

## Safety Precautions

- Important Notes on exporting this product or equipment containing this product;  
If the end-user or application of this product is related to military affairs or weapons, its export may be controlled by "Foreign Exchange and Foreign Trade Control Law" of Japan where export license will be required before product can be exported from Japan.
- This product is designed and manufactured for use in General Purpose Industrial Equipment and it is not intended to be used in equipment or system that may cause personal injury or death.
- All servicing such as installation, wiring, operation, maintenance and etc., should be performed by qualified personnel only.
- Tighten mounting screws with an adequate torque by taking into consideration strength of the screws and the characteristics of material to which the product will be mounted. Over tightening can damage the screw and/or material; under tightening can result in loosening.
- Install safety equipment to prevent serious accidents or loss that is expected in case of failure of this product.
- Consult us before using this product under such special conditions and environments as nuclear energy control, aerospace, transportation, medical equipment, various safety equipments or equipments which require a lesser air contamination.
- We have been making the best effort to ensure the highest quality of our products, however, some applications with exceptionally large external noise disturbance and static electricity, or failure in input power, wiring and components may result in unexpected action. It is highly recommended that you make a fail-safe design and secure the safety in the operative range.
- If the motor shaft is not electrically grounded, it may cause an electrolytic corrosion to the bearing, depending on the condition of the machine and its mounting environment, and may result in the bearing noise. Checking and verification by customer is required.
- Failure of this product depending on its content may generate smoke of about one cigarette. Take this into consideration when the application of the machine is clean room related.
- Please be careful when using the product in an environment with high concentrations of sulfur or sulfuric gases, as sulfuration can lead to disconnection from the chip resistor or a poor contact connection.
- Do not input a supply voltage which significantly exceeds the rated range to the power supply of this product. Failure to heed this caution may lead to damage of the internal parts, causing smoke and/or fire and other troubles.
- The user is responsible for matching between machine and components in terms of configuration, dimensions, life expectancy, characteristics, when installing the machine or changing specification of the machine. The user is also responsible for complying with applicable laws and regulations.
- Manufacturer's warranty will be invalid if the product has been used outside its stated specifications.
- Component parts are subject to minor change to improve performance.
- Read and observe the instruction manual to ensure correct use of the product.

**Repair** Consult to the dealer from whom you have purchased this product for details of repair work.  
When the product is incorporated to the machine you have purchased, consult to the machine manufacturer or its dealer.

**URL** Electronic data of this product (Instruction Manual, CAD data) can be downloaded from the following web site;  
[industrial.panasonic.com/ac/e/](http://industrial.panasonic.com/ac/e/)

● Contact to : \_\_\_\_\_

**Panasonic**  
INDUSTRY

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**Panasonic**  
INDUSTRY

# AC Servo Motor & Driver

MINAS A6 Family  
MINAS E series

## IN Better Solution



AC Servo Motor & Driver <MINAS A6 Family, MINAS E series>

2023 / 3

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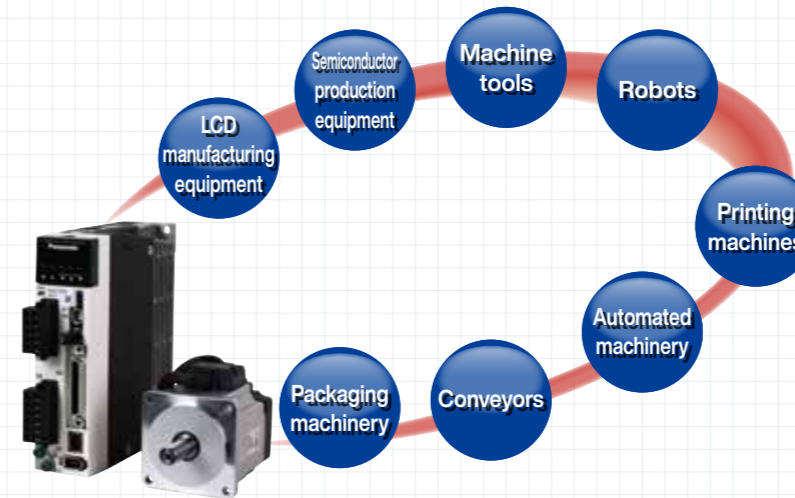
● This product is for industrial equipment. Don't use this product at general household.

# MINAS A6 Family



More compact, more faster and more easy-to-use Servomotors that meet the demands of the present age.

The MINAS A6 family of advanced AC servomotors is changing the landscape of industrial machinery.



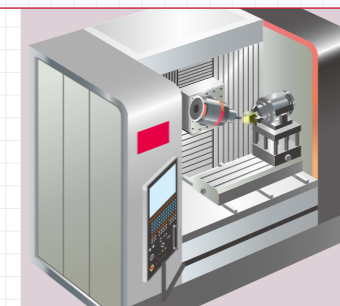
## Robots

A robot is required to operate stably despite arm posture and position, workload and other conditions changing from moment to moment. The MINAS A6 family assures stable operation by suppressing effects of load to a minimum using "adaptive load control."



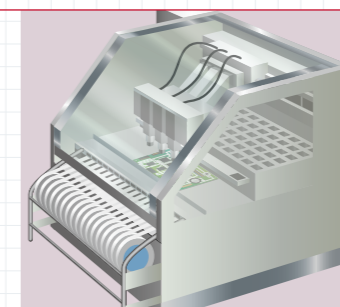
## Processing machinery

With metal processing machine, it is very difficult to render mirror-like finishing on a polygonal body. The A6 family realizes "3.2 kHz frequency response" to improve feedback responsiveness, thus enabling mirror surfacing without generating lines or streaks.



## Component mounting machines

The A6 family also shows its versatility when used with a component mounting machine where speed and positional accuracy are demanded. In addition to high frequency response, it can process accidental disturbances with the help of built-in "adaptive load control," thus maintaining high productivity.



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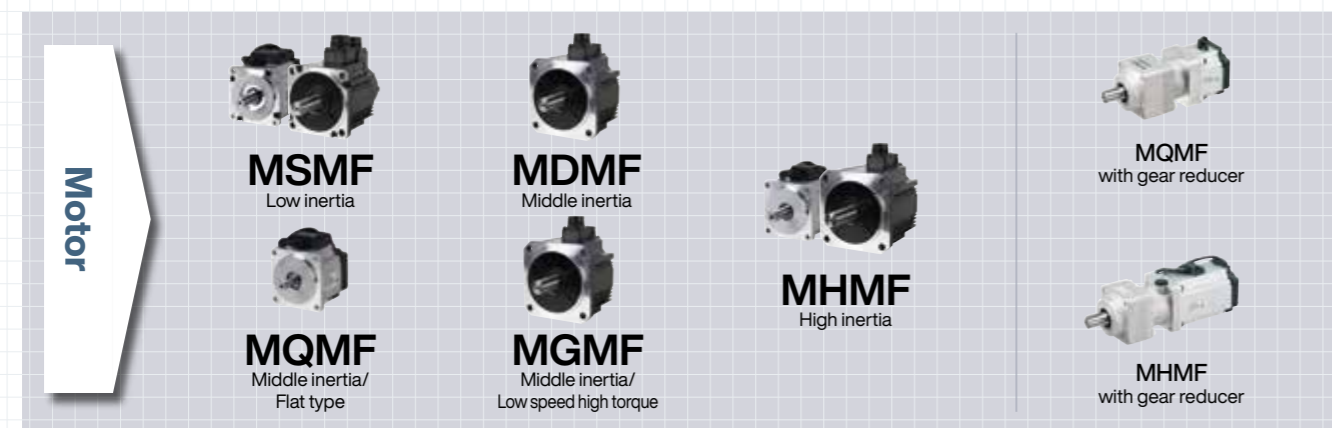
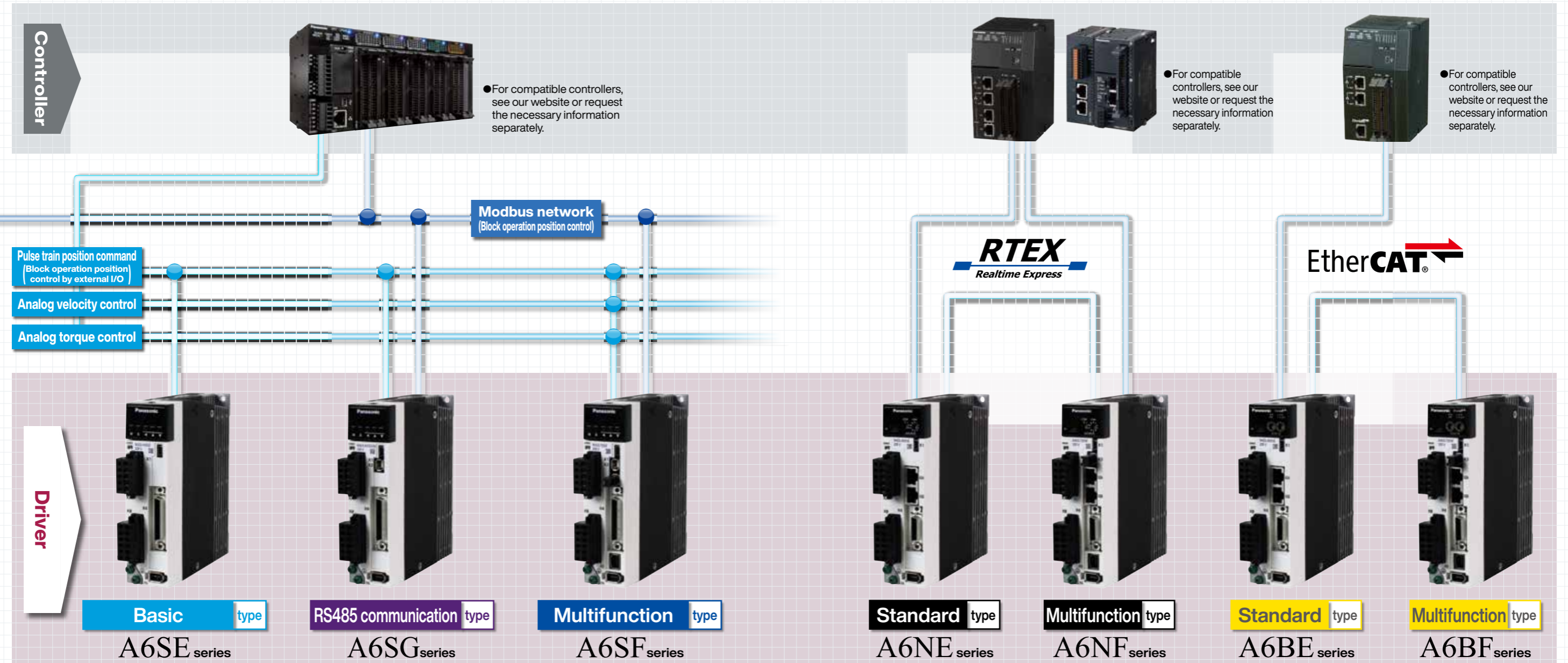
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# Servomotors that flexibly and effectively fit into

# various system configurations **MINAS** A6 Family



**Slim design and position control type**

**E series**

- Ultra-small design and pulse train command type only, DIN-rail mountable (using mounting Kit)
- Rated output: 50 W to 400 W

**MINAS A6 DC24 V / DC48 V type** Special order product

- DC24 V / DC48 V power supply
- Rated output :  
DC24 V: 50 W, 100 W, 133 W  
DC48 V: 50 W, 100 W, 133 W, 266 W

**Dual-axis servo driver** Special order product

- Reduced wiring by dual-axis integration
- Supports both rotary motors and linear / DD motors
- Rated output :  
Max.200 W ×2-axis  
Max.400 W ×2-axis  
Max.750 W ×2-axis  
Max.1 kW ×2-axis









**RTEX Realtime Express**

Special order product For more information, visit the website or please request to our distributors separately.

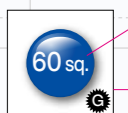
# It is MINAS A6 Family lineup that meets the

# manufacturing industry needs. **MINAS** A6 Family

## Motor line-up

		50 w	100 w	200 w	400 w	750 w	850 w	1000 w	1.0 kW	1.3 kW	1.5 kW		1.8 kW	2.0 kW	2.4 kW	2.9 kW	3.0 kW	4.0 kW	4.4 kW	5.0 kW	5.5 kW	7.5 kW	11.0 kW	15.0 kW	22.0 kW	
Low inertia MSMF	100 V 	38 sq.	38 sq.	60 sq.	60 sq.																					
	Rated rotational speed (Maximum rotational speed)	3000 r/min(6000 r/min)																								
	200 V 	38 sq.	38 sq.	60 sq.	60 sq.	80 sq.		80 sq.	100 sq.		100 sq.			100 sq.				120 sq.	130 sq.		130 sq.					
Rated rotational speed (Maximum rotational speed)	3000 r/min(6000 r/min)								3000 r/min(5000 r/min)				3000 r/min(5000 r/min)													
400 V (Under development)								100 sq.		100 sq.			100 sq.				120 sq.	130 sq.		130 sq.						
Rated rotational speed (Maximum rotational speed)									3000 r/min(5000 r/min)				3000 r/min(5000 r/min)													
Middle inertia/Flat type MQMF	100 V 		60 sq.	80 sq.	80 sq.																					
	Rated rotational speed (Maximum rotational speed)	3000 r/min(6500 r/min)																								
200 V 		60 sq.	80 sq.	80 sq.																						
Rated rotational speed (Maximum rotational speed)	3000 r/min(6500 r/min)																									
Middle inertia MDMF	200 V 								130 sq.		130 sq.			130 sq.			130 sq.	176 sq.		176 sq.		176 sq.	220 sq.	220 sq.	220 sq.	
	Rated rotational speed (Maximum rotational speed)									2000 r/min(3000 r/min)				2000 r/min(3000 r/min)				1500 r/min <sup>*1</sup>				1500 r/min(2000 r/min)				
	400 V (Under development)								130 sq.		130 sq.			130 sq.			130 sq.	176 sq.		176 sq.		176 sq.	220 sq.	220 sq.	220 sq.	
Rated rotational speed (Maximum rotational speed)									2000 r/min(3000 r/min)				2000 r/min(3000 r/min)				1500 r/min <sup>*1</sup>				1500 r/min(2000 r/min)					
Middle inertia/Low speed high torque MGMF	200 V 						130 sq.		130 sq.				130 sq.		176 sq.	176 sq.			176 sq.		176 sq.					
	Rated rotational speed (Maximum rotational speed)					1500 r/min(3000 r/min)				1500 r/min(3000 r/min)				1500 r/min(3000 r/min)												
	400 V (Under development)						130 sq.		130 sq.				130 sq.		176 sq.	176 sq.			176 sq.		176 sq.					
Rated rotational speed (Maximum rotational speed)					1500 r/min(3000 r/min)				1500 r/min(3000 r/min)				1500 r/min(3000 r/min)													
High inertia MHMF	100 V 	40 sq.	40 sq.	60 sq.	60 sq.																					
	Rated rotational speed (Maximum rotational speed)	3000 r/min(6500 r/min)																								
	200 V 	40 sq.	40 sq.	60 sq.	60 sq.	80 sq.		80 sq.	130 sq.		130 sq.			176 sq.			176 sq.	176 sq.		176 sq.		176 sq.		176 sq.		
Rated rotational speed (Maximum rotational speed)	3000 r/min(6500 r/min)				3000 r/min(6000 r/min)				2000 r/min(3000 r/min)				2000 r/min(3000 r/min)				1500 r/min <sup>*1</sup>									
400 V (Under development)			60 sq.	60 sq.	80 sq.		80 sq.	130 sq.		130 sq.			176 sq.			176 sq.	176 sq.		176 sq.		176 sq.		176 sq.			
Rated rotational speed (Maximum rotational speed)	3000 r/min(6500 r/min)				3000 r/min(6000 r/min)				2000 r/min(3000 r/min)				2000 r/min(3000 r/min)				1500 r/min <sup>*1</sup>									

**Table description**



Flange sq. dimension [Unit: mm]

Also available with gear reducer.

