mm]	ϕ 110	ϕ 110
Shaft diameter		[mm]	ϕ 24	ϕ 24
Mass		[kg]	6.8	10

(Note 1) This motor produces heat of about 100°C during high-speed rotation even when no load is connected. Mount the motor on a machine-side flange which has an appropriate size for sufficient heat dissipation.
(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

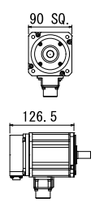
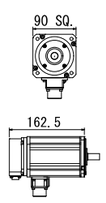
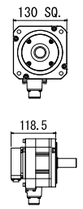
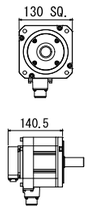
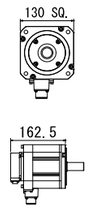
HF Series

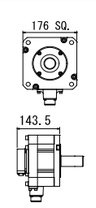
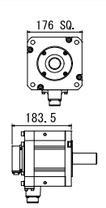
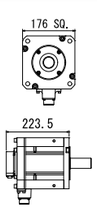
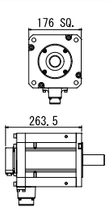
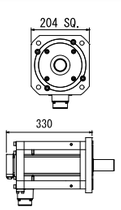
Tool spindle motor type			HF Series HF □-A48							
			HF75	HF105	HF54	HF104	HF154	HF224	HF204	HF354
Compatible spindle drive unit	1-axis type	MDS-D2-SP-	20	20	40	40	80	80	80	160
	2-axis type	MDS-D2-SP2-	2020 4020 (M)	2020 4020 (M)	4020 (L) 4040S 8040 (M)	4020 (L) 4040S 8040 (M)	8040 (L) 16080S (M) 8080	8040 (L) 16080S (M) 8080	8040 (L) 16080S (M) 8080	16080S (L) 16080 (L)
	Regenerative resistor type	MDS-DJ-SP-	20	20	20	40	80	80	80	–
		SP2-	2020	2020	2020	–	–	–	–	–
Output Rated torque Max. torque		[N · m]	1.8 / 7.0	2.4 / 8.1	1.6 / 12.1	3.2 / 23.3	4.8 / 33.9	7.0 / 46.5	6.4 / 46.5	11.1 / 74.5
Rated output		[kW]	0.75	1.0	0.5	1.0	1.5	2.2	2.0	3.5
Rated rotation speed		[r/min]	4000		3000					
Maximum rotation speed		[r/min]	4000		3000					
Motor inertia		[kg · cm²]	2.6	5.1	6.1	11.9	17.8	23.7	38.3	75.0
Degree of protection			IP67 (The shaft-through portion is excluded.)							
Outline dimension drawing (flange type)		[mm]	90 SQ., 126.5	90 SQ., 162.5	130 SQ., 118.5	130 SQ., 140.5	130 SQ., 162.5	130 SQ., 184.5	176 SQ., 143.5	176 SQ., 183.5
Flange fitting diameter		[mm]	ϕ 80	ϕ 80	ϕ 110	ϕ 110	ϕ 110	ϕ 110	ϕ 114.3	ϕ 114.3
Shaft diameter		[mm]	ϕ 14	ϕ 14	ϕ 24	ϕ 24	ϕ 24	ϕ 24	ϕ 35	ϕ 35

Tool spindle motor type			HF Series HF □-A48		
			HF453	HF703	HF903
Compatible spindle drive unit	1-axis type	MDS-D2-SP-	160	160	320
	2-axis type	MDS-D2-SP2-	16080S (L)	16080S (L)	–
	Regenerative resistor type	MDS-DJ-SP-	–	–	–
		SP2-	–	–	–
Output Rated torque Max. torque		[N · m]	14.3 / 89.3	22.3 / 116.5	28.7 / 171.0
Rated output		[kW]	4.5	7.0	9.0
Rated rotation speed		[r/min]	3000		
Maximum rotation speed		[r/min]	3000		
Motor inertia		[kg · cm²]	112.0	154.0	196.0
Degree of protection			Degree of protection IP67 (The shaft-through portion is excluded.)		
Outline dimension drawing (flange type)		[mm]	176 SQ., 223.5	176 SQ., 263.5	204 SQ., 330
Flange fitting diameter		[mm]	ϕ 114.3	ϕ 114.3	ϕ 180
Shaft diameter		[mm]	ϕ 35	ϕ 35	ϕ 42

(Note 1) The above characteristics values are representative values. The maximum current and maximum torque are the values when combined with the drive unit.
(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

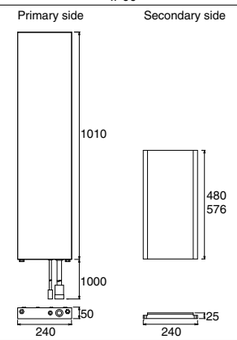
HF-H Series

Servo motor type		HF-H75	HF-H105	HF-H54	HF-H104	HF-H154
Compatible servo drive unit	1-axis type MDS-DH2-V1-	10	10	20	20	40
	2-axis type MDS-DH2-V2-	1010 2010 (M)	1010 2010 (M)	2010 (L) 2020 4020 (M)	2010 (L) 2020 4020 (M)	4020 (L) 4040 8040 (M)
Output Stall torque Maximum torque	[N · m]	2.0 / 8.0	3.0 / 11.0	2.9 / 13.0	5.9 / 23.3	9.0 / 42.0
Rated output	[kW]	0.75	1.0	0.5	1.0	1.5
Maximum rotation speed	[r/min]	5000		4000		
Motor inertia	[kg · cm²]	2.6	5.1	6.1	11.9	17.8
Motor inertia with brake	[kg · cm²]	2.8	5.3	8.3	14.1	20.0
Degree of protection		IP67 (The shaft-through portion is excluded.)				
Outline dimension drawing (flange type) (Note) The total length will be 3.5mm longer when using an A51 or A74N encoder.	[mm]					
Flange fitting diameter	[mm]	ϕ 80	ϕ 80	ϕ 110	ϕ 110	ϕ 110
Shaft diameter	[mm]	ϕ 14	ϕ 14	ϕ 24	ϕ 24	ϕ 24
Mass (with a brake)	[kg]	2.5 (3.9)	4.3 (5.7)	4.8 (6.8)	6.5 (8.5)	8.3 (10.3)
Absolute position encoder compatible drive unit	16,000,000 [p/rev] (A74/A74N)	DH2	DH2	DH2	DH2	DH2
	1,000,000 [p/rev] (A51)					
	260,000 [p/rev] (A48)					

Servo motor type		HF-H204	HF-H354	HF-H453	HF-H703	HF-H903
Compatible servo drive unit	1-axis type MDS-DH2-V1-	40	80	80	80W	160
	2-axis type MDS-DH2-V2-	4020 (L) 4040 8040 (M)	8040 (L) 8080 8080W	8040 (L) 8080 8080W	8080W	–
Output Stall torque Maximum torque	[N · m]	13.7 / 47.0	22.5 / 90.0	37.2 / 122.0	49.0 / 152.0	58.8 / 208.0
Rated output	[kW]	2.0	3.5	4.5	7.0	9.0
Maximum rotation speed	[r/min]	4000		3500	3000	
Motor inertia	[kg · cm²]	38.3	75.0	112.0	154.0	196.0
Motor inertia with brake	[kg · cm²]	48.0	84.7	121.7	163.7	205.7
Degree of protection		IP67 (The shaft-through portion is excluded.)				
Outline dimension drawing (flange type) (Note) The total length will be 3.5mm longer when using an A51 or A74N encoder.	[mm]					
Flange fitting diameter	[mm]	ϕ 114.3	ϕ 114.3	ϕ 114.3	ϕ 114.3	ϕ 180
Shaft diameter	[mm]	ϕ 35	ϕ 35	ϕ 35	ϕ 35	ϕ 42
Mass (with a brake)	[kg]	12.0 (18.0)	19.0 (25.0)	26.0 (32.0)	32.0 (38.0)	45.0 (51.0)
Absolute position encoder compatible drive unit	16,000,000 [p/rev] (A74/A74N)	DH2	DH2	DH2	DH2	DH2
	1,000,000 [p/rev] (A51)					
	260,000 [p/rev] (A48)					

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

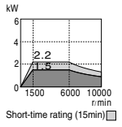
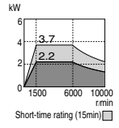
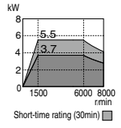
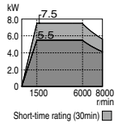
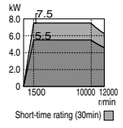
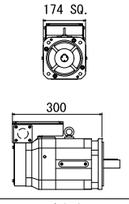
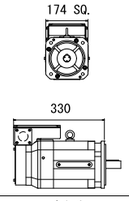
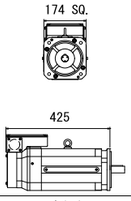
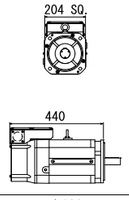
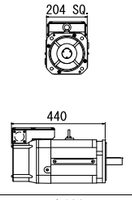
LM-F Series

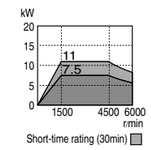
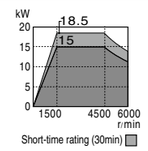
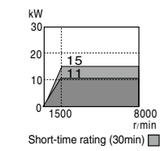
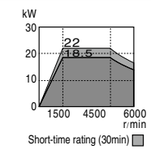
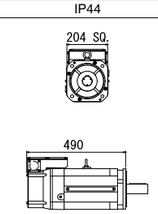
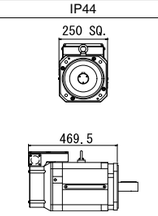
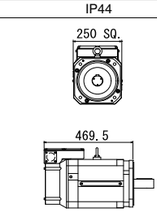
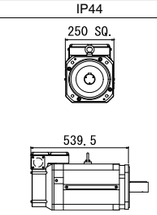
Linear servo motor type	Primary side type		LM-FP5H-60M-1WW0
	Secondary side type		LM-FS50-□-1WW0
Compatible drive unit	1-axis type	MDS-D2-V1-	200
	2-axis type	MDS-D2-V2-	–
	Regenerative resistor type	MDS-DJ-V1-	–
Thrust force Continuous (natural-cooling) Continuous (liquid-cooling) Maximum	[N]		20000 15000 10000 5000 0
Rated thrust force	[N]		6000
Maximum speed (Note 1)	[m/s]		2.0
Magnetic attraction force	[N]		45000
Degree of protection			IP00
Outline dimension drawing	[mm]		
Mass	[kg]	Primary side (coil)	67
		Secondary side (magnet)	20.0 (480mm) 26.0 (576mm)

(Note 1) The maximum speed in actual use is either the linear scale's maximum speed or this specified value, whichever is smaller.

(Note 2) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.

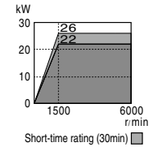
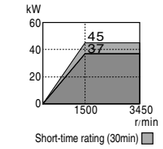
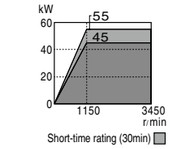
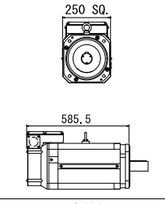
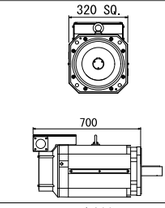
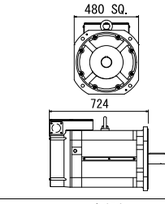
SJ-4-V Series (Normal)

Spindle motor type		SJ-4-V2.2-03T	SJ-4-V3.7-03T	SJ-4-V5.5-07T	SJ-4-V7.5-12T	SJ-4-V7.5-13ZT
Compatible spindle drive unit	MDS-DH2-SP-	20	20	40	40	80
Output Short-time rating ☐☐ Continuous rating ☐						
Standard output during acceleration/deceleration [kW]		2.2	3.7	5.5	7.5	7.5
Actual acceleration/deceleration output (Note 2) [kW]		2.64	4.44	6.6	9	9
Base rotation speed	[r/min]	1500		1500		
Maximum rotation speed	[r/min]	10000		8000		12000
Continuous rated torque	[N · m]	9.5	14.0	23.5	35.0	35.0
Inertia	[kg · m^2]	0.007	0.009	0.015	0.025	0.025
Degree of protection		IP44	IP44	IP44	IP44	IP44
Outline dimension drawing (flange type)	[mm]					
Flange fitting diameter	[mm]	ϕ 150	ϕ 150	ϕ 150	ϕ 180	ϕ 180
Shaft diameter	[mm]	ϕ 28	ϕ 28	ϕ 28	ϕ 32	ϕ 32
Mass	[kg]	25	30	49	60	60

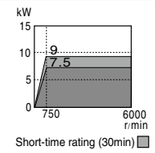
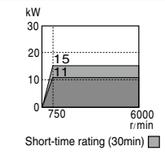
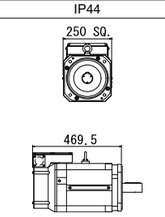
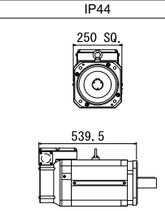
Spindle motor type		SJ-4-V11-18T	SJ-4-V18.5-14T	SJ-4-V22-18ZT	SJ-4-V22-15T
Compatible spindle drive unit	MDS-DH2-SP-	80	100	160	160
Output Short-time rating ☐ Continuous rating ☐					
Standard output during acceleration/deceleration [kW]		11	18.5	15	22
Actual acceleration/deceleration output (Note 2) [kW]		13.2	22.2	18	26.4
Base rotation speed	[r/min]	1500			
Maximum rotation speed	[r/min]	6000		8000	6000
Continuous rated torque	[N · m]	47.7	95.5	70.0	118
Inertia	[kg · m^2]	0.03	0.06	0.06	0.08
Degree of protection		IP44	IP44	IP44	IP44
Outline dimension drawing (flange type)	[mm]				
Flange fitting diameter	[mm]	ϕ 180	ϕ 230	ϕ 230	ϕ 230
Shaft diameter	[mm]	ϕ 48	ϕ 48	ϕ 48	ϕ 55
Mass	[kg]	70	110	125	135

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".
(Note 3) The rated output is guaranteed at the rated input voltage (380 to 440VAC 50Hz / 380 to 480VAC 60Hz) to the power supply unit.
If the input voltage fluctuates and drops below 380VAC, the rated output may not be attained.

SJ-4-V Series (Normal)

Spindle motor type		SJ-4-V26-08T	SJ-4-V45-02T	SJ-4-V55-03T
Compatible spindle drive unit	MDS-DH2-SP-	160	320	320
Output Continuous rating ☐ Short-time rating ☐				
Standard output during acceleration/deceleration [kW]		26	45	55
Actual acceleration/deceleration output (Note 2) [kW]		31.2	54	66
Base rotation speed	[r/min]	1500	1500	1150
Maximum rotation speed	[r/min]	6000		3450
Continuous rated torque	[N · m]	140	236	374
Inertia	[kg · m^2]	0.10	0.55	0.85
Degree of protection		IP44	IP44	IP44
Outline dimension drawing (flange type)	[mm]			
Flange fitting diameter	[mm]	ϕ 230	ϕ 300	ϕ 450
Shaft diameter	[mm]	ϕ 55	ϕ 60	ϕ 75
Mass	[kg]	155	390	450

SJ-4-V Series (Wide range constant output)

Spindle motor type		SJ-4-V15-20T	SJ-4-V22-16T
Compatible spindle drive unit	MDS-DH2-SP-	100	160
Output Short-time rating ☐ Continuous rating ☐			
Standard output during acceleration/deceleration [kW]		9	15
Actual acceleration/deceleration output (Note 2) [kW]		10.8	18
Base rotation speed	[r/min]	750	
Maximum rotation speed	[r/min]	6000	
Continuous rated torque	[N · m]	95.5	140
Inertia	[kg · m^2]	0.06	0.08
Degree of protection		IP44	IP44
Outline dimension drawing (flange type)	[mm]		
Flange fitting diameter	[mm]	ϕ 230	ϕ 230
Shaft diameter	[mm]	ϕ 48	ϕ 55
Mass	[kg]	110	135

(Note 1) Only the combination designated in this manual can be used for the motor and drive unit. Always use the designated combination.
(Note 2) Actual acceleration/deceleration output is 1.2-fold of "Standard output during acceleration/deceleration" or "Short time rated output".
(Note 3) The rated output is guaranteed at the rated input voltage (380 to 440VAC 50Hz / 380 to 480VAC 60Hz) to the power supply unit.
If the input voltage fluctuates and drops below 380VAC, the rated output may not be attained.

MDS-D2 Series

1-axis servo drive unit

Drive unit type		MDS-D2-V1-20	MDS-D2-V1-40	MDS-D2-V1-80	MDS-D2-V1-160	MDS-D2-V1-160W	MDS-D2-V1-320	MDS-D2-V1-320W
Drive unit category		1-axis servo						
Nominal maximum current (peak) [A]		20	40	80	160	160	320	320
Power input	Rated voltage [V]	270 to 311DC						
	Rated current [A]	7	7	14	30	35	45	55
Control power input	Voltage [V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%						
	Current [A]	MAX. 0.2						
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%						
Control method		Sine wave PWM control method						
Dynamic brakes		Built-in						External
Machine end encoder		Compatible						
Cooling method		Forced wind cooling						
Mass [kg]		3.8	3.8	3.8	3.8	4.5	5.8	7.5
Unit outline dimension drawing		A1	A1	A1	A1	B1	C1	D1

2-axis servo drive unit

Drive unit type		MDS-D2-V2-2020	MDS-D2-V2-4020	MDS-D2-V2-4040	MDS-D2-V2-8040	MDS-D2-V2-8080	MDS-D2-V2-16080	MDS-D2-V2-160160	MDS-D2-V2-160160W
Drive unit category		2-axis servo							
Nominal maximum current (peak) [A]		20/20	40/20	40/40	80/40	80/80	160/80	160/160	160/160
Power input	Rated voltage [V]	270 to 311DC							
	Rated current [A]	14 (7/7)	14 (7/7)	14 (7/7)	21 (14/7)	28 (14/14)	44 (30/14)	60 (30/30)	70 (35/35)
Control power input	Voltage [V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%							
	Current [A]	MAX. 0.2							
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%							
Control method		Sine wave PWM control method							
Dynamic brakes		Built-in							
Machine end encoder		Compatible							
Cooling method		Forced wind cooling							
Mass [kg]		4.5	4.5	4.5	4.5	4.5	5.2	5.2	6.3
Unit outline dimension drawing		A1	A1	A1	A1	A1	B1	B1	C1

3-axis servo drive unit

Drive unit type		MDS-D2-V3-202020	MDS-D2-V3-404040
Drive unit category		3-axis servo	
Nominal maximum current (peak) [A]		20/20/20	40/40/40
Power input	Rated voltage [V]	270 to 311DC	
	Rated current [A]	21 (7/7/7)	21 (7/7/7)
Control power input	Voltage [V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%	
	Current [A]	MAX. 0.2	
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%	
Control method		Sine wave PWM control method	
Dynamic brakes		Built-in	
Machine end encoder		Compatible	
Cooling method		Forced wind cooling	
Mass [kg]		3.8	3.8
Unit outline dimension drawing		A0	A0

MDS-D2 Series

1-axis spindle drive unit

Drive unit type		MDS-D2-SP-20	MDS-D2-SP-40	MDS-D2-SP-80	MDS-D2-SP-160	MDS-D2-SP-200	MDS-D2-SP-240	MDS-D2-SP-320	MDS-D2-SP-400	MDS-D2-SP-640
Drive unit category		1-axis spindle								
Nominal maximum current (peak) [A]		20	40	80	160	200	240	320	400	640
Power input	Rated voltage [V]	270 to 311DC								
	Rated current [A]	7	13	20	41	76	95	140	150	210
Control power input	Voltage [V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%								
	Current [A]	MAX. 0.2								
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%								
Control method		Sine wave PWM control method								
Cooling method		Forced wind cooling								
Mass [kg]		3.8	3.8	3.8	4.5	5.8	6.5	7.5	16.5	16.5
Unit outline dimension drawing		A1	A1	A1	B1	C1	D1	D2	E1	F1

2-axis spindle drive unit

Drive unit type		MDS-D2-SP2-2020	MDS-D2-SP2-4020	MDS-D2-SP2-4040S	MDS-D2-SP2-8040	MDS-D2-SP2-8080	MDS-D2-SP2-16080S
Drive unit category		2-axis spindle					
Nominal maximum current (peak) [A]		20/20	40/20	40/40	80/40	80/80	160/80
Power input	Rated voltage [V]	270 to 311DC					
	Rated current [A]	14 (7/7)	20 (13/7)	26 (13/13)	33 (20/13)	40 (20/20)	61 (41/20)
Control power input	Voltage [V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%					
	Current [A]	MAX. 0.2					
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%					
Control method		Sine wave PWM control method					
Cooling method		Forced wind cooling					
Mass [kg]		4.5	4.5	4.5	5.2	6.5	5.2
Unit outline dimension drawing		A1	A1	A1	B1	C1	B1

Power supply unit

Power supply unit type		MDS-D2-CV-37	MDS-D2-CV-75	MDS-D2-CV-110	MDS-D2-CV-185	MDS-D2-CV-300	MDS-D2-CV-370	MDS-D2-CV-450	MDS-D2-CV-550
30-minute rated output [kW]		3.7	7.5	11.0	18.5	30.0	37.0	45.0	55.0
Continuous rated output [kW]		2.2	5.5	7.5	15.0	26.0	30.0	37.0	45.0
Power input	Rated voltage [V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%							
	Rated current [A]	15	26	35	65	107	121	148	200
Control power input	Voltage [V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%							
	Current [A]	MAX. 0.2							
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%							
Regeneration method		Power regeneration method							
Cooling method		Natural-cooling		Forced wind cooling					
Mass [kg]		4.0	4.0	6.0	6.0	10.0	10.0	10.0	25.5
Unit outline dimension drawing		A2	A2	B1	B1	D1	D1	D2	F1

AC reactor

AC reactor model		D-AL-7.5K	D-AL-11K	D-AL-18.5K	D-AL-30K	D-AL-37K	D-AL-45K	D-AL-55K
Compatible power supply unit type	MDS-D2-CV-	37, 75	110	185	300	370	450	550
Rated capacity [kW]		7.5	11	18.5	30	37	45	55
Rated voltage [V]		200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%						
Rated current [A]		27	40	66	110	133	162	200
Frequency [Hz]		50/60 Tolerable fluctuation: between +3% and -3%						
Mass [kg]		4.2	3.7	5.3	6.1	8.6	9.7	11.5
Unit outline dimension drawing		R1	R1	R2	R2	R3	R3	R4

MDS-DH2 Series

1-axis servo drive unit

Drive unit type		MDS-DH2-V1-10	MDS-DH2-V1-20	MDS-DH2-V1-40	MDS-DH2-V1-80	MDS-DH2-V1-80W	MDS-DH2-V1-160	MDS-DH2-V1-160W	MDS-DH2-V1-200
Drive unit category		1-axis servo							
Nominal maximum current (peak) [A]		10	20	40	80	80	160	160	200
Power input	Rated voltage [V]	513 to 648DC							
	Rated current [A]	0.9	1.6	2.9	6.0	8.0	11.9	16.7	39.0
Control power input	Voltage [V]	380 to 440AC (50Hz) / 380 to 480AC (60Hz) Tolerable fluctuation: between +10% and -15%							
	Current [A]	MAX. 0.1							
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%							
Control method		Sine wave PWM control method							
Dynamic brakes		Built-in						External (MDS-D-DBU)	
Degree of protection		IP20 ([over all] / IP00 [Terminal block TE1])							
Cooling method		Forced wind cooling							
Mass [kg]		3.8	3.8	3.8	3.8	4.5	5.8	7.5	16.5
Unit outline dimension drawing		A1	A1	A1	A1	B1	C1	D1	E1