\*1 Maximum rotational speed is 3000 r/min.

# It is MINAS A6 Family lineup that meets the

# manufacturing industry needs. **MINAS** A6 Family

## Driver line-up

	Rotary motor			Linear motor / DD motor	
	Basic type A6SE series	RS485 communication type A6SG series	Multifunction type A6SF series	Basic type A6SL series <small>Special order product</small>	Multifunction type A6SM series <small>Special order product</small>
Position control	●	●	●	●	●
Block operation	(External contact signal only)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)
Speed control			●		●
Internal velocity command <sup>*2</sup>	(External contact signal only)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)
Torque control			●		●
Full-close control			●		●
Block operation			(External contact signal or Modbus communication)		
Pulse	●	●	●	●	●
Analog			●		●
Modbus		●	●	●	●
External scale			●	●	●
RS-232/RS-485		●	●	●	●
STO (Safety Torques Off)			●	●	●

\*1 A6SE series driver (Position control only) does not correspond to the absolute system of using the serial communication with the host device. It supports incremental system only.

\*2 When using internal speed command with Modbus, external servo ON is required.

## High speed communication For Realtime Express Network servo driver ▶ For Details see P.349

	Rotary motor		Linear motor / DD motor	
	Standard type A6NE series	Multifunction type A6NF series	Standard type A6NL series <small>Special order product</small>	Multifunction type A6NM series <small>Special order product</small>
<b>RTEX</b> Realtime Express				
Control mode				
Position/Speed/Torque control	●	●	●	●
Full-close control		●		●
Interface				
External scale		●	●	●
STO (Safety Torques Off)		●		●

## Servo drivers with EtherCAT open network ▶ For Details see P.369

	Rotary motor		Linear motor / DD motor	
	Standard type A6BE series <small>Special order product</small>	Multifunction type A6BF series <small>Special order product</small>	Standard type A6BL series <small>Special order product</small>	Multifunction type A6BM series <small>Special order product</small>
<b>EtherCAT</b>				
Control mode				
Position/Speed/Torque control	●	●	●	●
Full-close control		●		●
Interface				
External scale		●	●	●
STO (Safety Torques Off)		●		●

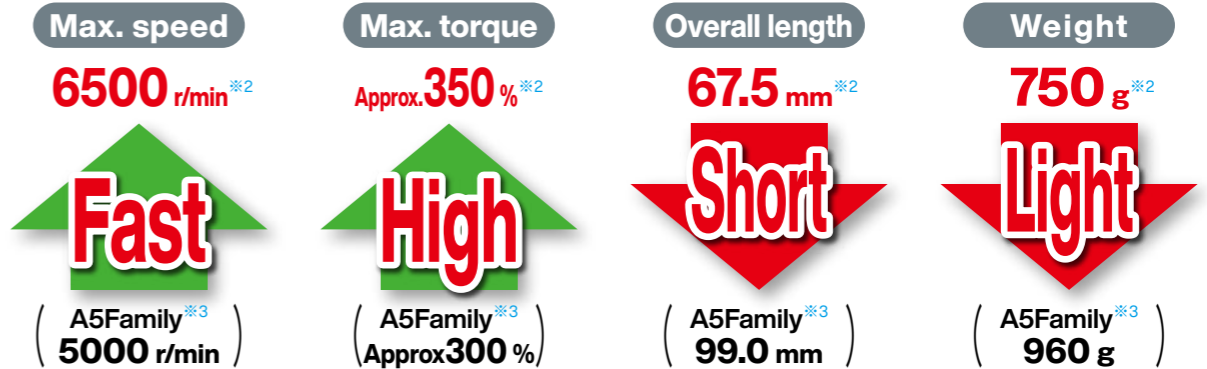
● Please check the instruction manual for necessary wiring.

Special order product For more information, please visit our website or request to our distributors separately.

# Small, light, powerful and speedy <sup>※1</sup>

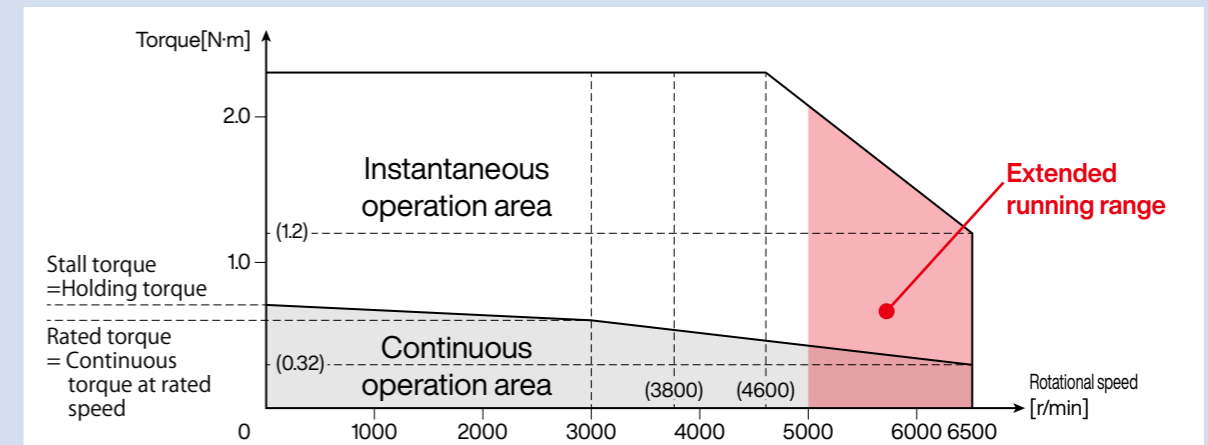
MINAS A6 Family

## High-speed, high-torque, compact and lightweight. <sup>※1</sup>



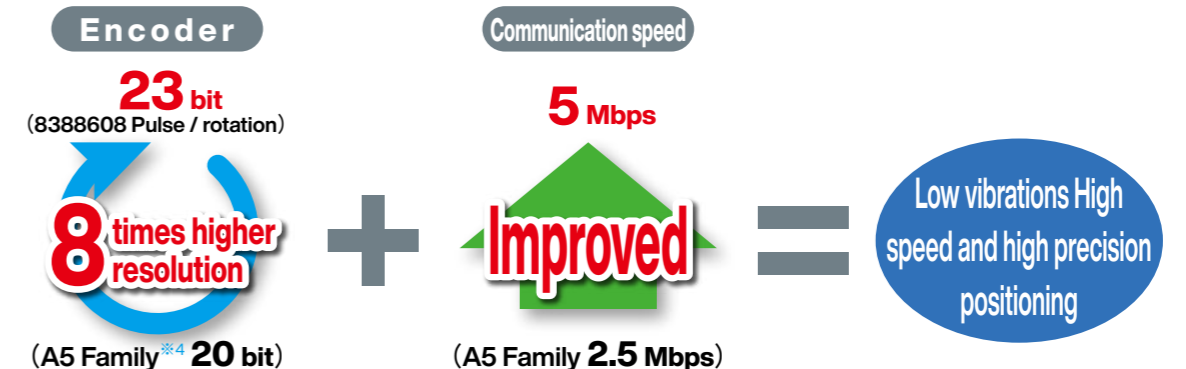
※1 Middle and high inertia types only ※2 MHMF200 W ※3 MHMD200 W

## Thanks to high-speed and high-torque, the application area is greatly expanded.



● The graph shows performance of the MHMF200 W (200 V).

## Enhanced position detecting resolution enables smoother and more precise positioning.



※4 Incremental encoder



# Swifter, smarter and easier to use

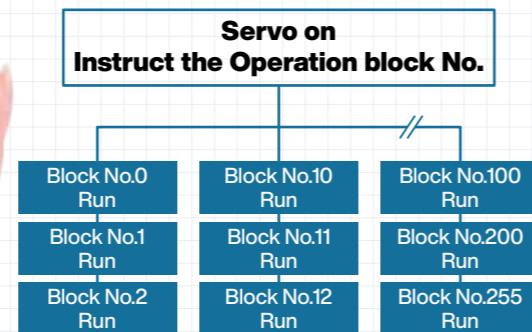
Powered Up compact driver



- New two-degree-of-freedom control system
- Frequency response 3.2 kHz
- Built-in filters and adjusting functions
- PANATERM Support
- Modbus Support (A6SF, A6SG Series)
- Block operation position control (Supports Modbus and external I/O)

Full-scale

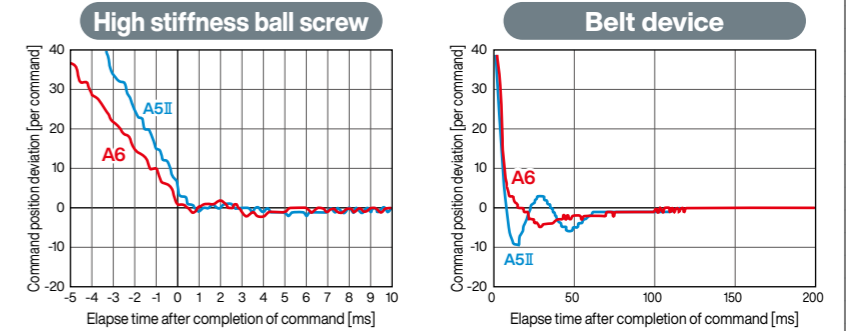
### Image of block operations



## High-speed response, high-precision positioning for quick and accurate movement

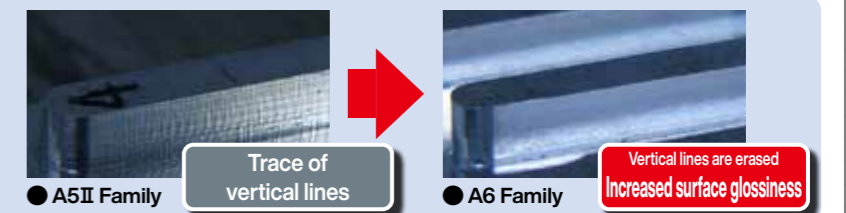
Our proprietary algorithm in addition to upgraded CPU and other hardware realized further high-speed response. Furthermore, high-precision positioning is achieved by automatically eliminating micro vibrations and machine oscillation caused by the resonance.

### Comparison of position setting waveforms



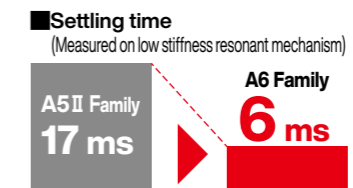
### Example of operation with processing machine

A mirror finish is obtained even if a process that tends to cause streaking.



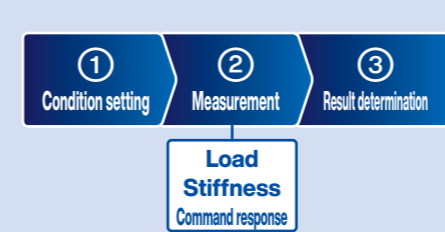
## Easy and quick setting, shortening conventional settling time by approx. 64%\*1

Newly developed fit gain function substantially reduces adjustment time. Adaptive notch filter and various gains can be automatically set and adjusted.

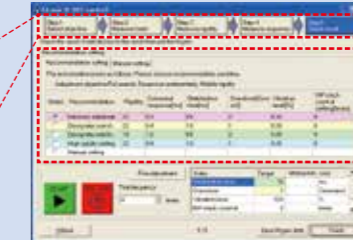


\*1 Comparison with conventional product A5II Family

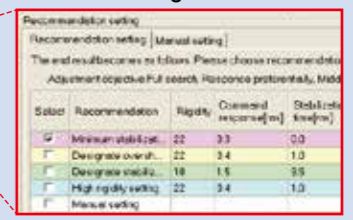
### Adjustment completed in only 3 processes



### Fit gain adjustment window



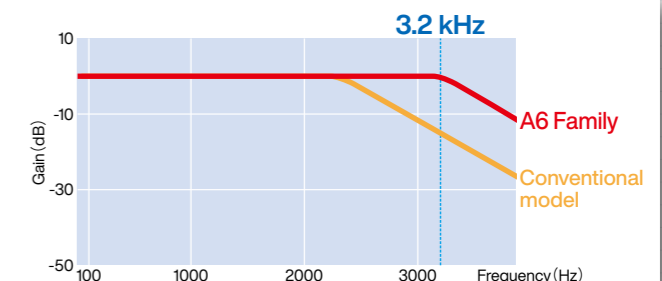
### Automatically proposes various settings



## Realized 3.2 kHz frequency response to improve productivity

Realizes 3.2 kHz frequency response. At 139% that of conventional models \*1, it enables high-speed operation and improves productivity.

\*1 Comparison with conventional product A5II Family



# Reduced maintenance work

# and trouble.

## Lineup of motors protected by high dust-proof, high heat-resistant oil seal (With protective lip)

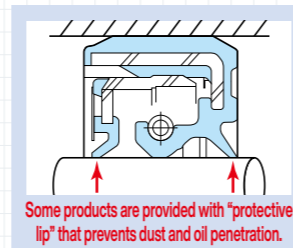
Motors protected by a highly dust-proof, oil-tight oil seal (with protection lip) have been added to the lineup of motor products equipped with oil seals of conventional specifications. The oil seals of this type of motor are made of a material of higher heat resistance.

You can select appropriate motor type according to your application environment such as dusty, powdery or gear connection necessity.