2-axis servo drive unit

Drive unit type		MDS-DH2-V2-1010	MDS-DH2-V2-2010	MDS-DH2-V2-2020	MDS-DH2-V2-4020	MDS-DH2-V2-4040	MDS-DH2-V2-8040	MDS-DH2-V2-8080	MDS-DH2-V2-8080W
Drive unit category		2-axis servo							
Nominal maximum current (peak) [A]		10/10	20/10	20/20	40/20	40/40	80/40	80/80	80/80
Power input	Rated voltage [V]	513 to 648DC							
	Rated current [A]	1.8 (0.9/0.9)	2.5 (1.6/0.9)	3.2 (1.6 /1.6)	4.5 (2.9/1.6)	5.8 (2.9/2.9)	8.9 (6.0/2.9)	12 (6.0/6.0)	16 (8.0/8.0)
Control power input	Voltage [V]	380 to 440AC (50Hz) / 380 to 480AC (60Hz) Tolerable fluctuation: between +10% and -15%							
	Current [A]	MAX. 0.1							
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%							
Control method		Sine wave PWM control method · Current control method							
Dynamic brakes		Built-in							
Degree of protection		IP20							
Cooling method		Forced wind cooling							
Mass [kg]		3.8	3.8	3.8	3.8	3.8	5.2	5.2	6.3
Unit outline dimension drawing		A1	A1	A1	A1	A1	B1	B1	C1

1-axis spindle drive unit

Drive unit type		MDS-DH2-SP-20	MDS-DH2-SP-40	MDS-DH2-SP-80	MDS-DH2-SP-100	MDS-DH2-SP-160	MDS-DH2-SP-200	MDS-DH2-SP-320	MDS-DH2-SP-480
Drive unit category		1-axis spindle							
Nominal maximum current (peak) [A]		20	40	80	100	160	200	320	480
Power input	Rated voltage [V]	513 to 648DC							
	Rated current [A]	10	15	21	38	72	82	119	150
Control power input	Voltage [V]	380 to 440AC (50Hz) / 380 to 480AC (60Hz) Tolerable fluctuation: between +10% and -15%							
	Current [A]	MAX. 0.1							
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%							
Control method		Sine wave PWM control method							
Degree of protection		IP20 ([over all] / IP00 [Terminal block TE1])							
Cooling method		Forced wind cooling							
Mass [kg]		3.8	4.5	4.5	5.8	7.5	16.5	16.5	22.5
Unit outline dimension drawing		A1	A1	B1	C1	D1	E1	E1	F1

(Note) Rated output capacity and rated speed of the motor used in combination with the drive unit are as indicated when using the power supply voltage and frequency listed.
The torque drops when the voltage is less than specified.

Power supply unit

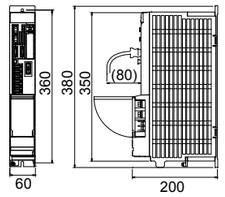
Power supply unit type		MDS-DH2-CV-37	MDS-DH2-CV-75	MDS-DH2-CV-110	MDS-DH2-CV-185	MDS-DH2-CV-300	MDS-DH2-CV-370	MDS-DH2-CV-450	MDS-DH2-CV-550	MDS-DH2-CV-750
30-minute rated output [kW]		3.7	7.5	11.0	18.5	30.0	37.0	45.0	55.0	75.0
Continuous rated output [kW]		2.2	5.5	7.5	15.0	26.0	30.0	37.0	45.0	55.0
Power input	Rated voltage [V]	380 to 440AC (50Hz) / 380 to 480AC (60Hz) Tolerable fluctuation: between +10% and -15%								
	Rated current [A]	5.2	13	18	35	61	70	85	106	130
Control power input	Voltage [V]	380 to 440AC (50Hz) / 380 to 480AC (60Hz) Tolerable fluctuation: between +10% and -15%								
	Current [A]	MAX. 0.1								
	Frequency [Hz]	50/60 Tolerable fluctuation: between +3% and -3%								
Main circuit method		Converter with power regeneration circuit								
Cooling method		Forced wind cooling								
Mass [kg]		6.0	6.0	6.0	6.0	10.0	10.0	10.0	25.5	25.5
Unit outline dimension drawing		B1	B1	B1	B1	D1	D1	D1	F1	F1

AC reactor

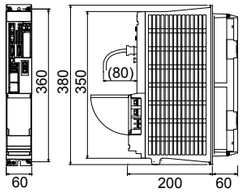
AC reactor model		DH-AL-7.5K	DH-AL-11K	DH-AL-18.5K	DH-AL-30K	DH-AL-37K	DH-AL-45K	DH-AL-55K	DH-AL-75K
Compatible power supply unit type	MDS-DH2-CV-	37, 75	110	185	300	370	450	550	750
Rated capacity [kW]		7.5	11	18.5	30	37	45	55	75
Rated voltage [V]		380 to 440AC (50Hz) / 380 to 480AC (60Hz) Tolerable fluctuation: between +10% and -15%							
Rated current [A]		14	21	37	65	75	85	106	142
Frequency [Hz]		50/60 Tolerable fluctuation: between +3% and -3%							
Mass [kg]		4.0	3.7	5.3	6.0	8.5	9.8	10.5	13.0
Unit outline dimension drawing		R1	R1	R2	R2	R3	R3	R5	R6

[Unit : mm]

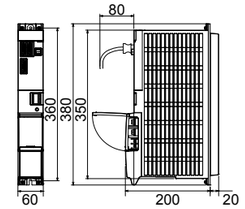
A0



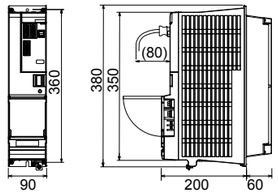
A1



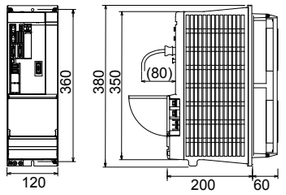
A2



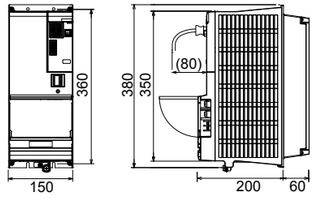
B1



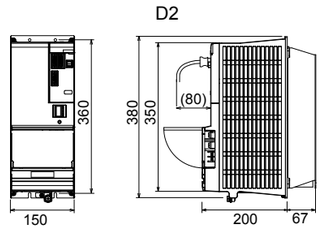
C1



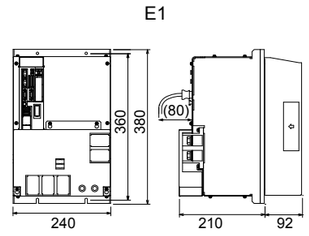
D1



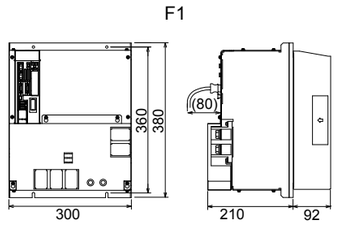
D2



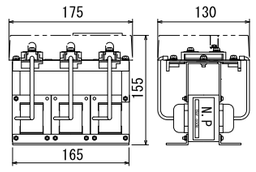
E1



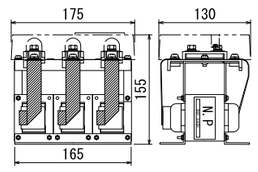
F1



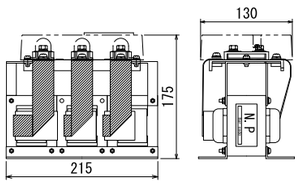
R1



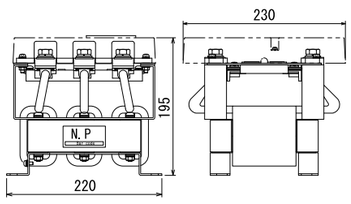
R2



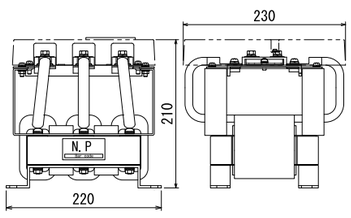
R3



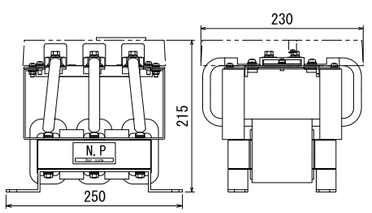
R4



R5



R6



MDS-DM2 Series

Multi-hybrid drive

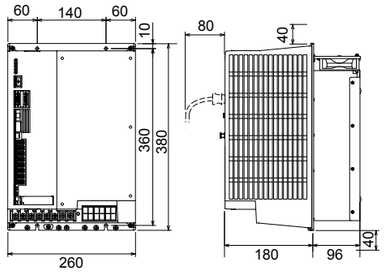
Drive unit type			MDS-DM2-SPV2-10080	MDS-DM2-SPV2-16080	MDS-DM2-SPV2-20080
Drive unit category			2-axis servo, 1-axis spindle (with converter)		
Nominal maximum current (spindle/servo)		[A]	100/80×2	160/80×2	200/80×2
Power input	Rated voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%		
	Rated current	[A]	33	43	55
Control power input	Voltage	[V]	24DC Tolerable fluctuation: between +10% and -10%		
	Current	[A]	MAX. 4		
	Frequency	[Hz]	50/60 Tolerable fluctuation: between +3% and -3%		
Control method			Sine wave PWM control method		
Regeneration method			Power regeneration method		
Dynamic brakes (servo)			Built-in		
Machine end encoder (servo)			Compatible		
Cooling method			Forced wind cooling		
Mass		[kg]	14.5	14.5	14.5

Drive unit type			MDS-DM2-SPV3-10080	MDS-DM2-SPV3-16080	MDS-DM2-SPV3-20080	MDS-DM2-SPV3-200120	MDS-DM2-SPHV3-20080
Drive unit category			3-axis servo, 1-axis spindle (with converter)				
Nominal maximum current (spindle/servo)		[A]	100/80×3	160/80×3	200/80×3	200/120×3	200/80×3
Power input	Rated voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%				
	Rated current	[A]	38	48	60	65	60
Control power input	Voltage	[V]	24DC Tolerable fluctuation: between +10% and -10%				
	Current	[A]	MAX. 4				
	Frequency	[Hz]	50/60 Tolerable fluctuation: between +3% and -3%				
Control method			Sine wave PWM control method				
Regeneration method			Power regeneration method				
Dynamic brakes (servo)			Built-in				
Machine end encoder (servo)			Compatible				
Cooling method			Forced wind cooling				
Mass		[kg]	15	15	15	15	15

Unit outline dimension drawing

Drive unit MDS-DM2-SP□V□-□

[Unit : mm]



MDS-DJ Series

All-in-one compact servo drive unit

Drive unit type			MDS-DJ-V1-10	MDS-DJ-V1-15	MDS-DJ-V1-30	MDS-DJ-V1-40	MDS-DJ-V1-80	MDS-DJ-V1-100
Drive unit category			1-axis servo (with converter)					
Nominal maximum current (peak)		[A]	10	15	30	40	80	100
Power input	Rated voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%					
	Rated current	[A]	1.5	2.9	3.8	5.0	10.5	16.0
Control power input	Voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%					
	Current	[A]	MAX. 0.2					
	Frequency	[Hz]	50/60 Tolerable fluctuation: between +5% and -5%					
Control method			Sine wave PWM control method					
Regeneration method			Power regeneration method					
Dynamic brakes			Built-in					
Machine end encoder			Compatible					
Cooling method			Natural cooling		Forced wind cooling			
Mass		[kg]	0.8	1.0	1.4	2.3	2.3	2.3
Unit outline dimension drawing			J1	J2	J3	J4a	J4a	J4b

Drive unit type			MDS-DJ-V2-3030
Drive unit category			2-axis servo (with converter)
Nominal maximum current (peak)		[A]	30/30
Power input	Rated voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%
	Rated current	[A]	3.8/3.8
Control power input	Voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%
	Current	[A]	50/60 Tolerable fluctuation: between +5% and -5%
	Frequency	[Hz]	MAX. 0.4
Control method			Sine wave PWM control method
Regeneration method			Power regeneration method
Dynamic brakes			Built-in
Machine end encoder			Not compatible
Cooling method			Forced wind cooling
Mass		[kg]	1.5
Unit outline dimension drawing			JW1