- Oil-seals (with protective lip) are not available for MSMF motors with flange size 80 mm or smaller.
- MQMF and MHMF motors with flange size of 80 mm or smaller provided with oils seals (with protective lip) are not mounting-compatible with A5 Family models.

### ■ Applicable oil seals

Flange size	Motor type	With oil seal		With oil seal (with protective lip)	
		With oil seal	Made of nitrile rubber (NBR)	With oil seal	Made of fluororubber
80 mm or less	MSMF	○	Made of nitrile rubber (NBR)	No setting	
	MHMF, MQMF	○		○	Made of fluororubber
100 mm or more	All Type	○	○	fluororubber	Mounting-compatible with A5 Family products



## IP67 enclosure rating (Motors with flange size of 80 mm or smaller are order-made products)

Direct-mount connectors are used for the motor power supply and encoder input and output to improve sealing performance of the motor to IP67.

- IP67-compatible motors with flange size of 80 mm or smaller are order-made products.
- For environmental conditions of applications, refer to P.303.

**What is IP?**  
An international standard that specifies the degree of dustproof and waterproof performance. (IP: Ingress Protection)

IP-67	
<b>6</b> Dust-tight type: Totally protected against dust penetration.	<b>7</b> Protected against water penetration when immersed in water for the specified period of time and under the specified pressure.



## Lifespan diagnosis / degradation diagnosis

It warns expected lifetime of the motor & driver, and deterioration limit of the equipment.

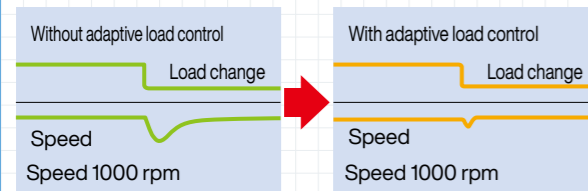
## Geared servomotor

The geared servomotor lineup is also added.

# Other driver functions

## Adaptive load control

Adaptive load control automatically sets the best suitable gain table in response to fluctuations in inertia caused by changes in workload, thus keeping machines operating stably at all times.



## Friction torque compensation

This function reduces the effect of machine related friction and improves responsiveness. Three kinds of friction compensation can be set: unbalanced load compensation, which sets an offset torque that is constantly applied; kinetic friction compensation, which changes direction in response to the direction of movement; and viscous friction compensation, which changes according to the speed command.

## Manual/Auto damping filter

Equipped with a damping filter that is automatically set through the setup support software. This filter removes the natural vibration frequency component from the command input, greatly reducing vibration of the axis when stopping. The number of filters for simultaneous use has been increased to three from the conventional two filters. (Two from one in the two-degree-of-freedom-control mode.) The adaptive frequency has also been significantly expanded from 0.5 Hz to 300 Hz.

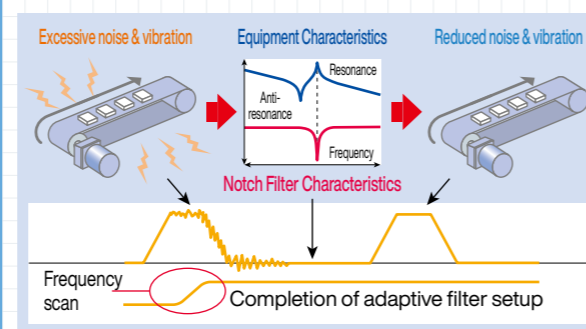


## Manual/Auto notch filter

Equipped with auto-setting notch filters for greater convenience. Now there is no need to measure troublesome vibration frequencies.

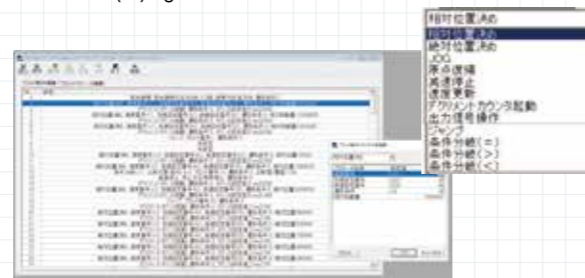
Our notch filters automatically detect vibration and provide simple auto-setting. These notch filters greatly reduce noise and vibration caused by equipment resonance and respond quickly.

The A6 Family is equipped with 5 notch filters with frequencies settable from 50 Hz to 5000 Hz. Depth can be individually adjusted within this range. (Two of the filters share automatic settings.)



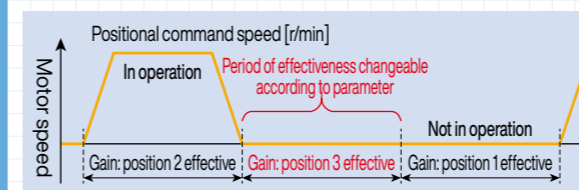
## Block operation function

256 block patterns can be created. Easy control is possible because the instruction can be given to block No. by Modbus (RS232, RS485) or interface (IO) signal.



## 3-step gain

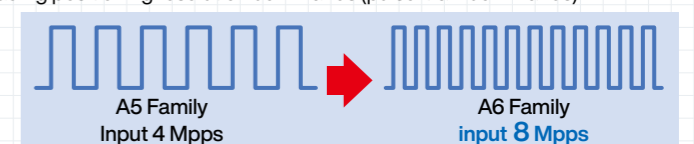
A 3-step gain switch is available in addition to the normal gain switch. This chooses appropriate gain tunings at both stopping and running. The 3-step gain switch gives you choices of 3 different tunings for normal running, stopping for faster positioning and at stopping. The right gaining tunings achieve lower vibration and quicker positioning time of your application.



## Supports semi-/full-closed loop (8 Mpps input pulse, 4 Mpps output pulse) control.

Supports full-closed loop control. The A6SF series accommodates a command input of 8 Mpps and feedback output of 4 Mpps, enabling high-resolution, high-speed operation. Supports the industry's leading positioning resolution commands (pulse-train commands).

- The A6SE and A6SG series do not support full-closed loop control.
- Applicable scale: AB-phase feedback scale (general purpose product) and serial feedback scale (dedicated to Panasonic format product)



## Dynamic braking

With parameter settings, you can select dynamic braking, which shorts servomotor windings U, V and W at Servo-OFF, during positive direction/ negative direction, and during power shutdown and tripping of the circuit breaker for over travel inhibition.

- The desired action sequence can be set up to accommodate your machine requirements.

## Inrush current preventive function

This driver is equipped with a rush current preventive resistor to prevent the circuit breaker from shutting off the power supply as a result of inrush current occurring at power-on.

## Inertia ratio conversion

You can adjust right inertia ratio by Inertia ratio conversion input (J-SEL) of interface. When you have significant load inertia changes, it can adjust unbalanced speed and position gain turning combination. It ends up quicker response of your system.

## Input/output signal assignment

You can use the parameters to arbitrarily allocate the universal 10 inputs and 6 outputs. (Inputs can be selected as either A contacts or B contacts). The Panaterm setup software provides an exclusive screen for a more simplified setup.

## Torque limiter switching

These can be used for applications such as simplified pressure, tension control, and sensor-less homing.

## Parameter initialization

Using the front panel or by connecting a PC, you can restore the parameters to the factory settings.

## Regenerative energy discharge

A regenerative resistor is used to discharge regenerative energy, which is the energy generated when stopping a load with a large moment of inertia or when using this unit in vertical operation. This energy is returned to the driver from the motor.

- Frame A, and frame B model drivers do not contain a regenerative resistor. Optional regenerative resistors are recommended.
- Frame C to frame F model drivers contain one regenerative resistor; however, adding an optional regenerative resistor provides additional regeneration capability.



# Multifunctional software for quick adjustment support

## PANATERM set-up support software

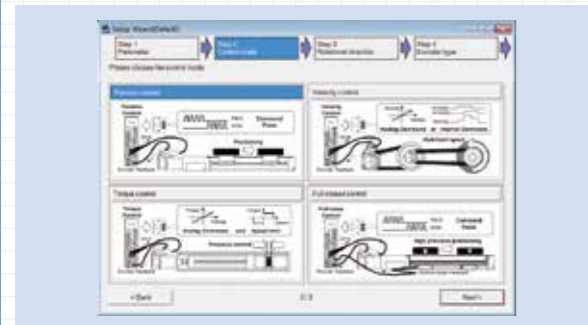
The PANATERM set-up support software, with many added features. The PANATERM assists users in setting parameters, monitoring control conditions, setup support, and analyzing mechanical operation data on the PC screen, when installed in a commercially available personal computer, and connected to the MINAS A6 Family through the USB interface. Choose either English, Japanese, Chinese, Korean-language display.

Please download from our web site and use after install to the PC.

<https://industrial.panasonic.com/ww/products/motors-compressors/fa-motors/ac-servo-motors/minas-a5-panaterm>

### Setup wizard

This wizard supports fundamental settings in each control mode step by step, including reading of default setting. In On-line condition, Input data related to each step can be monitored in real time.



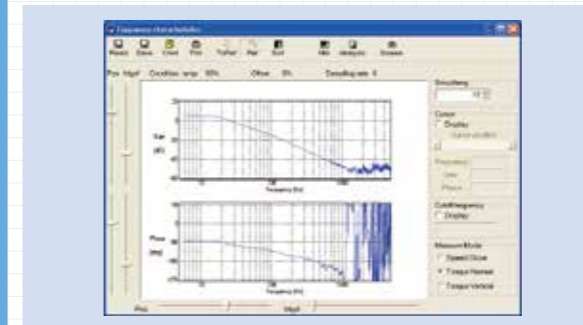
### Trial run

This function supports positioning with the Z-phase search and software limit.



### Frequency characteristics measurement function

Can check frequency response characteristics of the mechanism and motor. Since resonance frequency of the mechanism is measurable, it is effective for start-up time reduction.



### Service Life Prediction

The service life prediction function considers the internal temperature for main components such as the fan and condenser. If the rated value is exceeded, an alarm is displayed. This approach prevents unexpected suspension of operation and allows for planning of systemized maintenance.

Note: The life span prediction value should be considered as a guide only.

Item	Value	Unit	Status
Power supply on integrated value	3.0	%	
Driver temperature	54	degrees	
Number of times of inductive resistance	0	times	
Number of times of CB relay changing	0	times	
Fan operation time	0.0	%	
Fan life time integrated value	0.0	%	
Condenser life time integrated value	0.0	%	
Maker users	0	-	

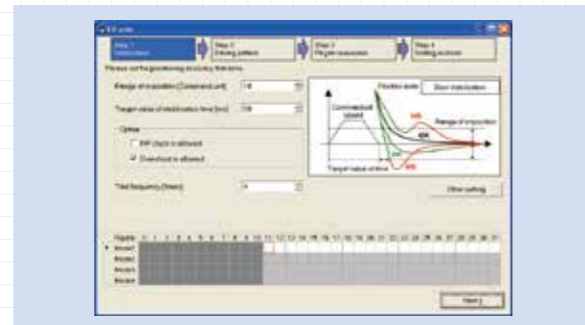
### The fit gain function for setting Two-degree-of-freedom control.

- 1) Select the adjustment method
- 2) Load measurement
- 3) Confirming results Adjust gain to meet your needs



### Fit gain

This function automatically searches the best suitable stiffness setting and mode and adjusts the gain once the target in-position range and setting time are set.



### Encoder temperature monitor

The Encoder Temperature Monitor is a new function capable of real-time measurement of the interior temperature of the encoder, something that has been difficult to achieve in the past. It is valuable for monitoring the motor and can be used as a diagnostic in the event of a malfunction.

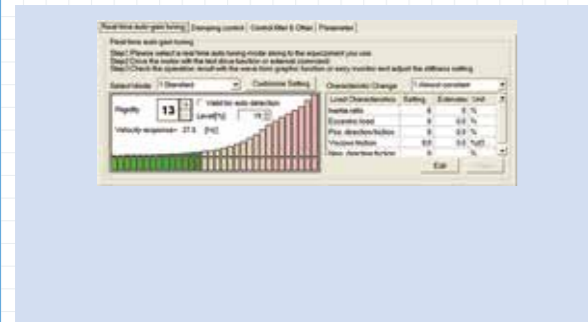


### Deterioration diagnosis

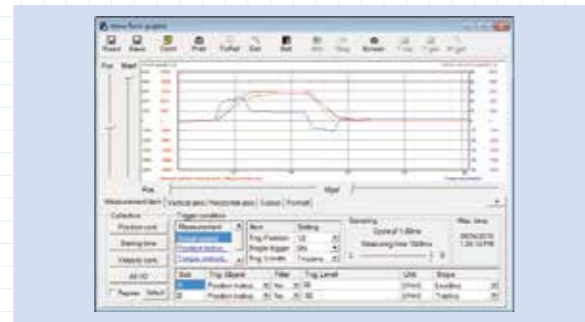
From the equipment information that can be detected by the motor, it is possible to display and check the deterioration and aging status of the equipment.



### Added New screen for gain adjustment, equipped with stiffness oscillation auto-reduction function



### Significant increase of measuring objects Multi-functional waveform graphic



**Other features** It has convenient functions such as motor / driver information such as load factor, power supply voltage, driver temperature etc, logging function capable of recording interface recording, display function of non-rotating factors etc

- Deterioration diagnosis ● Block action editor / monitor (A6SE, A6SG, A6SF series) ● Battery refresh ● Object editor (A6BE, A6BF series)

### Hardware configuration

Personal computer	CPU	800 MHz or more
	Memory	System memory 512 MB or more Graphics memory 32 MB or more
	Hard disk capacity	Vacancy of 512MB or more recommended
	OS	Windows® Vista SP1 (32 bit), Windows® 7 (32 bit, 64 bit), Windows® 8 (32 bit, 64 bit), Windows® 10 (32 bit, 64 bit) Japanese, English, Chinese (Simplified), Korean version
Serial communication function		USB port, COM port (Communication speeds: 2400 bps to 115200 bps) * A COM port is required to use RS232C communications. A 9600 bps or higher baud rate is recommended.
	Display	
	Resolution	1024 × 768 pix or more
	Number of colors	24 bit colors (TrueColor) or more

<CAUTION> This software is applicable only to A5 Family, A6 Family. To apply this software to A, AIII, E or A4 series, consult our distributors.

# Lineup of two types of network

# servo driver

MINAS A6 Family

## Realtime Express(RTEX)

### Ultimate Real-time performance

- Com. period min. **0.0625 ms**
- Com. speed **100 Mbps** Full-duplex
- Velocity response **3200 Hz**

### Functionality to meet various needs

- Precise position latch & comparing
- Infinitely rotatable absolute encoder
- IEC safety I/F model available <sup>\*1</sup>

<sup>\*1</sup>: Multi-functional type F. IEC61800-5-2 STO, IEC61508 SIL3.

### Simple network

- High-performance & Low-cost
- Isochronous established by ASIC
- Easy device development

**RTEX**  
Realtime Express



Max  
**16000**  
times/s

MINAS A6N series

## EtherCAT

### High-Performance

- Frequency response: **3200 Hz**
- Supports network communication "EtherCAT".
- High-Speed **100 Mbps**
- Real-time auto tuning function, Anti-vibration filters are available.

### High-functions

- EtherCAT with many supported applications <7 control modes, 32 hm methods, DC(Synch), SM2(Synch), FreeRUN (Non-synch)>
- System-up possible with various slaves.
- Supports PC-based controller.
- A6BL/A6BM (for Linear Motor) will be available soon.

### Standards

- Official EtherCAT Conformance Tested model available.
- IEC safety I/F model available. <sup>\*2</sup>

<sup>\*2</sup>: Supported by multifunction type. EN61800-5-2 STO, EN61508 SIL3.

EtherCAT®



Small size  
servo driver  
with EtherCAT

MINAS A6B series Special order product

# Absolute system can be configured without the battery.

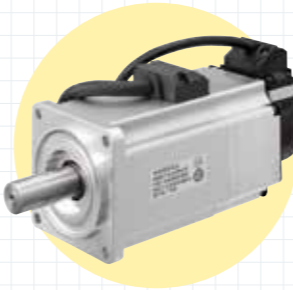
## Battery-less absolute encoder motor

For details on the battery-less absolute encoder type, refer to the "MINAS A6 Family Battery-less Absolute Encoder Models" catalog.

Reduced the battery for the absolute encoder by installing the power generating element in the motor. In addition to improving maintainability, we support the construction of ecological and economical industrial machines and systems.

Maintenance work such as battery replacement is reduced because battery is not required anymore.

Reduce wasteful inventory management and replacement costs as battery is no required anymore. It contributes to the construction of ecological and economical industrial machines and systems.



### Battery-less absolute encoder motor list

	80 mm sq. or less Leadwire type						100 mm sq. or more Encoder connector (Small size JN2) type					
	50 W	100 W	200 W	400 W	750 W	1000 W	1.0 kW	1.5 kW	2.0 kW	3.0 kW	4.0 kW	5.0 kW
Low inertia <b>MSMF</b>	100V 200V	100V 200V	100V 200V	100V 200V	200V	200V	200V	200V	200V	200V	200V	200V
Middle inertia <b>MQMF</b>		100V 200V	100V 200V	100V 200V								
Middle inertia <b>MDMF</b>	Table description Voltage specifications						200V	200V	200V	200V	200V	200V
Middle inertia <b>MGMF</b>							850 W 200V	1.3 kW 200V	1.8 kW 200V	2.4 kW 200V	2.9 kW 200V	4.4 kW 200V
High inertia <b>MHMF</b>	100V 200V	100V 200V	100V 200V	100V 200V	200V	200V	200V	200V	200V	200V	200V	200V

\* 400 V (Under development)

# Compliance with MINAS A6 Family international standards



	Driver	Motor	
EU/UK Standards	EU EMC Directives/ UK EMC Regulation	EN55011 EN61000-6-2 EN61000-6-4 EN61800-3	—
	EU Low Voltage Directives/ UK Low Voltage Regulation	EN61800-5-1	EN60034-1 EN60034-5
	Machinery (Functional safety *)	ISO13849-1 EN61508 EN62061 EN61800-5-2	—
UL Standards	UL61800-5-1 (E164620)	UL1004-1, UL 1004-6 (E327868)	
CSA Standards	C22.2 No.274	C22.2 No.100	
Radio Waves Act (South Korea) (KC) <sup>2</sup>	KN11 KN61000-4-2,3,4,5,6,8,11	—	

IEC : International Electrotechnical Commission  
UL : Underwriters Laboratories

EN : Europaischen Normen  
CSA : Canadian Standards Association

EMC : Electromagnetic Compatibility

### Safety parameter

	Diagnosis based on EDM	No diagnosis based on EDM
Safety Integrity Level	EN61508 (SIL3) EN62061 (SILCL3)	EN61508 (SIL2) EN62061 (SILCL2)
Performance level	ISO13849-1 PL e (Cat.3)	ISO13849-1 PL d (Cat.3)
Safety function	EN61800-5-2 (SIL 3, STO)	EN61800-5-2 (SIL 2, STO)
Hazardous failure probability per hour	<For size A,B,C,D,E,F> PFH = 1.34 × 10 <sup>-8</sup> (% SIL3 = 13.4 %)	<For size A,B,C,D,E,F> PFH = 1.40 × 10 <sup>-8</sup> (% SIL2 = 1.40 %)
	<For size G and H> PFH = 1.78 × 10 <sup>-8</sup> (% SIL3 = 17.8 %)	<For size G and H> PFH = 1.85 × 10 <sup>-8</sup> (% SIL2 = 1.85 %)
Average time of hazardous failure	MTTFd : High (100 years)	MTTFd : High (100 years)
Average self-diagnosis rate	DC : Medium	DC : Low
Task time	15 years	15 years

\* When export this product, follow statutory provisions of the destination country.

\*1 A6SE, A6SG, A6NE and A6BE series doesn't correspond to the functional safety standard.

\*2 Information related to the Korea Radio Law

This servo driver is a Class A commercial broadcasting radio wave generator not designed for home use.

The user and dealer should be aware of this fact.

A 급 기기 (업무용 방송통신기자재)

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

( 대상기종 : Servo Driver )

This products is not an object of china compulsory certification (CCC).

### Low noise, compliant with EU EMC Directives/UK EMC Regulation

Radiated noise is minimized to meet EU EMC Directives/UK EMC Regulation and to support international standards.

### Compliance with EU safety standards.

Features non-software-based independent redundant circuitry for motor power isolation. Independent redundant circuitry for motor power isolation. This obviates the need for magnetic contactors to isolate the required motor in order to accommodate EU Low Voltage Directives/UK Low Voltage Regulation machinery commands. (The final safety compliance must be applied as machine.)

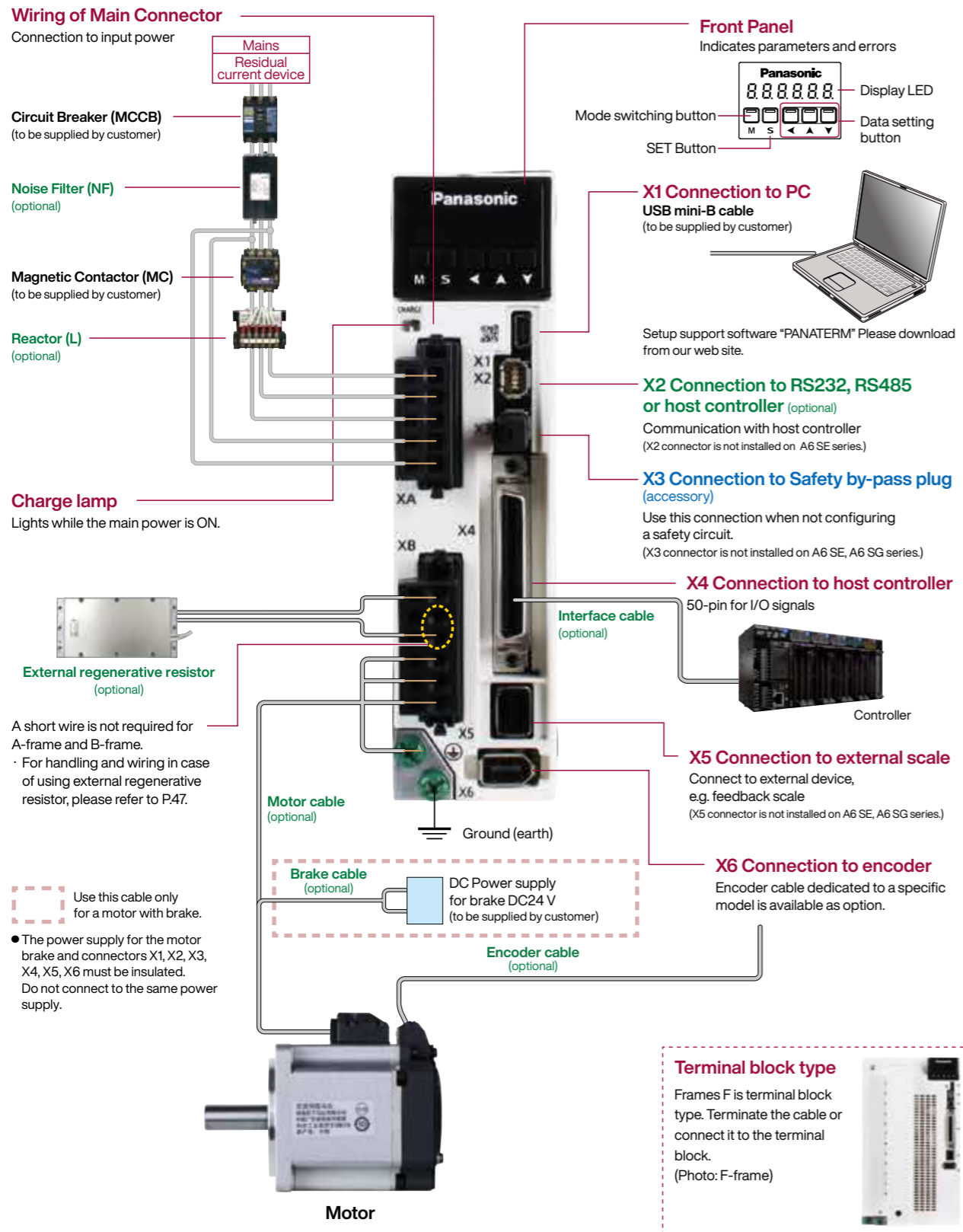
### SEMI-F47

Includes a function in compliance with the SEMI F47 standard for voltage sag immunity under no load or light load. Ideal for the semiconductor and LCD industries.

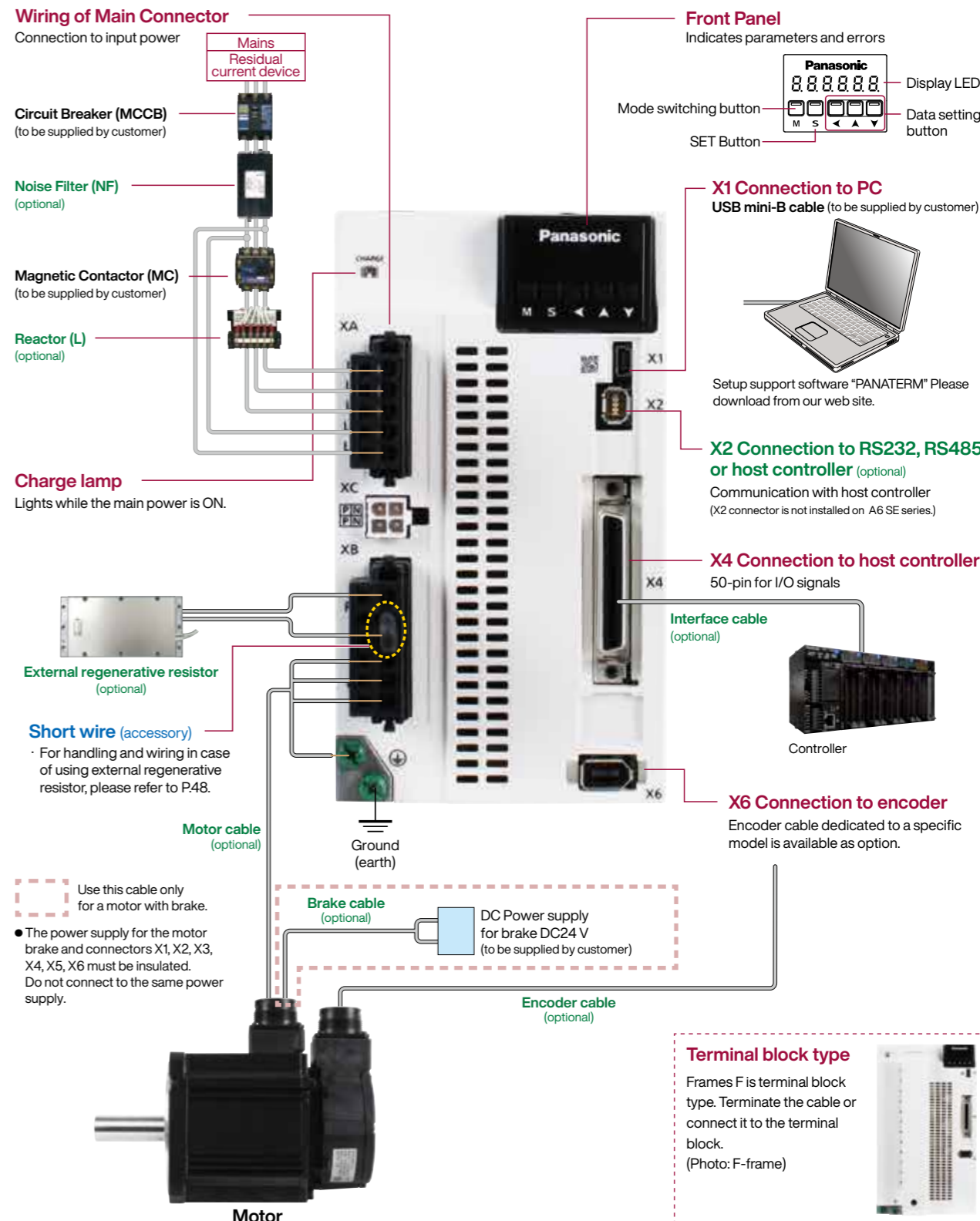
- Excluding the single-phase 100-V type.
- Please verify the actual compliance with your machine checking the F47 standard for voltage sag immunity.



<A6SF Series (Driver: A-frame Motor: 200 W)>



<A6SG Series/ A6SE Series (Driver: D-frame Motor: 1.0 kW)>

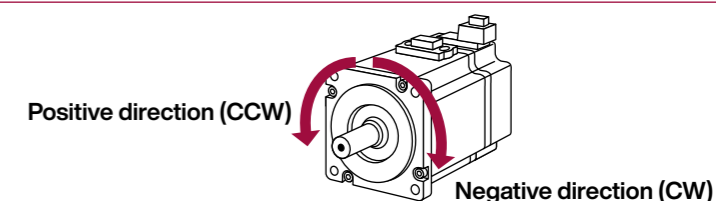


<Caution>

Apply adequate tightening torque to the product mounting screw by taking into consideration strength of the screw and the characteristics of material to which the product is installed. Overtightening can damage the screw and/or material; undertightening can result in loosening.