All-in-one compact spindle drive unit

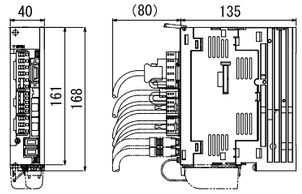
Drive unit type			MDS-DJ-SP-20	MDS-DJ-SP-40	MDS-DJ-SP-80	MDS-DJ-SP-100	MDS-DJ-SP-120	MDS-DJ-SP-160
Drive unit category			1-axis spindle (with converter)					
Nominal maximum current (peak)		[A]	20	40	80	100	120	160
Power input	Rated voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%					
	Rated current	[A]	2.6	9.0	10.5	16.0	26.0	35.4
Control power input	Voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%					
	Current	[A]	MAX. 0.2					
	Frequency	[Hz]	50/60 Tolerable fluctuation: between +5% and -5%					
Control method			Sine wave PWM control method					
Regeneration method			Power regeneration method					
Cooling method			Forced wind cooling					
Mass		[kg]	1.4	2.1	2.3	4.0	4.0	6.2
Unit outline dimension drawing			J3	J4a	J4b	J5	J5	J6

Drive unit type			MDS-DJ-SP2-2020
Drive unit category			2-axis spindle (with converter)
Nominal maximum current (peak)		[A]	20/20
Power input	Rated voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%
	Rated current	[A]	2.6/2.6
Control power input	Voltage	[V]	200AC (50Hz) / 200 to 230AC (60Hz) Tolerable fluctuation: between +10% and -15%
	Current	[A]	MAX. 0.4
	Frequency	[Hz]	50/60 Tolerable fluctuation: between +5% and -5%
Control method			Sine wave PWM control method
Regeneration method			Power regeneration method
Cooling method			Forced wind cooling
Mass		[kg]	1.5
Unit outline dimension drawing			JW1

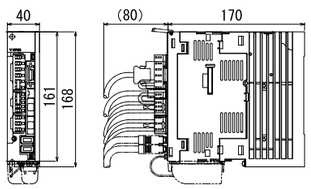
Unit outline dimension drawing

[Unit : mm]

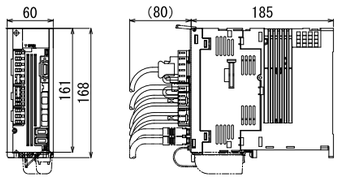
J1



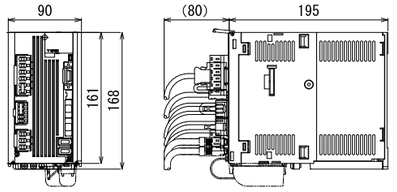
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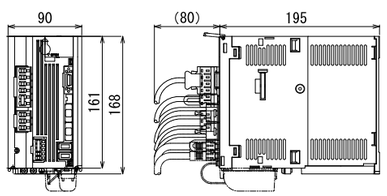
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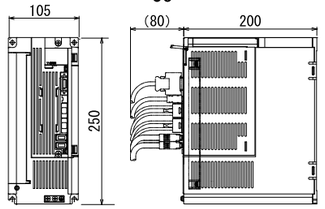
J4a



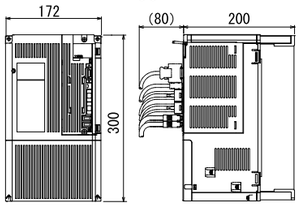
J4b



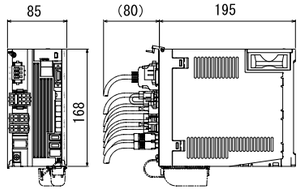
J5



J6



JW1



Servo options

The option units are required depending on the servo system configuration. Check the option units to be required referring the following items.

■System establishment in the full closed loop control

Full closed loop control for linear axis

Machine side encoder to be used			Encoder signal output	Interface unit	Drive unit input signal	Battery option	Remarks
Incremental encoder	Rectangular wave signal output	SR74, SR84 (Magnescale)	Rectangular wave signal	–	Rectangular wave signal	–	
		Various scale	Rectangular wave signal	–	Rectangular wave signal	–	
	SIN wave signal output	LS187, LS487 (HEIDENHAIN)	SIN wave signal	IBV Series (HEIDENHAIN)	Rectangular wave signal	–	
				EIB Series (HEIDENHAIN)	Mitsubishi serial signal	–	
				APE Series (HEIDENHAIN)	Mitsubishi serial signal	–	
		LS187C, LS487C (HEIDENHAIN)	SIN wave signal	MDS-B-HR-11 (P) (Mitsubishi Electric)	Mitsubishi serial signal	(Required) (Note 1)	Distance-coded reference scale (Note 2)
				EIB Series (HEIDENHAIN)			
		Various scale	SIN wave signal	MDS-B-HR-11 (P) (Mitsubishi Electric)	Mitsubishi serial signal	(Required) (Note 1)	Distance-coded reference scale is also available (Note 2)
				EIB Series (HEIDENHAIN)			
	Mitsubishi serial signal output	SR75, SR85 (Magnescale)	Mitsubishi serial signal	–	Mitsubishi serial signal	–	
Absolute position encoder	Mitsubishi serial signal output	OSA105ET2A OSA166ET2NA (Mitsubishi Electric)	Mitsubishi serial signal	–	Mitsubishi serial signal	Required	Ball screw side encoder
		SR27, SR77, SR87, SR67A (Magnescale)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		LC195M, LC495M, LC291M (HEIDENHAIN)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	Mistu03-04
		LC193M, LC493M (HEIDENHAIN)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	Mistu02-04
		AT343, AT543, AT545, ST748 (Mitutoyo)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		SAM Series (FAGOR)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		SVAM Series (FAGOR)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		GAM Series (FAGOR)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		LAM Series (FAGOR)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		RL40N Series (Renishaw)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		AMS-ABS-3B Series (Schneeberger)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		LMFA Series (AMO)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		LMBA Series (AMO)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		MPS Series (Mitsubishi Heavy Industries Machine Tool)	SIN wave signal	ADB-20J60 (Mitsubishi Heavy Industries Machine Tool)	Mitsubishi serial signal	Required	
		MPI Series (Mitsubishi Heavy Industries Machine Tool)	SIN wave signal	ADS-20J60 (Mitsubishi Heavy Industries Machine Tool)	Mitsubishi serial signal		

(Note 1) When using the distance-coded reference scale, it is recommended to use with distance-coded reference check function. In this case, the battery option is required.
(Note 2) Use the option of M700V Series for the distance-coded reference scale.

Full closed loop control for rotary axis

Machine side encoder to be used			Encoder signal output	Interface unit	Output signal	Battery option	Remarks
Incremental encoder	Rectangular wave signal output	Various scale	Rectangular wave signal	–	Rectangular wave signal	–	
	SIN wave signal output	ERM280 Series (HEIDENHAIN)	SIN wave signal	EIB Series (HEIDENHAIN)	Mitsubishi serial signal	–	
		Various scale	SIN wave signal	MDS-B-HR-11 (P) (MITSUBISHI ELECTRIC)	Mitsubishi serial signal	(Required) (Note 1)	Distance-coded reference scale is also available (Note 2)
Absolute position encoder	Mitsubishi serial signal output	MBA405W Series (Mitsubishi Electric)	Mitsubishi serial signal	(Provided)	Mitsubishi serial signal	Not required	
		RU77 (Magnescale)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		RCN223M, RCN227M (HEIDENHAIN)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	Mistu02-04
		RCN727M, RCN827M (HEIDENHAIN)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	Mistu02-04
		RA Series (Renishaw)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		HAM Series (FAGOR)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
		WMFA Series WMBA Series WMRA Series (AMO)	Mitsubishi serial signal	–	Mitsubishi serial signal	Not required	
	SIN wave signal output	MPRZ Series (Mitsubishi Heavy Industries Machine Tool)	SIN wave signal	ADB-20J71 (Mitsubishi Heavy Industries Machine Tool)	Mitsubishi serial signal	Not required	
		MPI Series (Mitsubishi Heavy Industries Machine Tool)	SIN wave signal	ADB-20J60 (Mitsubishi Heavy Industries Machine Tool)	Mitsubishi serial signal	Required	

(Note 1) When using the distance-coded reference scale, it is recommended to use with distance-coded reference check function. In this case, the battery option is required.
(Note 2) Use the option of M700V Series for the distance-coded reference scale.

■System establishment in the synchronous control

Position command synchronous control

The synchronous control is all executed in the NC, and the each servo is controlled as an independent axis. Therefore, preparing special options for the synchronous control is not required on the servo side.

Speed command synchronization control

The common position control in two axes is performed by one linear scale. Basically, the multi axis integrated type drive unit (MDS-D2/DH2-V2/V3) is used, and the feedback signal is divided for two axes inside the drive unit.
When the two 1-axis type drive units are used in driving the large capacity servo motor, the linear scale feedback signal must be divided outside.

<Required option in the speed command synchronous control>

Machine side encoder to be used	For MDS-D2/DH2-V2/V3	For MDS-D2/DH2-V1 × 2 units	Remarks
SIN wave signal output scale	MDS-B-HR-11 (P) (Serial conversion)	MDS-B-HR-12 (P) (Serial conversion/signal division)	
Mitsubishi serial signal output scale	–	MDS-B-SD (Signal division)	Including the case that an interface unit of the scale manufacturer is used with SIN wave output scale.

(Note) The rectangular wave signal output scale speed command synchronous control is not available.

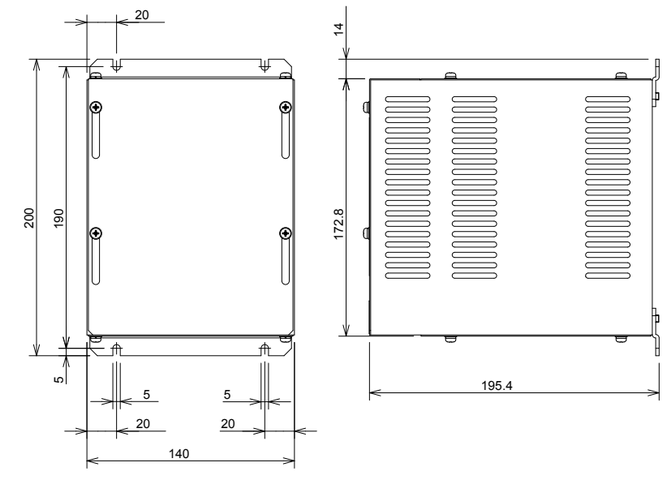
■Dynamic brake unit (MDS-D-DBU)

Specifications

Type	MDS-D-DBU
Coil specifications	24VDC 160mA
Wire size	5.5mm² or more (For IV wire)
Compatible drive unit	MDS-D2-V1-320W, MDS-DH2-V1-160W, MDS-DH2-V1-200
Mass	3kg

Outline dimension drawing

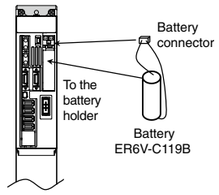
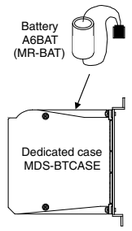
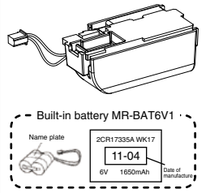
MDS-D-DBU



[Unit : mm]

■Battery option

This battery option may be required to establish absolute position system. Select a battery option from the table below depending on the servo system.

Type		ER6V-C119B	A6BAT (MR-BAT)	MDS-BTBOX-36	MR-BAT6V1SET
Installation type		Drive unit with battery holder type	Dedicated case type	Unit and battery integration type	Drive unit with battery holder type
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
Battery change		Possible	Possible	Possible	Possible
Appearance					
Compatible model	D2/DH2	○	○	○	–
	DM2	○	○	○	–
	DJ	–	–	–	○

■Cell battery (ER6V-C119B)

Specifications

Battery option type		Cell battery
		ER6V-C119B (Note 1)
Battery model name		ER6V
Nominal voltage		3.6V
Number of connectable axes		Up to 3 axes (Note 3)
Battery continuous backup time		Up to 2 axes: Approx. 10000 hours 3 axes connected: Approx. 6600 hours
Back up time from battery warning to alarm occurrence (Note 2)		Up to 2 axes: Approx. 100 hours 3 axes connected: Approx. 60 hours
Compatible model	D2/DH2	○
	DM2	○
	DJ	–

(Note 1) ER6V-C119B 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 warning occurs.
(Note 3) When using ball screw side encoder OSA166ET2NA/OSA105ET2A, both ball screw side encoder and motor side encoder need to be backed up by a battery, so the number of load shaft should be two.

■Cell battery (A6BAT)

Always use the cell battery (A6BAT) in combination with the dedicated case (MDS-BTCASE).