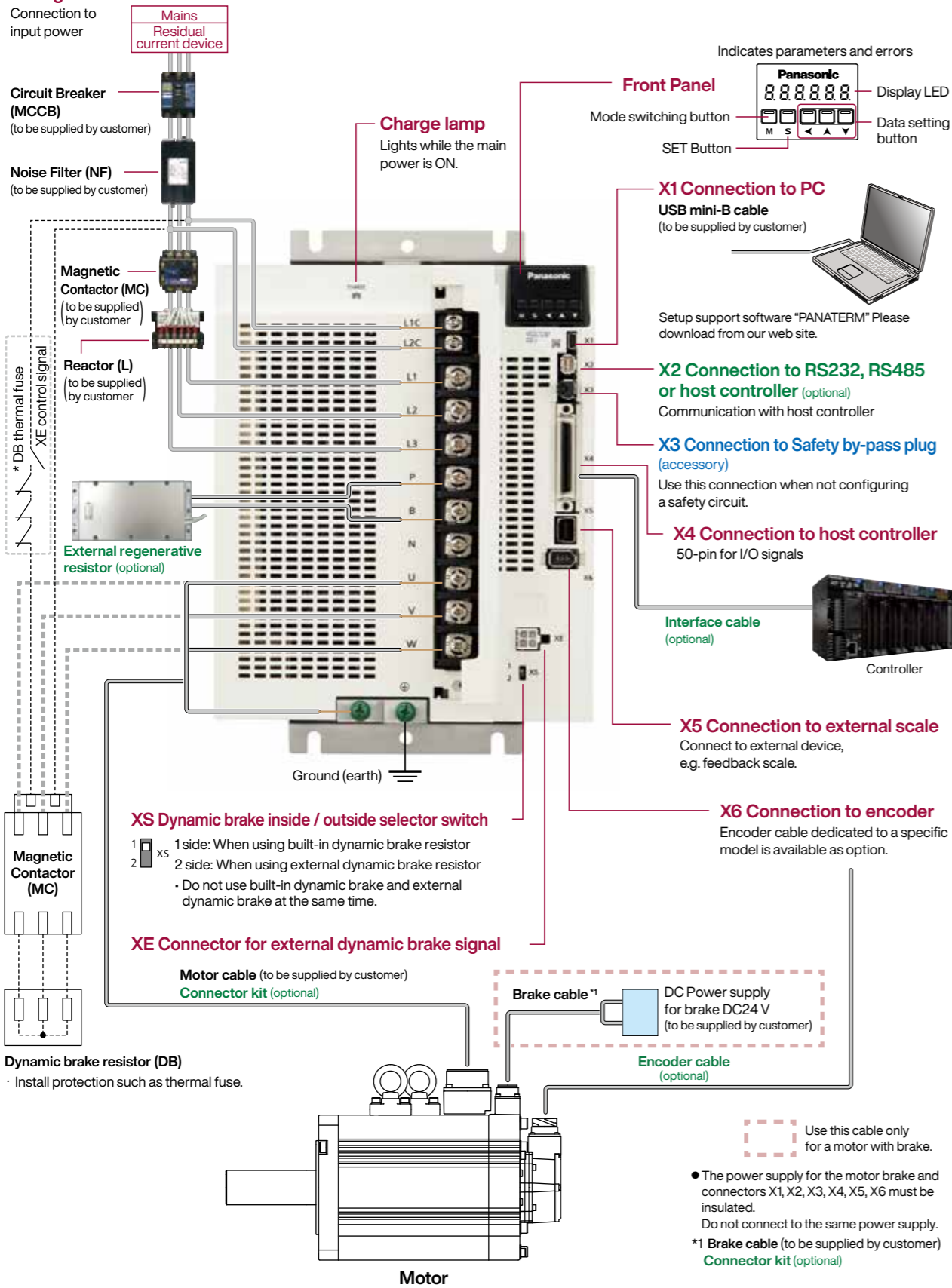
<Note>

Initial setup of rotational direction: positive = CCW and negative = CW. Pay an extra attention.



<A6SF Series (Driver: G-frame Motor: 7.5 kW)>

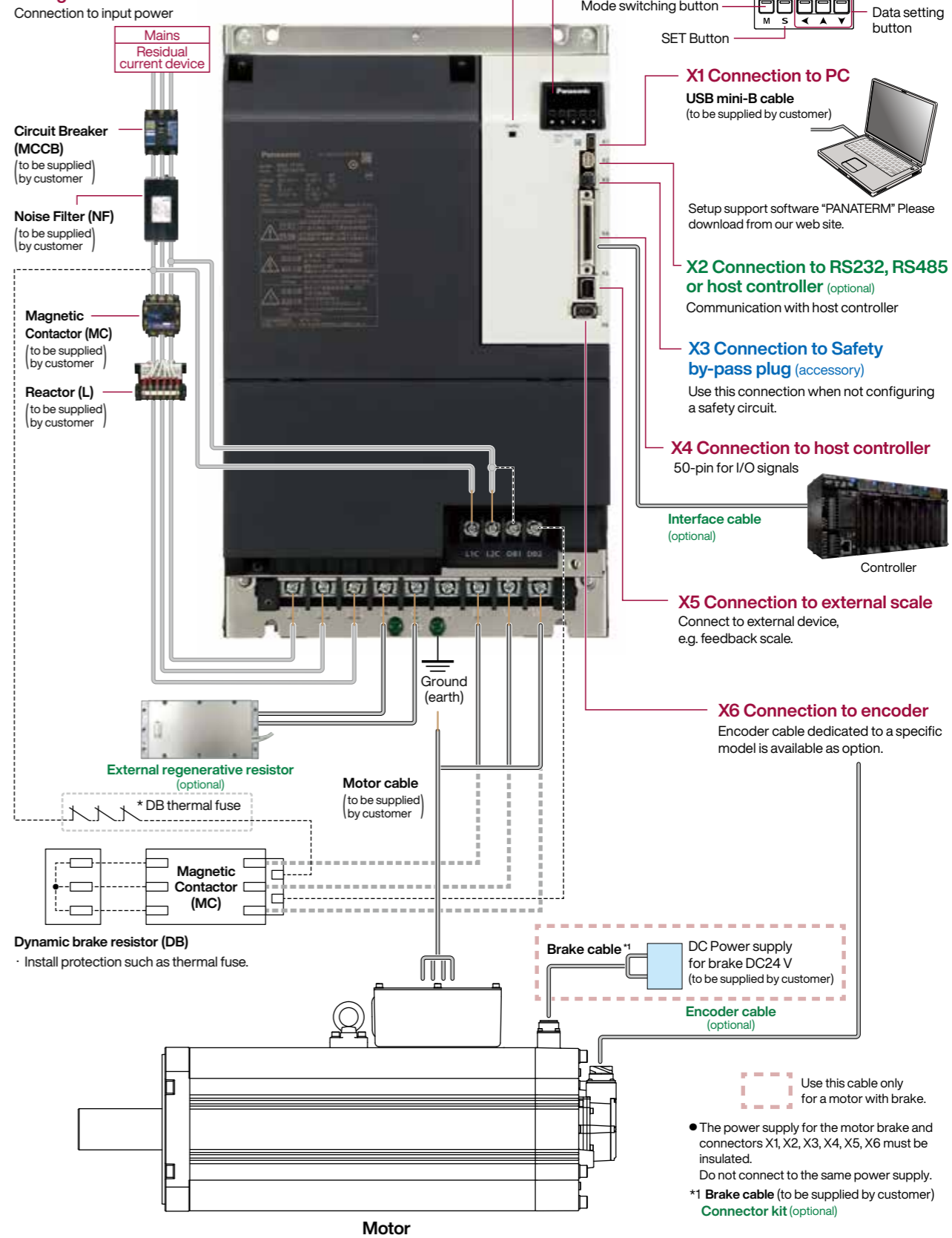
Wiring of Main Connector



<Caution> Apply adequate tightening torque to the product mounting screw by taking into consideration strength of the screw and the characteristics of material to which the product is installed. Overtightening can damage the screw and/or material; undertightening can result in loosening.

<A6SF Series (Driver: H-frame Motor: 22.0 kW)>

Wiring of Main Connector



<Note> Initial setup of rotational direction: positive = CCW and negative = CW. Pay an extra attention.


Driver	Applicable motor	Voltage (V) *1	Rated output (kW)	Required Power at the rated load (kVA)	Circuit breaker (rated current) (A)	Noise filter (Single phase/3-phase)	Surge absorber (Single phase/3-phase)	Ferrite core	Rated operating current of magnetic contactor configuration *2	Diameter and withstand voltage of main circuit cable	Crimp terminal for main circuit terminal block *3	Diameter and withstand voltage of control power supply cable	Crimp terminal for control power supply terminal block	Diameter and withstand voltage of motor cable *4	Diameter and withstand voltage of brake cable
MADL	MSMF MHMF	Single phase, 100	0.05	approx. 0.4	10	DV0P4170	DV0P4190		20 A (3P+1a)	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	2.0 mm <sup>2</sup> / AWG14 600 VAC or more	0.28 mm <sup>2</sup> to 0.75 mm <sup>2</sup> / AWG22 to AWG18 100 VAC or more
	MSMF MQMF MHMF		0.1												
MBDL	MSMF MQMF MHMF	Single/3-phase 200	0.05	approx. 0.5	10	DV0P4170 DV0PM20042	DV0P4190 DV0P1450		20 A (3P+1a)	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	2.0 mm <sup>2</sup> / AWG14 600 VAC or more	0.28 mm <sup>2</sup> to 0.75 mm <sup>2</sup> / AWG22 to AWG18 100 VAC or more
	MSMF MQMF MHMF		0.1, 0.2												
MCDL	MSMF MQMF MHMF	Single phase, 100	0.2	approx. 0.9	15	DV0P4170 DV0PM20042	DV0P4190 DV0P1450		20 A (3P+1a)	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	2.0 mm <sup>2</sup> / AWG14 600 VAC or more	0.28 mm <sup>2</sup> to 0.75 mm <sup>2</sup> / AWG22 to AWG18 100 VAC or more
	MSMF MQMF MHMF		0.4												
MDDL	MSMF MQMF MHMF	Single/3-phase 200	0.4	approx. 0.9	15	DV0P4170 DV0PM20042	DV0P4190 DV0P1450		20 A (3P+1a)	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	2.0 mm <sup>2</sup> / AWG14 600 VAC or more	0.28 mm <sup>2</sup> to 0.75 mm <sup>2</sup> / AWG22 to AWG18 100 VAC or more
	MSMF MQMF MHMF		0.75												
MEDL	MGMF	Single/3-phase 200	0.85	approx. 2.0	20	DV0P4220	DV0P4190 DV0P1450	DV0P1460	30 A (3P+1a)	2.0 mm <sup>2</sup> / AWG14 600 VAC or more	Connection to exclusive connector	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	2.0 mm <sup>2</sup> / AWG14 600 VAC or more	0.75 mm <sup>2</sup> / AWG18 100 VAC or more
	MSMF		1.0 (80 mm sq.)												
	MDMF MHMF		1.0												
	MHMF		1.0 (80 mm sq.)												
	MSMF		1.0												
	MGMF		1.3												
MFDL	MGMF	3-phase 200	1.8	approx. 3.4	30	DV0P20043	DV0P1450		60 A (3P+1a)	2.0 mm <sup>2</sup> / AWG14 600 VAC or more	Connection to exclusive connector	0.75 mm <sup>2</sup> / AWG18 600 VAC or more	Connection to exclusive connector	2.0 mm <sup>2</sup> / AWG14 600 VAC or more	0.75 mm <sup>2</sup> / AWG18 100 VAC or more
	MSMF MDMF MHMF		2.0												
	MGMF		2.4												
MGDL	MGMF	3-phase 200	2.9	approx. 5.0	50	DV0P3410	DV0P1450		100 A (3P+1a)	3.5 mm <sup>2</sup> / AWG12 600 VAC or more	11 mm or smaller φ5.3 Terminal block M5	11 mm or smaller φ5.3 Terminal block M5	Connection to exclusive connector	3.5 mm <sup>2</sup> / AWG12 600 VAC or more	0.75 mm <sup>2</sup> / AWG18 100 VAC or more
	MSMF MDMF MHMF		3.0												
	MSMF MDMF MHMF		4.0												
	MGMF		4.4												
	MSMF MDMF MHMF		5.0												
MDDL	MGMF	3-phase 200	5.5	approx. 8.5	60	HF3080C-SZA (Recommended components)	DV0P1450	DV0P1460 (Recommended components) T400-61D	100 A (3P+1a)	8.0 mm <sup>2</sup> / AWG8 600 VAC or more	7 mm or smaller φ3.2 Terminal block M3	7 mm or smaller φ3.2 Terminal block M3	Connection to exclusive connector	14 mm <sup>2</sup> / AWG6 600 VAC or more	0.75 mm <sup>2</sup> / AWG18 100 VAC or more
	MDMF		7.5												
	MHMF														
MHDL	MDMF	3-phase 200	11.0	approx. 15	125	HF3100C-SZA (Recommended components)	DV0P1450	*5	150 A (3P+1a)	22 mm <sup>2</sup> / AWG4 600 VAC or more	16 mm or smaller φ6.4 Terminal block M6	10 mm or smaller φ4.3 Terminal block M4	Connection to exclusive connector	22 mm <sup>2</sup> / AWG4 600 VAC or more *6 22.8 mm or smaller φ8.5 Terminal block M8	0.75 mm <sup>2</sup> / AWG18 100 VAC or more
			15.0												
			22.0												

\*1 Select peripheral devices for single/3phase common specification according to the power source.  
 \*2 The magnetic contactor used for the external dynamic brake resistor should have the same rating as the magnetic contactor used for the main circuit.  
 \*3 For the ground screw, use the same crimp terminal as that for the main circuit terminal block.  
 \*4 The thickness of the grounding wire and the thickness of the external dynamic brake resistor should be the same as or larger than the thickness of the motor wire.  
 \*5 Please use all to comply with international standards.  
 \*6 22.0 kW The connection of the motor power line is a terminal block. In order to comply with the CSA standard, it is necessary to use a CSA standard-certified power wire round terminal.

● Related page

Noise filter .....P.412 “Composition of Peripheral Devices”  
 Surge absorber .....P.413 “Composition of Peripheral Devices”  
 Ferrite core .....P.414 “Composition of Peripheral Devices”  
 Motor/brake connector .....P.307 “Specifications of Motor connector”

● About circuit breaker and magnetic contactor

To comply to EU Directives/UK Regulation, install a circuit breaker between the power and the noise filter without fail, and the circuit breaker should conform to IEC Standards and UL recognized (Listed and  marked).

Suitable for use on a circuit capable of delivering not more than 5000 Arms symmetrical amperes, below the maximum input voltage of the product.