Specifications

Battery option type	Cell battery
	A6BAT (MR-BAT)
Battery model name	ER17330V
Nominal voltage	3.6V
Number of connectable axes	1 axis / (per 1 battery)
Data save time in battery replacement	Approx.10000 hours
Back up time from battery warning to alarm occurrence (Note)	Approx. 80 hours

(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.

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)×2, 1 to 2 axis/axes× When A6BAT (MR-BAT)×4, 3 to 4 axes When A6BAT (MR-BAT)×6, 5 to 6 axes When A6BAT (MR-BAT)×8, 7 to 8 axes
Compatible model	D2/DH2	○
	DM2	○
	DJ	–

■Battery box (MDS-BTBOX-36)

Specifications

Battery option type		Battery box
		MDS-BTBOX-36
Battery model name		size-D alkaline batteries LR20×4 pieces (Note1)
Nominal voltage		3.6V (Unit output), 1.5V (Isolated battery)
Number of connectable axes		Up to 8 axes
Battery continuous backup time		Approx. 10000 hours (when 8 axes are connected, cumulative time in non-energized state) (Note2)
Back up time from battery warning to alarm occurrence		Approx. 336 hours (when 8 axes are connected) (Note2)
Compatible model	D2/DH2	○
	DM2	○
	DJ	–

(Note 1) Install commercially-available alkaline dry batteries into MDS-BTBOX-36. The batteries should be procured by customers.
(Note 2) These backup periods are estimated based on the JIS standard, assuming that the product is used at a room temperature. The actual backup period may vary depending on the batteries (type and storage period after production, etc.) and the operating environment. Thus, regard these values only as a guide.

■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

■Cell battery (MR-BAT6V1SET)

Specifications

Battery option type		Cell battery
		MR-BAT6V1SET (Note 1)
Battery model name		2CR17335A
Nominal voltage		6V
Number of connectable axes		Up to 2 axes
Data save time in battery replacement		Up to 2 axes: Approx. 10000 hours
Back up time from battery warning to alarm occurrence (Note 2)		Approx. 100 hours
Compatible model	D2/DH2	–
	DM2	–
	DJ	○

(Note 1) 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.

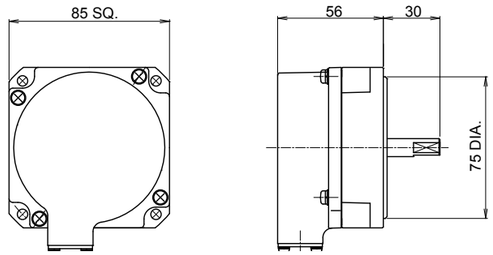
■Ball screw side encoder OSA105ET2A, OSA166ET2NA

Specifications

Encoder type		OSA105ET2A	OSA166ET2NA
Electrical characteristics	Encoder resolution	1,000,000pulse/rev	16,000,000pulse/rev
	Detection method	Absolute position method (battery backup method)	
	Tolerable rotation speed at power off (Note)	500r/min	
	Encoder output data	Serial data	
	Power consumption	0.3A	
Mechanical characteristics for rotation	Inertia	0.5×10^{-4}kgm^2 or less	
	Shaft friction torque	0.1Nm or less	
	Shaft angle acceleration	4×10^{4}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	
Compatible model	D2/DH2	○	○
	DM2	○	–
	DJ	○	–

Outline dimension drawing

OSA105ET2A/OSA166ET2NA



[Unit : mm]

■Twin-head magnetic encoder (MBA Series)

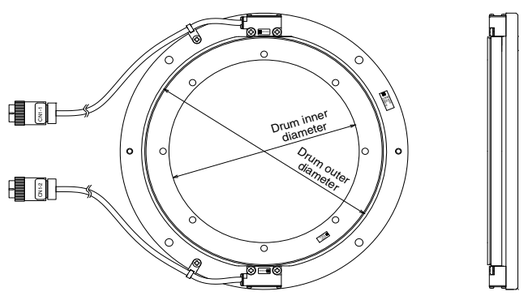
Specifications

Encoder type		MBA405W-BE082	MBA405W-BF125	MBA405W-BG160
Electrical characteristics	Encoder resolution	4,000,000 pulse/rev		
	Detection method	Absolute position method (battery backup method)		
	Tolerable rotation speed at power off	3000r/min	2000r/min	1500r/min
	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	0.5×10^{-3}kg · m^2	2.4×10^{-3}kg · m^2	8.7×10^{-3}kg · m^2
	Tolerable angle acceleration (time of backup)	500rad/s^2		
	Tolerable continuous rotation speed	3000r/min	2000r/min	1500r/min
Mechanical configuration	Drum inner diameter	ϕ 82mm	ϕ 125mm	ϕ 160mm
	Drum outer diameter	ϕ 100mm	ϕ 150.3mm	ϕ 200.6mm
	Drum mass	0.2kg	0.46kg	1.0kg
	Degree of protection (*3)	IP67		
	Outline dimension	ϕ 140mm×21.5mm	ϕ 190mm×23.5mm	ϕ 242mm×25.5mm

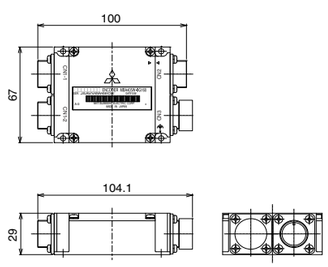
(*1) The values above are typical values after the calibration with our shipping test device and are not guaranteed.
(*2) The user is requested to install the magnetic drum and installation ring in the encoder within the accuracy range specified herein. Even when the accuracy of the encoder when shipped 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.

Outline dimension drawing

Encoder



Preamplifier



[Unit : mm]

Spindle options

According to the spindle control to be adopted, select the spindle side encoder based on the following table.

No-variable speed control (When spindle and motor are directly coupled or coupled with a 1:1 gear ratio)

●: Control possible ×: Control not possible

Spindle control item	Control specifications	Without spindle side encoder	With spindle side encoder
Spindle control	Normal cutting control	●	This normally is not used for novariable 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)	●

(Note) When spindle and motor are coupled with a 1:1 gear ratio, use of a spindle side encoder is recommended to assure the precision.

Variable speed control (When using V-belt, or when spindle and motor are connected with a gear ratio other than 1:1)

●: Control possible ×: Control not possible

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 1)	●	●	● (Note 1)
	Thread cutting (lathe)	×	●	●	×
Orientation control	1-point orientation control	×	●	●	● (Note 3)
	Multi-point orientation control	×	●	●	×
	Orientation indexing	×	●	●	×
Synchronous tap control	Standard synchronous tap	● (Note 2)	●	●	● (Note 2)
	Synchronous tap after zero point return	×	●	●	×
Spindle synchronous control	Without phase alignment function	● (Note 1)	●	●	● (Note 1)
	With phase alignment function	×	●	●	×
C-axis control	C-axis control	×	●	×	×

(Note 1) Control not possible when connected with the V-belt.
(Note 2) Control not possible when connected with other than the gears.
(Note 3) When using a proximity switch, an orientation is executed after the spindle is stopped.
As for 2-axis spindle drive unit, setting is available only for one of the axes.

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.

■Spindle side ABZ pulse output encoder (OSE-1024 Series)

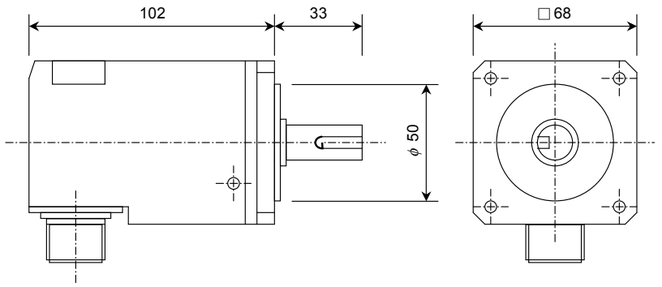
When a spindle and motor are connected with a V-belt, or connected with a gear ratio other than 1:1, use this spindle side encoder to detect the position and speed of the spindle. Also use this encoder when orientation control and synchronous tap control, etc are executed under the above conditions.

Specifications

Encoder type		OSE-1024-3-15-68	OSE-1024-3-15-68-8
Mechanical characteristics for rotation	Inertia	0.1×10^{-4}kgm^2 or less	0.1×10^{-4}kgm^2 or less
	Shaft friction torque	0.98Nm or less	0.98Nm or less
	Shaft angle acceleration	10^4rad/s^2 or less	10^4rad/s^2 or less
	Tolerable continuous rotation speed	6000r/min	8000r/min
Mechanical configuration	Bearing maximum non-lubrication time	20000h/6000r/min	20000h/8000r/min
	Shaft amplitude (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	
Compatible model	D2/DH2	○	○
	DM2	○	○
	DJ	○	○

(Note) Confirm that the gear ratio (pulley ratio) of the spindle end to the encoder is 1:1.

Outline dimension drawing



[Unit : mm]

Spindle side encoder (OSE-1024-3-15-68, OSE-1024-3-15-68-8)

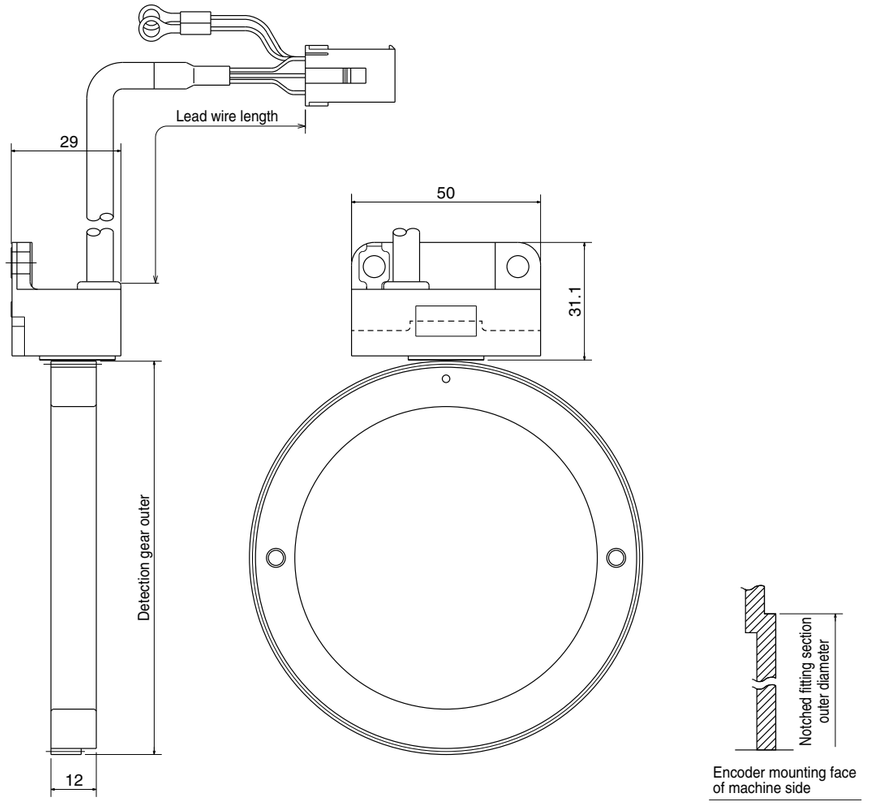
■Spindle side PLG serial output encoder (TS5690, MU1606 Series)

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.

Specifications

	Series type		TS5690N64xx					TS5690N12xx					TS5690N25xx				
Sensor	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				
	Shrink fitting	[mm]	0.020 to 0.040					0.030 to 0.055					0.050 to 0.085				
Notched fitting section	Outer diameter	[mm]	ϕ72.0					ϕ122.0					ϕ223.6				
	Outer diameter tolerance	[mm]	+0.010 to +0.060					-0.025 to +0.025					-0.025 to +0.025				
The number of output pulse	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														
Compatible model	D2/DH2		○					○					○				
	DM2		○					○					○				
	DJ		○					○					○				

Outline dimension drawing



[Unit : mm]

■Twin-head magnetic encoder (MBE Series)

Specifications

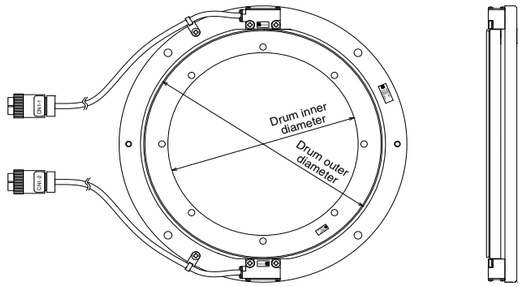
Encoder type		MBE405W-BE082	MBE405W-BF125	MBE405W-BG160
Electrical characteristics	Encoder resolution	4,000,000 pulse/rev		
	Detection method	Incremental		
	Accuracy (*1) (*2)	±4 seconds	±3 seconds	±2 seconds
	Wave number within one rotation	512 waves	768 waves	1024 waves
	Encoder output data	Serial data		
	Power consumption	0.2A or less		
Mechanical characteristics for rotation	Inertia	0.5×10^{-3}kg · m^2	2.4×10^{-3}kg · m^2	8.7×10^{-3}kg · m^2
	Tolerable continuous rotation speed	15000 r/min	10000 r/min	8000 r/min
Mechanical configuration	Drum inner diameter	ϕ 82mm	ϕ 125mm	ϕ 160mm
	Drum outer diameter	ϕ 100mm	ϕ 150.3mm	ϕ 200.6mm
	Drum mass	0.2kg	0.46kg	1.0kg
	Degree of protection (*3)	IP67		
	Outline dimension	ϕ 140mm×21.5mm	ϕ 190mm×23.5mm	ϕ 242mm×25.5mm

(*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.

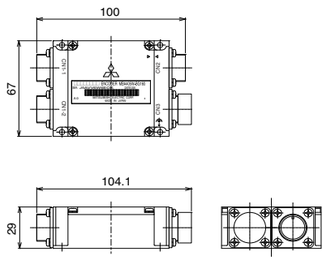
Outline dimension drawing

[Unit : mm]

Encoder



Preamplifier



■Spindle side accuracy serial output encoder (ERM280, MPCI Series)

C-axis control encoder is used in order to perform an accurate C-axis control.

Manufacturer		HEIDENHAIN		MITSUBISHI HEAVY INDUSTRIES MACHINE TOOL CO., LTD
Encoder type		ERM280 1200	ERM280 2048	MPCI Series
Interface unit type		EIB192M C4 1200	EIB192M C6 2048	ADB-20J20
		EIB392M C4 1200	EIB392M C6 2048	
Minimum detection resolution		0.0000183° (19,660,800p/rev)	0.0000107° (33,554,432p/rev)	0.00005° (7,200,000p/rev)
Tolerable maximum speed		20000r/min	11718r/min	10000r/min
Compatible model	D2/DH2	○		○
	DM2	○		○
	DJ	○		○

Encoder interface unit

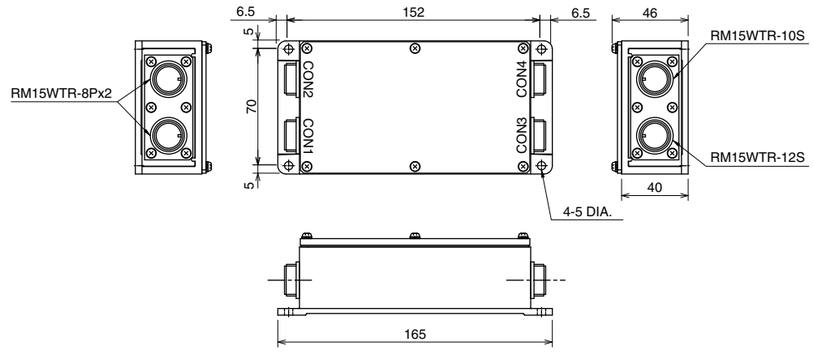
■Serial output interface unit for ABZ analog encoder MDS-B-HR

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.

Specifications

Type		MDS-B-HR-11	MDS-B-HR-12	MDS-B-HR-11P	MDS-B-HR-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			
Tolerable power voltage		5VDC±5%			
Maximum heating value		2W			
Mass		0.5kg or less			
Degree of protection		IP65		IP67	
Compatible model	D2/DH2	○	○	○	○
	DM2	○	–	○	–
	DJ	○	○	○	○

Outline dimension drawing



[Unit : mm]

■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.

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
Tolerable power voltage		5VDC±10%
Maximum heating value		4W
Mass		0.5kg or less
Degree of protection		IP20
Compatible model	D2/DH2	○
	DM2	–
	DJ	○

■Serial output interface unit for ABZ analog encoder EIB192M (Other manufacturer's product)

Specifications

Type		EIB192M A4 20μm	EIB192M C4 1200	EIB192M C4 2048
Manufacturer		HEIDENHAIN		
Input signal		A-phase, B-phase: SIN wave 1Vpp, Z-phase		
Maximum input frequency		400kHz		
Output signal		Mitsubishi high-speed serial signal (MITSU02-4)		
Interpolation division number		Maximum 16384 divisions		
Compatible encoder		LS187, LS487	ERM280 1200	ERM280 2048
Minimum detection resolution		0.0012μm	0.0000183° (19,660,800p/rev)	0.0000107° (33,554,432p/rev)
Degree of protection		IP65		
Outline dimension		98mm×64mm×38.5mm		
Mass		300g		
Compatible model	D2/DH2	○	○	○
	DM2	○	○	○
	DJ	○	○	○

■Serial output interface unit for ABZ analog encoder EIB392M (Other manufacturer's product)

Specifications

Type		EIB392M A4 20μm	EIB392M C4 1200	EIB392M C4 2048
Manufacturer		HEIDENHAIN		
Input signal		A-phase, B-phase: SIN wave 1Vpp, Z-phase		
Maximum input frequency		400kHz		
Output signal		Mitsubishi high-speed serial signal (MITSU02-4)		
Interpolation division number		Maximum 16384 divisions		
Compatible encoder		LS187, LS487	ERM280 1200	ERM280 2048
Minimum detection resolution		0.0012μm	0.0000183° (19,660,800p/rev)	0.0000107° (33,554,432p/rev)
Degree of protection		IP40		
Outline dimension		76.5mm×43mm×16.6mm		
Mass		140g		
Compatible model	D2/DH2	○	○	○
	DM2	○	○	○
	DJ	○	○	○

■Serial output interface unit for ABZ analog encoder ADB-20J Series (Other manufacturer's product)

Specifications

Type		ADB-20J20	ADB-20J60		ADB-20J71
Manufacturer		MITSUBISHI HEAVY INDUSTRIES MACHINE TOOL CO., LTD			
Maximum response speed		10,000r/min	3,600m/min	5,000r/min	10,000r/min
Output signal		Mitsubishi high-speed serial signal			
Compatible encoder		MPCI series	MPS series	MPI series	MPRZ series
Minimum detection resolution		0.00005° (7,200,000p/rev)	0.05μm	0.000025° (1,440,000p/rev)	0.000043° (8,388,608p/rev)
Degree of protection		IP20			
Outline dimension		190mm×160mm×40mm			
Mass		0.9kg			
Compatible model	D2/DH2	○	○	○	○
	DM2	○	○	○	○
	DJ	○	○	○	○

Drive unit option

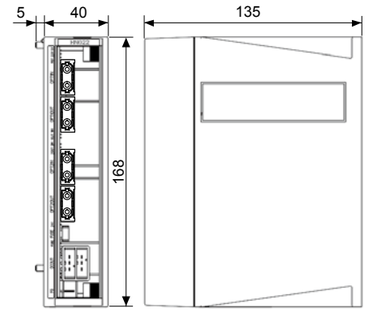
■Optical communication repeater unit (FCU7-EX022)

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.

Specifications

Type		FCU7-EX022
DC24V 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
Dimension	Dimension	(depth)135mm × (width)40mm × (height)168mm
	Mounting method	Screw cramp with M5 2 screw cramps
Mass		0.42kg
Compatible model	D2/DH2	○
	DM2	○
	DJ	○

Outline dimension drawing



[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.

Specifications

Series		MDS-D2		MDS-DH2		
Large capacity drive unit		MDS-D2-SP-400 MDS-D2-SP-640	MDS-D2-SP-400 MDS-D2-SP-640	MDS-DH2-SP-200 MDS-DH2-SP-320 MDS-DH2-SP-480	MDS-DH2-V1-200 MDS-DH2-SP-200 MDS-DH2-SP-320	MDS-DH2-V1-200
Power supply unit		MDS-D2-CV-300 MDS-D2-CV-370 MDS-D2-CV-450	MDS-D2-CV-550	MDS-DH2-CV-550 MDS-DH2-CV-750	MDS-D2-CV-300 MDS-D2-CV-370 MDS-D2-CV-450	MDS-DH2-CV-185
Required connection bar		D-BAR-B1006	D-BAR-A1010 (Two-parts set)	DH-BAR-A0606 (Two-parts set)	DH-BAR-B0606	DH-BAR-C0606
Compatible model	D2/DH2	○	○	○	○	○
	DM2	–	–	–	–	–
	DJ	–	–	–	–	–

■Side protection cover (D-COVER-1)

Install the side protection cover outside the both ends of the connected units.

■Regenerative option

Confirm the regeneration resistor capacity and possibility of connecting with the drive unit.
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.

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
	Mass		0.5kg	0.8kg	2.9kg	2.9kg	5.6kg	2.9kg	5.6kg
	Unit outline dimension		168mm× 30mm× 119mm	168mm× 40mm× 149mm	150mm× 100mm× 318mm	150mm× 100mm× 318mm	350mm× 128mm× 200mm	150mm× 100mm× 318mm	350mm× 128mm× 200mm
			W1	W2	W3	W3	W4	W3	W4
	External option regenerative resistor		–	–	GZG200W120 OHMK ×3	GZG200W39 OHMK ×3	GZG300W39 OHMK ×3	GZG200W20 OHMK ×3	GZG300W20 OHMK ×3
	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
	Mass		0.8kg	1.2kg	2.2kg	4.4kg	4.4kg	4.4kg
	Unit outline dimension		30mm× 60mm× 215mm	30mm× 60mm× 335mm	40mm× 80mm× 400mm	355mm× 105mm× 114mm	40mm× 80mm× 400mm	40mm× 80mm× 400mm
			W5	W5	W6	W7	W6	W6
	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		○	○			

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 spindle drive unit		External option regenerative resistor			
		MR-RB12	MR-RB32	MR-RB30	MR-RB50
	Parameter setting value	1300h	1400h	1500h	1600h
	Mass	0.8kg	2.9kg	2.9kg	5.6kg
	Unit outline dimension	168mm× 40mm× 149mm	150mm× 100mm× 318mm	150mm× 100mm× 318mm	350mm× 128mm× 200mm
		W2	W3	W3	W4
	External option regenerative resistor	GZG200W39OHMK	GZG200W120 OHMK×3	GZG200W39 OHMK×3	GZG300W39 OHMK×3
	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	–			○	○

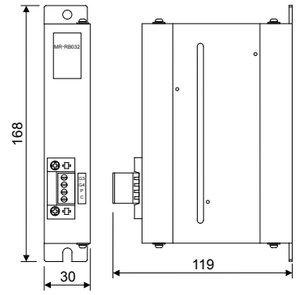
Corresponding spindle drive unit		External option regenerative resistor				
		FCUA-RB22	FCUA-RB37	FCUA-RB55	FCUA-RB75/2 (1 unit)	
	Parameter setting value	2400h	2500h	2600h	2700h	
	Mass	0.8kg	1.2kg	2.2kg	2.2kg	
	Unit outline dimension	30mm× 60mm× 215mm	30mm× 60mm× 335mm	40mm× 80mm× 400mm	40mm× 80mm× 400mm	
		W5	W5	W6	W6	
	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 spindle 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	2D00h
	Mass	4.3kg	4.4kg	10.8kg	11.0kg	15.0kg	4.4kg	4.4kg
	Unit outline dimension	355mm× 105mm× 114mm	355mm× 105mm× 114mm	375mm× 276mm× 104mm	375mm× 276mm× 104mm	375mm× 276mm× 160mm	40mm× 80mm× 400mm	40mm× 80mm× 400mm
		W7	W7	W8	W8	W9	W6	W6
	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	–							