If the short-circuit current of the power supply exceeds this value, install a current limit device (current limiting fuse, current limiting circuit breaker, transformer, etc.) to limit the short-circuit current.

<Caution>

- Select a circuit breaker and noise filter which match to the capacity of power supply (including a load condition).

● Terminal block and protective earth terminals

- Use a copper conductor cables with temperature rating of 75 or higher.
- Use the attached exclusive connector for A-frame to E-frame, and maintain the peeled off length of 8 mm to 9 mm.

■ Fastening torque list (Terminal block screw/Terminal cover fastening screw)

Frame	Terminal name	Terminal block screw		Terminal cover fastening screw	
		Nominal size	Fastening torque (N·m) <sup>Note)1</sup>	Nominal size	Fastening torque (N·m) <sup>Note)1</sup>
MFDL	L1, L2, L3, L1C, L2C, P, RB, B, N, U, V, W	M5	1.8 to 2.0	M3	0.19 to 0.21
MGDL	L1C, L2C	M3	0.4 to 0.6	M3	0.19 to 0.21
	L1, L2, L3, P, B, N, U, V, W	M5	2.0 to 2.4		
MHDL	L1C, L2C, DB1, DB2	M4	0.7 to 1.0	M5	2.0 to 2.5
	L1, L2, L3, P, B, N, U, V, W	M6	2.2 to 2.5	M3	0.19 to 0.21

■ Fastening torque list (Ground terminal screw/Connector to host controller [X4])

Driver frame	Ground screw		Connector to host controller (X4)	
	Nominal size	Fastening torque (N·m) <sup>Note)1</sup>	Nominal size	Fastening torque (N·m) <sup>Note)1</sup>
MADL, MBDL, MCDL, MDDL, MEDL	M4	1.0 to 1.2	M2.6	0.2±0.05
MFDL, MGDL	M5	1.8 to 2.0		
MHDL	M6	2.4 to 2.6		

■ Motor: Fastening torque

Motor	U, V, W terminal Ground terminal screw		Terminal box cover fastening screw	
	Nominal size	Fastening torque (N·m) <sup>Note)1</sup>	Nominal size	Fastening torque (N·m) <sup>Note)1</sup>
MDMF 22.0 kW	M8	12.0	M5	4.4

Note)1 <Caution>

- Applying fastening torque larger than the maximum value may result in damage to the product.
- Do not turn on power without tightening all terminal block screws properly, otherwise, loose contacts may generate heat (smoking, firing).

<Remarks>

- To check for looseness, conduct periodic inspection of fastening torque once a year.

Motor					Driver				Optional parts ▶ refer to P.306												
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	Power capacity (at rated load) (kVA)	Encoder Cable Note)3		Motor Cable Note)3		Brake Cable Note)3	External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter (Single phase / 3-phase)					
									23-bit Absolute		without Brake	with Brake									
									Use in the absolute system (with battery box) Note)5	Use in the Incremental system (without battery box)											
Fixed cable		Movable cable		Movable cable																	
Low inertia	MSMF (Leadwire type) 3000 r/min IP65	Single phase 100 V	50	MSMF5AZL1 □ 2	63, 119	MADLT01SF	MADLN01S◇	A-frame ★	Approx. 0.4	MFECA 0* *0EAE (For fixed)	MFECA 0* *0EAD (For fixed)	MFMCA 0* *0EED	MFMCB 0* *0GET Note)6	DV0P4280	DV0P227	DV0P4170					
			100	MSMF011L1 □ 2	65, 120	MADLT11SF	MADLN11S◇							DV0P4283	DV0P228						
			200	MSMF021L1 □ 2	67, 121	MBDLT21SF	MBDLN21S◇							DV0P4282	DV0P228		DV0PM20042				
			400	MSMF041L1 □ 2	69, 123	MCDLT31SF	MCDLN31S◇							DV0P4281	DV0P227 / DV0P220	DV0P4170 / DV0PM20042					
	Single phase/ 3-phase 200 V	50	MSMF5AZL1 □ 2	64, 119	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5	DV0P4283					DV0P228 / DV0P220	DV0PM20042						
		100	MSMF012L1 □ 2	66, 120	MADLT05SF	MADLN05S◇			DV0P4284					DV0P228 / DV0P222	DV0P4220						
		200	MSMF022L1 □ 2	68, 121	MADLT15SF	MADLN15S◇															
		400	MSMF042L1 □ 2	70, 123	MBDLT25SF	MBDLN25S◇															
Middle inertia Flat type	MQMF (Leadwire type) 3000 r/min IP65	Single phase 100 V	100	MQMF011L1 □ 2 / MQMF011L1 □ 4	79, 135	MADLT11SF	MADLN11S◇	A-frame ★	Approx. 0.4	MFECA 0* *0EAE (For fixed)	MFECA 0* *0EAD (For fixed)	MFMCA 0* *0EED	MFMCB 0* *0GET Note)6	DV0P4280	DV0P227	DV0P4170					
			200	MQMF021L1 □ 2 / MQMF021L1 □ 4	81, 139	MBDLT21SF	MBDLN21S◇							DV0P4283	DV0P228						
			400	MQMF041L1 □ 2 / MQMF041L1 □ 4	83, 143	MCDLT31SF	MCDLN31S◇							DV0P4282	DV0P228		DV0PM20042				
			100	MQMF012L1 □ 2 / MQMF012L1 □ 4	80, 135	MADLT05SF	MADLN05S◇							A-frame ★	Approx. 0.5	DV0P4281	DV0P227 / DV0P220	DV0P4170 / DV0PM20042			
	200	MQMF022L1 □ 2 / MQMF022L1 □ 4	82, 139	MADLT15SF	MADLN15S◇	DV0P4283	DV0P228 / DV0P220														
	400	MQMF042L1 □ 2 / MQMF042L1 □ 4	84, 143	MBDLT25SF	MBDLN25S◇																
	High inertia	MHMF (Leadwire type) 3000 r/min IP65	Single phase 100 V	50	MHMF5AZL1 □ 2 / MHMF5AZL1 □ 4	85, 147	MADLT01SF	MADLN01S◇	A-frame ★							Approx. 0.4	MFECA 0* *0EAE (For fixed)	MFECA 0* *0EAD (For fixed)	MFMCA 0* *0EED	MFMCB 0* *0GET Note)6	DV0P4280
				100	MHMF011L1 □ 2 / MHMF011L1 □ 4	87, 151	MADLT11SF	MADLN11S◇						DV0P4283	DV0P228						
200				MHMF021L1 □ 2 / MHMF021L1 □ 4	89, 155	MBDLT21SF	MBDLN21S◇	DV0P4282		DV0P228	DV0PM20042										
400				MHMF041L1 □ 2 / MHMF041L1 □ 4	91, 159	MCDLT31SF	MCDLN31S◇	A-frame ★		Approx. 0.5	DV0P4281	DV0P227 / DV0P220	DV0P4170 / DV0PM20042								
50		MHMF5AZL1 □ 2 / MHMF5AZL1 □ 4	86, 147	MADLT05SF	MADLN05S◇	B-frame ★	Approx. 0.9		DV0P4283		DV0P228 / DV0P220	DV0PM20042									
100		MHMF012L1 □ 2 / MHMF012L1 □ 4	88, 151	MADLT05SF	MADLN05S◇																
200		MHMF022L1 □ 2 / MHMF022L1 □ 4	90, 155	MADLT15SF	MADLN15S◇																
400		MHMF042L1 □ 2 / MHMF042L1 □ 4	92, 159	MBDLT25SF	MBDLN25S◇			C-frame	Approx. 1.8												
750	MHMF082L1 □ 2 / MHMF082L1 □ 4	93, 163	MCDLT35SF	MCDLN35S◇																	
1000	MHMF092L1 □ 2 / MHMF092L1 □ 4	94, 167	MDDLTL55SF	MDDLNL55S◇	D-frame	Approx. 2.4															

★ : Frame-A and B drivers are not equipped with regenerative resistors. When regeneration occurs, please prepare an optional external regenerative resistor.

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P.22.)

Note)3 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030EAE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box).

Please buy the battery part number "DV0P2990" separately.

Note)6 Brake cable and motor cables are required for the motors with brake.



Motor					Driver				Optional parts ▶ refer to P.306								
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)5	Frame	Power capacity (at rated load) (kVA)	Encoder Cable Note)3		Motor Cable Note)3		Brake Cable Note)3	External Regenerative Resistor	Reactor (Single phase 3-phase)	Noise Filter (Single phase 3-phase)	
									23-bit Absolute		without Brake	with Brake					
									Use in the absolute system (with battery box) Note)6	Use in the incremental system (without battery box)							
Low Inertia MSMF (Connector type) 3000 r/min IP67	Single phase 100 V	50	MSMF5AZL1 □ 1	63, 119	MADLT01SF	MADLN01S◇	A-frame ★	Approx. 0.4									
		100	MSMF011L1 □ 1	65, 121	MADLT11SF	MADLN11S◇											
		200	MSMF021L1 □ 1	67, 122	MBDLT21SF	MBDLN21S◇	B-frame ★	Approx. 0.5									
		400	MSMF041L1 □ 1	69, 123	MCDLT31SF	MCDLN31S◇	C-frame	Approx. 0.9									
	Single phase/ 3-phase 200 V	50	MSMF5AZL1 □ 1	64, 119	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5									
		100	MSMF012L1 □ 1	66, 121	MADLT05SF	MADLN05S◇											
		200	MSMF022L1 □ 1	68, 122	MADLT15SF	MADLN15S◇											
		400	MSMF042L1 □ 1	70, 123	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9									
		750	MSMF082L1 □ 1	71, 125	MCDLT35SF	MCDLN35S◇	C-frame	Approx. 1.8									
		1000	MSMF092L1 □ 1	72, 126	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 2.4									
Middle Inertia Flat type MQMF (Connector type) 3000 r/min IP67	Single phase 100 V	100	MQMF011L1 □ 1 MQMF011L1 □ 3	79, 137	MADLT11SF	MADLN11S◇	A-frame ★	Approx. 0.4									
		200	MQMF021L1 □ 1 MQMF021L1 □ 3	81, 141	MBDLT21SF	MBDLN21S◇	B-frame ★	Approx. 0.5									
		400	MQMF041L1 □ 1 MQMF041L1 □ 3	83, 145	MCDLT31SF	MCDLN31S◇	C-frame	Approx. 0.9									
	Single phase/ 3-phase 200 V	100	MQMF012L1 □ 1 MQMF012L1 □ 3	80, 137	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5									
		200	MQMF022L1 □ 1 MQMF022L1 □ 3	82, 141	MADLT15SF	MADLN15S◇											
		400	MQMF042L1 □ 1 MQMF042L1 □ 3	84, 145	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9									

★ : Frame-A and B drivers are not equipped with regenerative resistors. When regeneration occurs, please prepare an optional external regenerative resistor.

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P.22.)

Note)3 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030MJE

Note)4 Cables for opposite to output shaft cannot be used with 50 W or 100 W motor. (MSMF connector type only.)

Note)5 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)6 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Note)7 Brake cable and motor cables are required for the motors with brake.

Movable : For application where the cable is movable.

Fixed : For application where the cable is fixed.

Direction of motor shaft/Opposite direction of motor shaft : Cable direction

Motor					Driver				Optional parts ▶ refer to P.306																																
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	Power capacity (at rated load) (kVA)	Encoder Cable Note)3		Motor Cable Note)3		Brake Cable Note)3	External Regenerative Resistor	Reactor (Single phase 3-phase)	Noise Filter (Single phase 3-phase)																									
									23-bit Absolute		without Brake	with Brake																													
									Use in the absolute system (with battery box) Note)5	Use in the Incremental system (without battery box)																															
High inertia	MHMF (Connector type) 3000 r/min IP67	Single phase 100 V	50	MHMF5AZL1 □ 1 MHMF5AZL1 □ 3	85, 149	MADLT01SF	MADLN01S◇	A-frame ★	Approx. 0.4	MFCA 0 * * 7UFD (Movable/fixed common-use, direction of motor shaft)	MFCA 0 * * 7VFD (Movable/fixed common-use, direction of motor shaft)	MFCA 0 * * 7UGD (Movable/fixed common-use, opposite direction of motor shaft)	MFCA 0 * * 7VGD (Movable/fixed common-use, opposite direction of motor shaft)	DV0P4280	DV0P227	DV0P4170																									
			100	MHMF011L1 □ 1 MHMF011L1 □ 3	87, 153	MADLT11SF	MADLN11S◇																																		
			200	MHMF021L1 □ 1 MHMF021L1 □ 3	89, 157	MBDLT21SF	MBDLN21S◇	B-frame ★	Approx. 0.5								MFCA 0 * * 0UFD (For movable, direction of motor shaft)	MFCA 0 * * 0VFD (For movable, direction of motor shaft)	MFCA 0 * * 0UGD (For movable, opposite direction of motor shaft)	MFCA 0 * * 0VGD (For movable, opposite direction of motor shaft)	DV0P4283	DV0P228	DV0P20042																		
			400	MHMF041L1 □ 1 MHMF041L1 □ 3	91, 161	MCDLT31SF	MCDLN31S◇																	C-frame	Approx. 0.9	MFCA 0 * * 0WFD (For fixed, direction of motor shaft)	MFCA 0 * * 0XFD (For fixed, direction of motor shaft)	MFCA 0 * * 0WGD (For fixed, opposite direction of motor shaft)	MFCA 0 * * 0XGD (For fixed, opposite direction of motor shaft)												
			50	MHMF5AZL1 □ 1 MHMF5AZL1 □ 3	86, 149	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5																					MFCA 0 * * 0TJE (For fixed, direction of motor shaft)	MFCA 0 * * 0TJD (For fixed, direction of motor shaft)	MFCA 0 * * 7UFD (Movable/fixed common-use, direction of motor shaft)	MFCA 0 * * 7VFD (Movable/fixed common-use, direction of motor shaft)	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0P20042					
			100	MHMF012L1 □ 1 MHMF012L1 □ 3	88, 153	MADLT05SF	MADLN05S◇																																		
		200	MHMF022L1 □ 1 MHMF022L1 □ 3	90, 157	MADLT15SF	MADLN15S◇	B-frame ★	Approx. 0.9	MFCA 0 * * 0TKE (For fixed, opposite direction of motor shaft)					MFCA 0 * * 0TKD (For fixed, opposite direction of motor shaft)	MFCA 0 * * 7UGD (Movable/fixed common-use, opposite direction of motor shaft)	MFCA 0 * * 7VGD (Movable/fixed common-use, opposite direction of motor shaft)								DV0P4283	DV0P228 DV0P220												DV0P20042				
		400	MHMF042L1 □ 1 MHMF042L1 □ 3	92, 161	MBDLT25SF	MBDLN25S◇																																			
		750	MHMF082L1 □ 1 MHMF082L1 □ 3	93, 165	MCDLT35SF	MCDLN35S◇	C-frame	Approx. 1.8													MFCA 0 * * 0WFD (For fixed, direction of motor shaft)	MFCA 0 * * 0XFD (For fixed, direction of motor shaft)	MFCA 0 * * 0WGD (For fixed, opposite direction of motor shaft)															MFCA 0 * * 0XGD (For fixed, opposite direction of motor shaft)	DV0P4284	DV0P228 DV0P222	DV0P4220
		1000	MHMF092L1 □ 1 MHMF092L1 □ 3	94, 169	MDDLT55SF	MDDL55S◇																																			

★ : Frame-A and B drivers are not equipped with regenerative resistors. When regeneration occurs, please prepare an optional external regenerative resistor.

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P.22.)

Note)3 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030MJE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Movable : For application where the cable is movable.

Fixed : For application where the cable is fixed.

Direction of motor shaft/Opposite direction of motor shaft : Cable direction

**A6 Series** **Table of Part Numbers and Options** **100 mm sq. or more** **0.85 kW to 5.0 kW**  
 IP67 motor Encoder connector (Large size JL10) type

Motor				Driver				Optional parts ▶ refer to P.306													
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	Power capacity (at rated load) (kVA)	Encoder Cable Note)3,5		Motor Cable Note)3,5		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter						
									JL10 (Large size) (One-touch lock type) (N/MS screwed type)		JL10 (One-touch lock type) (JL04 screwed type)										
									23-bit Absolute		without Brake	with Brake									
									Use in the absolute system (with battery box) Note)7	Use in the incremental system (without battery box)											
									Fixed cable		Movable cable										
Low inertia	MSMF Large size JL10 type 3000 r/min IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □ 6 MSMF102L1 □ 8	73, 127	MDDL55SF	MDDL55S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE  MFECA 0 * * 0ESE	MFECA 0 * * 0EPD  MFECA 0 * * 0ESD	MFMC 0 * * 2EUD	MFMC 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220					
			1500	MSMF152L1 □ 6 MSMF152L1 □ 8	74, 128	MDDL55SF	MDDL55S◇		DV0P228 / DV0P222												
		3-phase 200 V	2000	MSMF202L1 □ 6 MSMF202L1 □ 8	75, 129	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8			MFMC 0 * * 2ECD	MFMC 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043					
			3000	MSMF302L1 □ 6 MSMF302L1 □ 8	76, 131	MFDLTA3SF	MFDLNA3S◇		F-frame			Approx. 5.2	MFMC 0 * * 3EUT	MFMC 0 * * 3FUT	DV0P4285 x2 in parallel	DV0P224	DV0P3410				
			4000	MSMF402L1 □ 6 MSMF402L1 □ 8	77, 132	MFDLTB3SF	MFDLNB3S◇					Approx. 6.5	MFMC 0 * * 3ECT	MFMC 0 * * 3FCT		DV0P225					
			5000	MSMF502L1 □ 6 MSMF502L1 □ 8	78, 133	MFDLTB3SF	MFDLNB3S◇		Approx. 7.8												
Middle inertia	MDMF Large size JL10 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □ 6 MDMF102L1 □ 8	102, 180	MDDL45SF	MDDL45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE  MFECA 0 * * 0ESE	MFECA 0 * * 0EPD  MFECA 0 * * 0ESD	MFMC 0 * * 2EUD	MFMC 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220					
			1500	MDMF152L1 □ 6 MDMF152L1 □ 8	103, 181	MDDL55SF	MDDL55S◇		DV0P228 / DV0P222												
		3-phase 200 V	2000	MDMF202L1 □ 6 MDMF202L1 □ 8	104, 183	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8			MFMC 0 * * 2ECD	MFMC 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043					
			3000	MDMF302L1 □ 6 MDMF302L1 □ 8	105, 184	MFDLTA3SF	MFDLNA3S◇		F-frame			Approx. 5.2	MFMC 0 * * 3EUT	MFMC 0 * * 3FUT	DV0P4285 x2 in parallel	DV0P224	DV0P3410				
			4000	MDMF402L1 □ 6 MDMF402L1 □ 8	106, 185	MFDLTB3SF	MFDLNB3S◇					Approx. 6.5	MFMC 0 * * 3ECT	MFMC 0 * * 3FCT		DV0P225					
			5000	MDMF502L1 □ 6 MDMF502L1 □ 8	107, 187	MFDLTB3SF	MFDLNB3S◇		Approx. 7.8												
		MGMF Large size JL10 type (Low speed/High torque type) 1500 r/min IP67	Single phase/ 3-phase 200 V	850	MGMF092L1 □ 6 MGMF092L1 □ 8	112, 193	MDDL45SF	MDDL45S◇	D-frame			Approx. 2.0	MFECA 0 * * 0EPE  MFECA 0 * * 0ESE	MFECA 0 * * 0EPD  MFECA 0 * * 0ESD	MFMC 0 * * 2EUD	MFMC 0 * * 2FUD	DV0P4284	DV0P228 / DV0P221	DV0P4220		
				1300	MGMF132L1 □ 6 MGMF132L1 □ 8	113, 195	MDDL55SF	MDDL55S◇				DV0P228 / DV0P222									
			3-phase 200 V	1800	MGMF182L1 □ 6 MGMF182L1 □ 8	114, 196	MEDLT83SF	MEDLN83S◇	E-frame			Approx. 3.4			MFMC 0 * * 2ECD	MFMC 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043		
				2400	MGMF242L1 □ 6 MGMF242L1 □ 8	115, 197	MEDLT93SF	MEDLN93S◇				F-frame			Approx. 4.5	MFMC 0 * * 3EUT		MFMC 0 * * 3FUT		DV0P4285 x2 in parallel	DV0P224
				2900	MGMF292L1 □ 6 MGMF292L1 □ 8	116, 199	MFDLTA3SF	MFDLNA3S◇							Approx. 5.0	MFMC 0 * * 3ECT		MFMC 0 * * 3FCT			DV0P225
				4400	MGMF442L1 □ 6 MGMF442L1 □ 8	117, 200	MFDLTB3SF	MFDLNB3S◇				Approx. 7.0									
High inertia	MHMF Large size JL10 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □ 6 MHMF102L1 □ 8	95, 171	MDDL45SF	MDDL45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE  MFECA 0 * * 0ESE	MFECA 0 * * 0EPD  MFECA 0 * * 0ESD	MFMC 0 * * 2EUD			MFMC 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220			
			1500	MHMF152L1 □ 6 MHMF152L1 □ 8	96, 172	MDDL55SF	MDDL55S◇		DV0P228 / DV0P222												
		3-phase 200 V	2000	MHMF202L1 □ 6 MHMF202L1 □ 8	97, 173	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8			MFMC 0 * * 2ECD			MFMC 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043			
			3000	MHMF302L1 □ 6 MHMF302L1 □ 8	98, 175	MFDLTA3SF	MFDLNA3S◇		F-frame			Approx. 5.2			MFMC 0 * * 3EUT		MFMC 0 * * 3FUT		DV0P4285 x2 in parallel	DV0P224	
			4000	MHMF402L1 □ 6 MHMF402L1 □ 8	99, 176	MFDLTB3SF	MFDLNB3S◇					Approx. 6.5			MFMC 0 * * 3ECT		MFMC 0 * * 3FCT			DV0P225	
			5000	MHMF502L1 □ 6 MHMF502L1 □ 8	100, 177	MFDLTB3SF	MFDLNB3S◇		Approx. 7.8												

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P.22.)

Note)3 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFCEA0030EPE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.

Note)6 For other possible combinations, refer to P.343.

Note)7 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Motor					Driver				Optional parts ▶ refer to P.306																				
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	Power capacity (at rated load) (kVA)	Encoder Cable Note)3		Motor Cable Note)3,5		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter														
									JN2 (Small size) (One-touch lock type)		JL10 (One-touch lock type) (JL04 screwed type)					without Brake	with Brake												
									23-bit Absolute		Use in the absolute system (with battery box) Note)7	Use in the Incremental system (without battery box)																	
									Use in the absolute system (with battery box) Note)7	Use in the Incremental system (without battery box)																			
Fixed cable		Movable cable																											
Low inertia	MSMF Small size JN2 type 3000 r/min IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □ 5 MSMF102L1 □ 7	73, 127	MDDL55SF	MDDL55S◇	D-frame	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P222	DV0P4220														
			1500	MSMF152L1 □ 5 MSMF152L1 □ 7	74, 129	MDDL55SF	MDDL55S◇							DV0PM20047 / DV0P222															
		3-phase 200 V	2000	MSMF202L1 □ 5 MSMF202L1 □ 7	75, 130	MEDLT83SF	MEDLN83S◇	E-frame						MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043									
			3000	MSMF302L1 □ 5 MSMF302L1 □ 7	76, 131	MFDLTA3SF	MFDLNA3S◇												F-frame		MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6	DV0P224					
			4000	MSMF402L1 □ 5 MSMF402L1 □ 7	77, 133	MFDLTB3SF	MFDLNB3S◇	F-frame																MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6	DV0P225		
			5000	MSMF502L1 □ 5 MSMF502L1 □ 7	78, 134	MFDLTB3SF	MFDLNB3S◇												F-frame								MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6
Middle inertia	MDMF Small size JN2 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □ 5 MDMF102L1 □ 7	102, 181	MDDL45SF	MDDL45S◇	D-frame	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4284						DV0P228 / DV0P222	DV0P4220									
			1500	MDMF152L1 □ 5 MDMF152L1 □ 7	103, 182	MDDL45SF	MDDL45S◇												DV0PM20047 / DV0P222										
		3-phase 200 V	2000	MDMF202L1 □ 5 MDMF202L1 □ 7	104, 183	MEDLT83SF	MEDLN83S◇	E-frame						MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043									
			3000	MDMF302L1 □ 5 MDMF302L1 □ 7	105, 185	MFDLTA3SF	MFDLNA3S◇												F-frame		MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6						
			4000	MDMF402L1 □ 5 MDMF402L1 □ 7	106, 186	MFDLTB3SF	MFDLNB3S◇	F-frame																MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6			
			5000	MDMF502L1 □ 5 MDMF502L1 □ 7	107, 187	MFDLTB3SF	MFDLNB3S◇												F-frame								MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6
High inertia	MHMF Small size JN2 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □ 5 MHMF102L1 □ 7	95, 171	MDDL45SF	MDDL45S◇	D-frame	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4284						DV0P228 / DV0P222	DV0P4220									
			1500	MHMF152L1 □ 5 MHMF152L1 □ 7	96, 173	MDDL45SF	MDDL45S◇												DV0PM20047 / DV0P222										
		3-phase 200 V	2000	MHMF202L1 □ 5 MHMF202L1 □ 7	97, 174	MEDLT83SF	MEDLN83S◇	E-frame						MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043									
			3000	MHMF302L1 □ 5 MHMF302L1 □ 7	98, 175	MFDLTA3SF	MFDLNA3S◇												F-frame		MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6						
			4000	MHMF402L1 □ 5 MHMF402L1 □ 7	99, 177	MFDLTB3SF	MFDLNB3S◇	F-frame																MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6			
			5000	MHMF502L1 □ 5 MHMF502L1 □ 7	100, 178	MFDLTB3SF	MFDLNB3S◇												F-frame								MFECA 0 * * 2EUD MFECA 0 * * 2EUD MFECA 0 * * 2ECD	MFECA 0 * * 2FUD MFECA 0 * * 2FUD MFECA 0 * * 2FCD	DV0P4285 Note)6

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P.22.)

Note)3 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Use of JL10 type motor cables enable one-touch lock connections. Conventional screwed type JL04V type cables can also be used.

Note)6 For other possible combinations, refer to P.343.

Note)7 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Motor				Driver				Optional parts ▶ refer to P.306									
Motor series	Power supply	Output (W)	Part No. (Note)1	Rating/Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input)	Frame	Power capacity (at rated load) (kVA)	Encoder Cable Note)2,3		Motor Cable		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter		
									JL10 (Large size) (One-touch lock type) (N/MS screwed type)		Note)6					without Brake	with Brake
									23-bit Absolute		Use in the absolute system (with battery box) (Note)4	Use in the Incremental system (without battery box)					
									Fixed cable								
Middle inertia	3-phase 200 V	7500	MDMF752L1 □ 6	108 188	MGDLTC3SF	—	G-frame	Approx. 11	MFECA 0* *0EPE MFECA 0* *0ESE	MFECA 0* *0EPD MFECA 0* *0ESD	Note)6	Note)6	DV0P4285 x3 in parallel	HF3080C-SZA (Recommended components) P.413			
		11000	MDMFC12L1 □ 6	109 189	MHDLTE3SF	—	H-frame	Approx. 15					Note)6	Note)6	DV0P4285 x6 in parallel	Note)5	HF3100C-SZA (Recommended components) P.413
		15000	MDMFC52L1 □ 6	110 191	MHDLTE3SF	—		Approx. 20									
		22000	MDMFD22L1 □ 6	111 192	MHDLTF3SF	—	Approx. 28										
	3-phase 200 V	5500	MGMF552L1 □ 6	118 201	MGDLTC3SF	—	G-frame	Approx. 8.5	MFECA 0* *0EPE MFECA 0* *0ESE	MFECA 0* *0EPD MFECA 0* *0ESD	Note)6	Note)6	DV0P4285 x3 in parallel	Note)5	HF3080C-SZA (Recommended components) P.413		
	3-phase 200 V	7500	MHMF752L1 □ 6	101 179	MGDLTC3SF	—	G-frame	Approx. 11								MFECA 0* *0EPE MFECA 0* *0ESE	MFECA 0* *0EPD MFECA 0* *0ESD

■ About dynamic brake

G frame is built-in / external, H frame is external  
 The indication of the internal / {external} dynamic brake resistance capacity is the maximum allowable inertia (load inertia moment ratio to rotor inertia moment is 10 times) up to three consecutive emergency stops at the rated speed. If used under conditions higher than that, the resistance may break and the dynamic brake may not operate.  
 Recommended resistance: 1.2 Ω 400 W or more × 3 pieces  
 For inquiries: Iwaki Musen Kenkyusho Co.,Ltd. Tel: +81-44-833-4311

- Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)
- Note)2 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE
- Note)3 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.
- Note)4 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.
- Note)5 The reactor has to be prepared by the customer.
- Note)6 We recommend purchasing an optional connector kit.