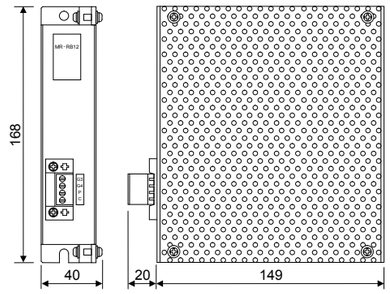
External option regenerative resistor unit

[Unit : mm]

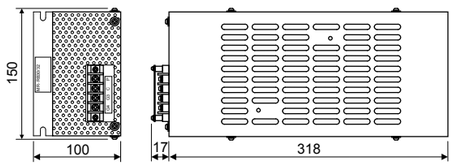
W1



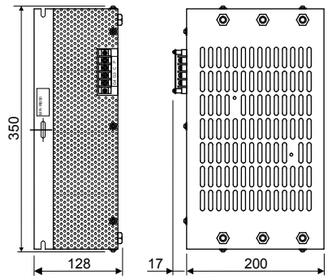
W2



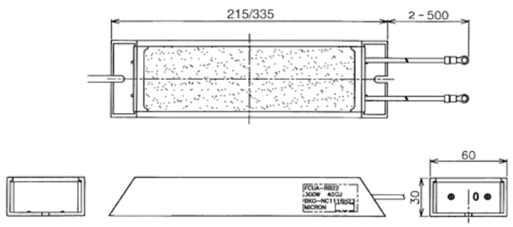
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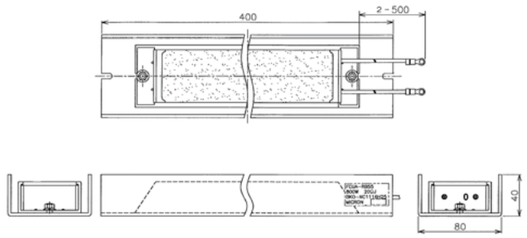
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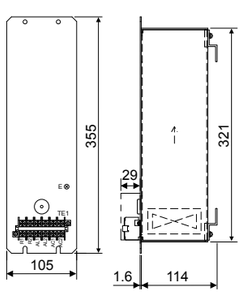
W5



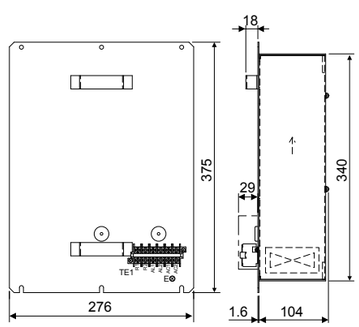
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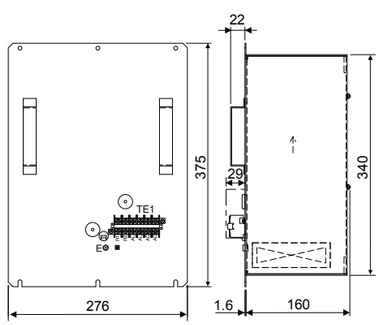
W7



W8



W9



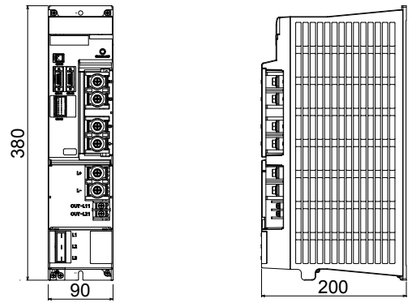
■Power backup unit MDS-D/DH-PFU

Use this unit to protect machines or drive units at power failure.

Specifications

Power backup unit type			MDS-DH-PFU	MDS-D-PFU
AC Input	Rated voltage	[V]	AC380 to 480 (50/60Hz) Tolerable fluctuation : between +10% and -10%	AC200 to 230 (50/60Hz) Tolerable fluctuation : between +10% and -15%
	Frequency	[Hz]	50/60 Tolerable fluctuation : between +3% and -3%	
	Rated current	[A]	2	4
DC Input/Output	Rated voltage	[V]	DC513 to 648	DC270 to 311
	Rated current	[A]	Regenerative input: MAX 200A Power running output: MAX 160A	Regenerative input: MAX 300A Power running output: MAX 200A
AC output for control power backup	Voltage	[V]	Single-phase 200 to 230VAC (50Hz or 60Hz) 50Hz at backup	Single-phase 380 to 480VAC (50Hz or 60Hz) 50Hz at backup
	Current	[A]	MAX 2	MAX 4
	Maximum number of drive units to connect		6 units (except for the power supply unit)	
	Switching time		Within 100ms after AC input instantaneous interruption	
	Minimum backup time		75ms or more (AC380V input, at maximum number of drive units to connect)	75ms or more (AC200V input, at maximum number of drive units to connect)
Degree of protection			IP20 [except for the terminal block and connector area]	
Cooling method			Natural-cooling	
Mass		[kg]	4	

Outline dimension drawing



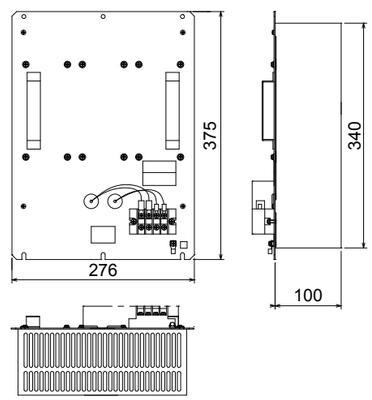
[Unit : mm]

■Regenerative resistor unit for power backup unit R-UNIT-6, R-UNIT-7

Specifications

Regenerative resistor type		R-UNIT-6	R-UNIT-7
Corresponding power backup unit type		MDS-DH-PFU	MDS-D-PFU
Resistance value	[Ω]	5	1.4
Instantaneous regeneration capacity	[kW]	128	114
Tolerable regeneration work amount	[kJ]	180	180
Cooling method		Natural-cooling	Natural-cooling
Mass	[kg]	10	10

Outline dimension drawing



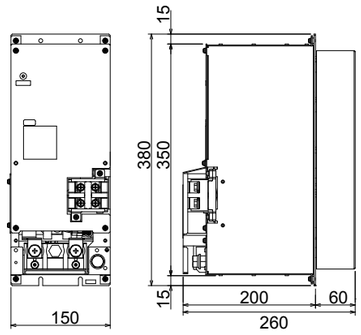
[Unit : mm]

■Capacitor unit MDS-D/DH-CU

Specifications

Capacitor unit type			MDS-DH-CU	MDS-D-CU
Compatible capacitor unit type			MDS-DH-PFU	MDS-D-PFU
Capacity		[μF]	7000	28000
DC Input/Output	Rated voltage	[V]	DC513 to 648	DC270 to 311
Cooling method			Natural-cooling	Natural-cooling
Mass		[kg]	11	11

Outline dimension drawing



[Unit : mm]

MEMO

<Optical communication cable>

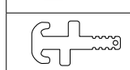
Item		Model	Length (m)	Contents	Compatible model		
					D2/DH2	DM2	DJ
For CN1A/ CN1B/ OPT1A	Optical communication cable For wiring between drive units (inside panel)	G396 L0.3M	0.3		○	○	○
		G396 L0.5M	0.5				
		G396 L1M	1				
		G396 L2M	2				
		G396 L3M	3				
		G396 L5M	5				
	Optical communication cable For wiring between drive units (outside panel) For wiring between NC-drive units	G395 L3M	3		○	○	○
		G395 L5M	5				
		G395 L7M	7				
		G395 L10M	10				
	Optical communication cable For wiring between drive units (outside panel) For optical communication repeater unit	G380 L5M	5		○	○	○
		G380 L10M	10				
		G380 L12M	12				
		G380 L15M	15				
		G380 L20M	20				
		G380 L25M	25				
		G380 L30M	30				

(Note1) For details on the optical communication cable, refer to the section "Optical communication cable specification" in Specifications Manual of each drive unit.

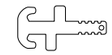
<Battery cable and connector>

Item		Model	Length (m)	Contents	Compatible model		
					D2/DH2	DM2	DJ
For battery unit	Battery cable (For drive unit - battery unit)	DG21-0.3M	0.3		○	○	–
		DG21-0.5M	0.5				
		DG21-1M	1				
		DG21-5M	5				
	Battery cable (For drive unit -battery box) (Note) The battery box side is connected using a bare conductor or a terminal bar.	DG23-0.3M	0.3		○	○	–
		DG23-0.5M	0.5				
		DG23-1M	1				
		DG23-2M	2				
		DG23-3M	3				
		DG23-5M	5				
		DG23-7M	7				
		DG23-10M	10				
	5V supply/DO output cable (For drive unit -battery box) (Note) The battery box side is connected using a bare conductor or a terminal bar.	DG24-0.3M	0.3		○	○	–
		DG24-0.5M	0.5				
		DG24-1M	1				
		DG24-2M	2				
		DG24-3M	3				
		DG24-5M	5				
		DG24-7M	7				
		DG24-10M	10				
For drive unit	Battery cable (For drive unit - drive unit) (Note) This cable is required to supply the power from the battery unit to multiple drive units.	DG22-0.3M	0.3		○	○	–
		DG22-0.5M	0.5				
		DG22-1M	1				
		DG22-2M	2				
		DG22-3M	3				
		DG22-5M	5				
		DG22-7M	7				
		DG22-10M	10				
For CN9	Battery cable connector set	FCUA-CS000	–		○	○	–

<Power supply communication cable and connector>

Item		Model	Length (m)	Contents	Compatible model		
					D2/DH2	DM2	DJ
For CN4/9	Power supply communication cable	SH21	0.35		○	–	–
			0.5				
			1				
			2				
			3				
			5				
			10				
			15				
			20				
			30				
	Power supply communication cable connector set	FCUA-CS000	–		○	–	–
For CN23	Contactor control output connector Applicable cable outline: 0.85mm^2 to 3.5mm^2 Finish outside diameter: to ϕ 4.2mm	CNU23SCV2 (AWG14) These connectors are supplied for each power supply unit.	–		○	–	–
					○	–	–
For CN24	External emergency stop input connector	CNU24S (AWG24)	–		○	–	–

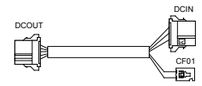
<Power backup unit connector>

Item		Model	Length (m)	Contents	Compatible model	
					D-PFU	DH-PFU
For CN43	Input/output connector for power backup unit	CNU43S (AWG22)	–		○	○
For TE1	Power connector for power backup unit	CNU01SPFU (AWG14)	–		○	○
			–		○	○

<STO input connector>

Item		Model	Length (m)	Contents	Compatible model		
					D2/DH2	DM2	DJ
For CN8	STO cable	MR-D05UDL3M-B	–		○	○	○
	STO short-circuit connector	These connectors are supplied for each drive unit.	–	Required when not using dedicated wiring STO function. 	○	○	○

<Optical communication repeater unit>

Item		Model	Length (m)	Contents	Compatible model		
					D2/DH2	DM2	DJ
For OPT1/2	Optical communication cable For wiring between drive unit and optical communication repeater unit/ For wiring between optical communication repeater units	G380 L5M	5		○	○	○
		G380 L10M	10				
		G380 L12M	12				
		G380 L15M	15				
		G380 L20M	20				
		G380 L25M	25				
		G380 L30M	30				
For DCIN	For optical communication repeater unit DC24V power cable	F070	0.5		○	○	○
			1.5				
			3				
			5				
			8				
			10				
			15				
			20				
For DCIN/ ACFAIL	For optical communication repeater unit/ For connecting Mitsubishi power unit PD25, PD27 DC24V power cable (power OFF detection)	F110	0.5		○	○	○
			1.5				
			3				
			5				
			8				
			10				
			15				

<Servo / tool spindle encoder cable and connector>

Item			Model	Length (m)	Contents	Compatible model		
						D2/DH2	DM2	DJ
For CN2/3	For HF/HF-H, HF-KP (Tool spindle) Motor side encoder cable (for A48/A51/ A74N)		CNV2E-8P-2M	2		○	○	○
			CNV2E-8P-3M	3				
			CNV2E-8P-4M	4				
			CNV2E-8P-5M	5				
			CNV2E-8P-7M	7				
			CNV2E-8P-10M	10				
			CNV2E-8P-15M	15				
			CNV2E-8P-20M	20				
			CNV2E-8P-25M	25				
			CNV2E-8P-30M	30				
			CNV2E-9P-2M	2		○	○	○
			CNV2E-9P-3M	3				
			CNV2E-9P-4M	4				
			CNV2E-9P-5M	5				
			CNV2E-9P-7M	7				
			CNV2E-9P-10M	10				
			CNV2E-9P-15M	15				
			CNV2E-9P-20M	20				
			CNV2E-9P-25M	25				
			CNV2E-9P-30M	30				
For CN2/3	Direct connection type	For HF-KP (Servo) Motor side encoder cable Lead out in direction of motor shaft Compatible with only IP65	CNV2E-K1P-2M	2		○	–	○
			CNV2E-K1P-3M	3				
			CNV2E-K1P-5M	5				
			CNV2E-K1P-7M	7				
			CNV2E-K1P-10M	10				
		For HF-KP (Servo) Motor side encoder cable Lead out in opposite direction of motor shaft Compatible with only IP65	CNV2E-K2P-2M	2		○	–	○
			CNV2E-K2P-3M	3				
			CNV2E-K2P-5M	5				
			CNV2E-K2P-7M	7				
			CNV2E-K2P-10M	10				
	Relay type (Note)	For HF-KP (Servo) Motor side encoder relay cable (motor side) Lead out in direction of motor shaft Compatible with only IP65	CNV22J-K1P-0.3M	0.3		○	–	○
		For HF-KP (Servo) Motor side encoder relay cable (motor side) Lead out in opposite direction of motor shaft Compatible with only IP65	CNV22J-K2P-0.3M	0.3		○	–	○
		For HF-KP (Servo) Motor side encoder relay cable (Drive unit side)	CNV2E-8P-2M	2		○	–	○
			CNV2E-8P-3M	3				
			CNV2E-8P-4M	4				
			CNV2E-8P-5M	5				
			CNV2E-8P-7M	7				
			CNV2E-8P-10M	10				
			CNV2E-8P-15M	15				
			CNV2E-8P-20M	20				
			CNV2E-8P-25M	25				
			CNV2E-8P-30M	30				
For motor encoder/ Ball screw side encoder	Motor side encoder connector/ Ball screw side encoder connector		CNE10-R10S (9)	–		○	○	○
	Applicable cable outline ϕ 6.0 to 9.0mm		CNE10-R10L (9)	–		○	○	○

(Note) When using cable of 15m or longer, use relay cable.

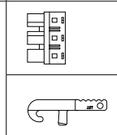
<Servo / tool spindle encoder cable and connector>

Item		Model	Length (m)	Contents	Compatible model		
					D2/DH2	DM2	DJ
For CN2/3	MDS-B-HR unit cable	CNV2E-HP-2M	2		○	○	○
		CNV2E-HP-3M	3				
		CNV2E-HP-4M	4				
		CNV2E-HP-5M	5				
		CNV2E-HP-7M	7				
		CNV2E-HP-10M	10				
		CNV2E-HP-15M	15				
		CNV2E-HP-20M	20				
		CNV2E-HP-25M	25				
		CNV2E-HP-30M	30				
For MDS-B-HR unit	MDS-B-HR connector (For CON1,2: 1) (For CON3: 1) Applicable cable outline ϕ 8.5 to 11mm	CNEHRS (10)	–		○	○	○
For CN3	MDS-B-SD unit cable	CNV2E-D-2M	2		○	–	–
		CNV2E-D-3M	3				
		CNV2E-D-4M	4				
		CNV2E-D-5M	5				
		CNV2E-D-7M	7				
		CNV2E-D-10M	10				
		CNV2E-D-15M	15				
		CNV2E-D-20M	20				
		CNV2E-D-25M	25				
		CNV2E-D-30M	30				
For MDS-B-SD unit	MDS-B-SD connector (Two-piece set)	FCUA-CS000	–		○	–	–
For CN2/3	Encoder connector	CNU2S (AWG18)	–		○	○	○

<Brake cable and connector>

Item			Model	Length (m)	Contents	Compatible model		
						D2/DH2	DM2	DJ
For motor brake	Brake connector for <200V Series> HF <400V Series> HF-H brake connector Applicable cable outline ϕ 4.0 to 6.0mm		CNB10-R2S (6)	–		○	○	○
			CNB10-R2L (6)	–		○	○	○
	Brake cable for <200V Series> HF-KP Lead out in direction of motor shaft		MR-BKS1CBL 2M-A1-H	2		○	○	○
			MR-BKS1CBL 3M-A1-H	3				
			MR-BKS1CBL 5M-A1-H	5				
			MR-BKS1CBL 7M-A1-H	7				
			MR-BKS1CBL 10M-A1-H	10				
	Brake cable for <200V Series> HF-KP Lead out in opposite direction of motor shaft		MR-BKS1CBL 2M-A2-H	2		○	○	○
			MR-BKS1CBL 3M-A2-H	3				
			MR-BKS1CBL 5M-A2-H	5				
			MR-BKS1CBL 7M-A2-H	7				
			MR-BKS1CBL 10M-A2-H	10				
For CN20	Brake connector for motor brake control output		CNU20S (AWG14)	–		○	–	–

<Power cable>

Item		Model	Length (m)	Contents	Compatible model D2/DH2	DM2	DJ
For motor power	Power connector for <200V Series> HF75, 105, 54, 104, 154, 224, 123, 223, 142 <400V Series> HF-H54, 75, 104, 105, 154 Applicable cable outline ϕ 10.5 to 14mm	CNP18-10S (14)	–		○	○	○
		CNP18-10L (14)	–		○	○	○
	Power connector for <200V Series> HF204, 354, 303, 453, 302 <400V Series> HF-H204, 354, 453, 703 Applicable cable outline ϕ 12.5 to 16mm	CNP22-22S (16)	–		○	○	○
		CNP22-22L (16)	–		○	○	○
	Power connector for <200V Series> HF703, 903 <400V Series> HF-H903 Applicable cable outline ϕ 22 to 23.8mm	CNP32-17S (23)	–		○	–	–
		CNP32-17L (23)	–		○	–	–
	Power cable for <200V Series> HF-KP Lead out in direction of motor shaft	MR-PWS1CBL 2M-A1-H	2		○	–	○
		MR-PWS1CBL 3M-A1-H	3				
		MR-PWS1CBL 5M-A1-H	5				
		MR-PWS1CBL 7M-A1-H	7				
		MR-PWS1CBL 10M-A1-H	10				
	Power cable for <200V Series> HF-KP (Note) It can not be used with HF-KP13. Lead out in opposite direction of motor shaft	MR-PWS1CBL 2M-A2-H	2		○	–	○
		MR-PWS1CBL 3M-A2-H	3				
		MR-PWS1CBL 5M-A2-H	5				
		MR-PWS1CBL 7M-A2-H	7				
		MR-PWS1CBL 10M-A2-H	10				
For TE1	Power connector for MDS-D2-V1-20 to 80 MDS-D2-V2-2020 to 8080 MDS-D2-SP-20 to 40 MDS-D2-SP2-2020 to 4040 MDS-DH2-V1-10 to 80 MDS-DH2-V2-1010 to 8080 MDS-DH2-SP-20, 40 MDS-D2-V3-202020 to 404040	CNU1S (AWG14)	–		○	–	–
	Power connector for MDS-D2-V1-160 MDS-D2-V2-16080, 160160 MDS-D2-SP-80 MDS-D2-SP2-8040, 8080 MDS-DH2-V1-80, 80W MDS-DH2-V2-8080W MDS-DH2-SP-80	CNU1S (AWG10)	–		○	–	–
	Power connector for MDS-D2-CV-37/75	CNU01SECV (AWG14)	–		○	–	–
For CN31 L/M/S	Power connector for MDS-DM2 Series	RCN31S(AWG14, AWG16) (Note) For servo 80 RCN31M(AWG10, AWG12) (Note) For servo 120	–		–	○	–
For CN22	Control power connector for MDS-DM2 Series Applicable cable outline ϕ 1.25 to 2.2mm	RCN22	–		–	○	–

<Drive unit side main circuit connector>

Item		Model	Length (m)	Contents	Compatible model D2/DH2	DM2	DJ
For drive unit	For MDS-DJ-V1-10, 15, 30 For MDS-DJ-SP-20 Applicable cable outline: 0.8mm² to 2.1mm² Finish outside diameter: to ϕ 3.9mm	These connectors are supplied for each drive unit.	–		–	–	○
			–		–	–	○
			–		–	–	○
			–		–	–	○
	For MDS-DJ-V1-40, 80, 100 For MDS-DJ-SP-40, 80 Applicable cable outline: (For CNP1, for CNP3) 1.25mm² to 5.5mm² (For CNP2) 0.14mm² to 2.1mm² Finish outside diameter: (For CNP1, for CNP3) to ϕ 4.7mm (For CNP2) to ϕ 3.9mm²	These connectors are supplied for each drive unit.	–		–	–	○
			–		–	–	○
			–		–	–	○
			–		–	–	○
	For MDS-DJ-V2-3030 For MDS-DJ-SP2-2020 Applicable cable size: (For CNP1) 1.25mm² to 2.0mm² (For CNP2) 1.25mm² to 2.0mm² (For CNP3) 1.25mm² to 2.2mm² Cable finish outside diameter: (For CNP1) to ϕ4.2mm (For CNP2) to ϕ3.8mm (For CNP3) to ϕ3.8mm	These connectors are supplied for each drive unit.			–	–	○
					–	–	○
					–	–	○
					–	–	○

<Spindle encoder cable and connector>

Item		Model	Length (m)	Contents	Compatible model D2/DH2	DM2	DJ
For CN2	Motor side PLG cable Spindle side accuracy encoder TS5690 cable	CNP2E-1-2M	2		○	○	○
		CNP2E-1-3M	3				
		CNP2E-1-4M	4				
		CNP2E-1-5M	5				
		CNP2E-1-7M	7				
		CNP2E-1-10M	10				
		CNP2E-1-15M	15				
		CNP2E-1-20M	20				
		CNP2E-1-25M	25				
		CNP2E-1-30M	30				
For CN3	Spindle side encoder OSE-1024 cable	CNP3EZ-2P-2M	2		○	○	○
		CNP3EZ-2P-3M	3				
		CNP3EZ-2P-4M	4				
		CNP3EZ-2P-5M	5				
		CNP3EZ-2P-7M	7				
		CNP3EZ-2P-10M	10				
		CNP3EZ-2P-15M	15				
		CNP3EZ-2P-20M	20				
		CNP3EZ-2P-25M	25				
		CNP3EZ-2P-30M	30				
		CNP3EZ-3P-2M	2		○	○	○
		CNP3EZ-3P-3M	3				
		CNP3EZ-3P-4M	4				
		CNP3EZ-3P-5M	5				
		CNP3EZ-3P-7M	7				
		CNP3EZ-3P-10M	10				
		CNP3EZ-3P-15M	15				
		CNP3EZ-3P-20M	20				
		CNP3EZ-3P-25M	25				
		CNP3EZ-3P-30M	30				
For spindle motor	Motor side PLG connector Spindle side accuracy encoder TS5690 connector	CNEPGS	–		○	○	○
	Spindle side encoder OSE-1024 cable		–		○	○	○
	Applicable cable outline ϕ6.8 to 10mm		–		○	○	○
For CN2/3	Spindle encoder drive unit side connector	CNU2S (AWG18)	–		○	○	○

<Twin-head magnetic encoder (MBE405W/MBA405W) cable and connector>

Item		Model	Length (m)	Contents	Compatible model D2/DH2	DM2	DJ
For CN2/3	Cable for MBE405W/MBA405W	CNV2E-MB-2M	2		○	○	○
		CNV2E-MB-3M	3				
		CNV2E-MB-4M	4				
		CNV2E-MB-5M	5				
		CNV2E-MB-7M	7				
		CNV2E-MB-10M	10				
		CNV2E-MB-15M	15				
		CNV2E-MB-20M	20				
	Connector for MBE405W/MBA405W	CNEMB2S (8)	–		○	○	○
For CN3 of preamplifier	Thermistor connector for MBE405W/MBA405W	CNEMB3S (8)	–		○	○	○

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Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001(standards for environmental management systems) and ISO9001(standards for quality assurance management systems)

⚠ Safety Warning

To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

ISO 14001 EC97J1113 UKAS MANAGEMENT SYSTEMS 051

ISO 9001 BUREAU VERITAS Certification UKAS MANAGEMENT SYSTEMS 008

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