■ Connector kit (option) components Note)6

Motor	Driver		Option No. Connector Kit for motor, encoder connection	Encoder Cable		Motor Cable		Brake Cable	
	Frame	Connection terminal		Motor side	Driver side	Motor side	Driver side	Motor side	Power supply for brake
MDMF 7.5 kW MGMF 5.5 kW MHMF 7.5 kW	G	M5	DV0PM20107	Large size connector One-touch lock type	For Connector X6	Connector Screwed type	(to be supplied by customer) M5 Round terminal	not included	Connector Screwed type (to be supplied by customer)
			DV0PM20108						
			DV0PM20111	Large size connector Screwed type					
			DV0PM20112						
MDMF 11.0 kW MDMF 15.0 kW	H	M6	DV0PM20107	Large size connector One-touch lock type	For Connector X6	Connector Screwed type	(to be supplied by customer) M6 Round terminal	not included	Connector Screwed type (to be supplied by customer)
			DV0PM20108						
			DV0PM20111	Large size connector Screwed type					
			DV0PM20112						
MDMF 22.0 kW	H	M6	DV0PM20109	Large size connector One-touch lock type	For Connector X6	Terminal block (to be supplied by customer) M8 Round terminal	(to be supplied by customer) M6 Round terminal	not included	Connector Screwed type (to be supplied by customer)
			DV0PM20110						
			DV0PM20113	Large size connector Screwed type					
			DV0PM20114						

Motor					Driver				Optional parts ▶ refer to P.306									
Motor series	Power supply	Output (W)	Part No. (Note)1	Rating/Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input)	Frame	Power capacity (at rated load) (kVA)	Encoder Cable (Note)2		Motor Cable (Note)5		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter			
									JN2 (Small size) (One-touch lock type)							without Brake	with Brake	
									23-bit Absolute		Use in the absolute system (with battery box) (Note)3	Use in the Incremental system (without battery box)						
									Fixed cable									
Middle inertia	MDMF Small size JN2 type 1500 r/min IP67 IP44 (22000 W)	3-phase 200 V	7500	MDMF752L1 □ 5	108 189	MGDLTC3SF	—	G-frame	Approx. 11	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	Note)5	Note)5	DV0P4285 x3 in parallel	— Note)4	HF3080C-SZA (Recommended components) P.413		
			11000	MDMFC12L1 □ 5	109 190	MHDLTE3SF	—	H-frame	Approx. 15					DV0P4285 x6 in parallel		HF3100C-SZA (Recommended components) P.413		
			15000	MDMFC52L1 □ 5	110 191	MHDLTE3SF	—	H-frame	Approx. 20					Note)5 (U, V, W, Ground) (: M8 terminal block)		Note)5 (U, V, W, Ground) (: M8 terminal block)	DV0P4285 x3 in parallel	HF3080C-SZA (Recommended components) P.413
			22000	MDMFD22L1 □ 5	111 193	MHDLTF3SF	—	H-frame	Approx. 28									
Middle inertia	MGMF Small size JN2 type (Low speed/High torque type) 1500 r/min IP67	3-phase 200 V	5500	MGMF552L1 □ 5	118 202	MGDLTC3SF	—	G-frame	Approx. 8.5	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	Note)5	Note)5	DV0P4285 x3 in parallel	— Note)4	HF3080C-SZA (Recommended components) P.413		
			7500	MHMF752L1 □ 5	101 179	MGDLTC3SF	—	G-frame	Approx. 11	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	Note)5	Note)5	— Note)4	HF3080C-SZA (Recommended components) P.413			
High inertia	MHMF Small size JN2 type 1500 r/min IP67	3-phase 200 V	7500	MHMF752L1 □ 5	101 179	MGDLTC3SF	—	G-frame	Approx. 11	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	Note)5	Note)5	— Note)4	HF3080C-SZA (Recommended components) P.413			

■ About dynamic brake

G frame is built-in / external, H frame is external

The indication of the internal / {external} dynamic brake resistance capacity is the maximum allowable inertia (load inertia moment ratio to rotor inertia moment is 10 times) up to three consecutive emergency stops at the rated speed. If used under conditions higher than that, the resistance may break and the dynamic brake may not operate.

Recommended resistance: 1.2 Ω 400 W or more × 3 pieces  
 For inquiries: Iwaki Musen Kenkyusho Co.,Ltd. Tel: +81-44-833-4311

- Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)
- Note)2 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE
- Note)3 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.
- Note)4 The reactor has to be prepared by the customer.
- Note)5 We recommend purchasing an optional connector kit.

■ Connector kit (option) components (Note)5

Motor	Driver		Option No. Connector Kit for motor, encoder connection	Encoder Cable		Motor Cable		Brake Cable	
	Frame	Connection terminal		Motor side	Driver side	Motor side	Driver side	Motor side	Power supply for brake
MDMF 7.5 kW MGMF 5.5 kW MHMF 7.5 kW	G	M5	DV0PM20056	Small size connector Screwed type	For Connector X6	Connector Screwed type	(to be supplied by customer)	not included	(to be supplied by customer)
			DV0PM20057				M5 Round terminal	Connector Screwed type	
MDMF 11.0 kW MDMF 15.0 kW	H	M6	DV0PM20056	Small size connector Screwed type	For Connector X6	Connector Screwed type	(to be supplied by customer)	not included	(to be supplied by customer)
			DV0PM20057				M6 Round terminal	Connector Screwed type	
MDMF 22.0 kW	H	M6	DV0PM20115	Small size connector Screwed type	For Connector X6	Terminal block (to be supplied by customer) M8 Round terminal	(to be supplied by customer)	not included	(to be supplied by customer)
			DV0PM20116				M6 Round terminal	Connector Screwed type	

Basic Specifications	Input power	100 V	Main circuit	Single phase	100 V <sup>+10 %</sup> / <sub>-15 %</sub>	to 120 V <sup>+10 %</sup> / <sub>-15 %</sub>	50 Hz / 60 Hz	
			Control circuit	Single phase	100 V <sup>+10 %</sup> / <sub>-15 %</sub>	to 120 V <sup>+10 %</sup> / <sub>-15 %</sub>	50 Hz / 60 Hz	
		200 V	Main circuit	A-frame to D-frame	Single/3-phase	200 V <sup>+10 %</sup> / <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> / <sub>-15 %</sub>	50 Hz / 60 Hz
				E-frame to H-frame	3-phase	200 V <sup>+10 %</sup> / <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> / <sub>-15 %</sub>	50 Hz / 60 Hz
			Control circuit	A-frame to D-frame	Single phase	200 V <sup>+10 %</sup> / <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> / <sub>-15 %</sub>	50 Hz / 60 Hz
	Environment	temperature	Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation <sup>*1</sup> )					
		humidity	Both operating and storage : 20 %RH to 85 %RH (free from condensation <sup>*1</sup> )					
		Altitude	Lower than 1000 m					
		Vibration	5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz					
	Control method	IGBT PWM Sinusoidal wave drive						
Encoder feedback	23-bit (8388608 resolution) absolute encoder, 7-wire serial * When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to "1" (factory settings).							
External scale feedback	A/B phase, homing signal differential input. Serial communication is also supported. Manufacturers that support serial communication scale: Fagor Automation S.Coop., HEIDENHAIN, Magnescale Co., Ltd., Mitutoyo Corporation Nidec Sankyo Corporation, Renishaw plc							
Interface connector	Control signal	Input	General purpose 10 inputs The function of general-purpose input is selected by parameters.					
		Output	General purpose 6 outputs The function of general-purpose output is selected by parameters.					
	Analog signal	Input	3 inputs (16-bit A/D : 1 input, 12-bit A/D : 2 inputs)					
		Output	2 outputs (Analog monitor: 2 output)					
Pulse signal	Input	2 inputs (Photo-coupler input, Line receiver input) Both open collector and line driver interface can be connected. High speed line driver interface can be connected.						
	Output	4 outputs ( Line driver: 3 output, open collector: 1 output) Line driver output for encoder pulses (A/B/Z signal) or external feedback pulses (EXA/EXB/EXZ signal) open collector output also available for Z or EXZ signal.						
Communication function	USB	USB interface to connect to computers for parameter setting or status monitoring.						
	RS232	1:1 communication						
	RS485	1: n communication (max 31) (Supports Modbus)						
Safety function	A dedicated connector is provided for Functional Safety.							
Front panel	(1) 5 keys (2) LED (6-digit)							
Regeneration	A-frame, B-frame, G-frame, H-frame: no built-in regenerative resistor (external resistor only) C-frame to F-frame: Built-in regenerative resistor (external resistor is also enabled.)							
Dynamic brake	A-frame to G-frame: Built-in H-frame: External resistor only							
Control mode	Switching among the following 7 mode is enabled, (1) Position control (2) Speed control (3) Toque control (4) Position/Speed control (5) Position/Torque control (6) Speed/Torque control (7) Full-closed control							

\*1 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

Function	Control input	(1) servo-ON input (2) Alarm clear input (3) Gain switch input (4) Positive direction drive inhibit input (5) Negative direction drive inhibit input (6) Forced alarm input (7) Inertia ratio switch input					
		Control output	(1) Servo-alarm output (2) Servo-ready output (3) External brake off output (4) At-speed output (5) Torque in-limit output (6) Zero speed detection output (7) Warning output (8) Alarm clear attribute output (9) Servo on status output				
	Position control		Control input	(1) Deviation counter clear input (2) Command pulse inhibit input (3) Command division/multiplication switch input (4) Anti-vibration switch input (5) Torque limit switch input (6) Control mode switch input			
		Control output	(1) In-position output (2) Position command ON/OFF output				
	Pulse input	Max. command pulse frequency	500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by 4)				
		Input pulse signal format	Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)				
		Electronic gear (Division/Multiplication of command pulse)	Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 <sup>30</sup> can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution per motor revolution), but the combination has to be within the range shown above.				
		Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input				
	Analog input	Torque limit command input	Individual torque limit for both positive and negative direction is enabled.				
		Torque feed forward input	Analog voltage can be used as torque feed forward input.				
Two-degree-of-freedom control	Available						
Anti-vibration control	Available						
Load variation suppression control	Available						
Block operation	Modbus (RS 232, RS 485) or interface is selectable						
Speed control	Control input	(1) Internal command velocity selection input (2) Speed zero clamp input (3) Velocity command sign input (4) Control mode switch input					
	Control output	(1) Speed coincidence output (2) Velocity command ON/OFF output					
	Analog input	Velocity command input	Velocity command input with analog voltage is possible. Scale setting and command polarity vary depending on parameters. (6 V/Rated rotational speed: Default)				
	Torque limit command input	Individual torque limit for both positive and negative direction is enabled.					
Torque feed forward input	Analog voltage can be used as torque feed forward input.						
Internal velocity command	Switching the internal 8 speed is enabled by command input.						
Soft-start/down function	Individual setup of acceleration and deceleration is enabled, with 0 s to 10 s / 1000 r/min. Sigmoid acceleration/deceleration is also enabled.						
Speed zero clamp	Internal velocity command can be clamped to 0 with speed zero clamp input.						
Two-degree-of-freedom control	Available						
Torque control	Control input	Speed zero clamp input, torque command sign input, control mode switch input.					
	Control output	(1) Speed coincidence output (2) Speed in-limit output					
	Analog input	Torque command input	Torque command input with analog voltage is possible. Scale setting and command polarity vary depending on parameters. (3 V/rated torque Default)				
Speed limit function	Speed limit value with parameter is enabled.						
Full-closed control	Control input	(1) Deviation counter clear input (2) Command pulse inhibit input (3) Command division/multiplication switch input (4) Anti-vibration switch input (5) Torque limit switch input					
		Control output	(1) In-position output (2) Position command ON/OFF output				
	Pulse input		Max. command pulse frequency	500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by 4)			
		Input pulse signal format	Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)				
		Electronic gear (Division/Multiplication of command pulse)	Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 <sup>30</sup> can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution per motor revolution), but the combination has to be within the range shown above.				
		Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input				
	Analog input	Torque limit command input	Individual torque limit for both positive and negative direction is enabled.				
		Torque feed forward input	Analog voltage can be used as torque feed forward input.				
	Setting range of external scale division/multiplication	1/40 times to 1280 times Although ratio of the encoder pulse (numerator) and external scale pulse (denominator) can be arbitrarily set in the range of 1 to 2 <sup>23</sup> for the numerator and in the range of 1 to 2 <sup>23</sup> for the denominator, this product should be used within the aforementioned range.					
	Two-degree-of-freedom control	Available					
Anti-vibration control	Available						
Load variation suppression control	Available						
Block operation	Modbus (RS 232, RS 485) or interface is selectable						
Common	Auto tuning	The load inertia is identified in real time by the driving state of the motor operating according to the command given by the controlling device and set up support software "PANATERM". The gain is set automatically in accordance with the rigidity setting.					
	Division of encoder feedback pulse	Set up of any value is enabled (encoder pulses count is the max.).					
	Protective function	Hard error	Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current and encoder error etc.				
		Soft error	Excess position deviation, command pulse division error, EEPROM error etc.				
Alarm data trace back	Tracing back of alarm data is available						

Basic Specifications	Input power	100 V	Main circuit	Single phase 100 V <sup>+10 %</sup> to 120 V <sup>+10 %</sup> <sub>-15 %</sub> 50 Hz / 60 Hz		
			Control circuit	Single phase 100 V <sup>+10 %</sup> to 120 V <sup>+10 %</sup> <sub>-15 %</sub> 50 Hz / 60 Hz		
		200 V	Main circuit	A-frame to D-frame	Single/3-phase 200 V <sup>+10 %</sup> to 240 V <sup>+10 %</sup> <sub>-15 %</sub> 50 Hz / 60 Hz	
				E-frame to F-frame	3-phase 200 V <sup>+10 %</sup> to 240 V <sup>+10 %</sup> <sub>-15 %</sub> 50 Hz / 60 Hz	
			Control circuit	A-frame to D-frame	Single phase 200 V <sup>+10 %</sup> to 240 V <sup>+10 %</sup> <sub>-15 %</sub> 50 Hz / 60 Hz	
				E-frame to F-frame	Single phase 200 V <sup>+10 %</sup> to 240 V <sup>+10 %</sup> <sub>-15 %</sub> 50 Hz / 60 Hz	
	Environment	temperature	Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation*1)			
		humidity	Both operating and storage : 20 %RH to 85 %RH (free from condensation*1)			
		Altitude	Lower than 1000 m			
		Vibration	5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz			
Control method	IGBT PWM Sinusoidal wave drive					
Encoder feedback	23-bit (8388608 resolution) absolute encoder, 7-wire serial * A6SG series When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to "1" (factory settings). * A6SE series Since it can be used only as an incremental system, do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to "1" (factory settings).					
Interface connector	Control signal	Input	General purpose 10 inputs The function of general-purpose input is selected by parameters.			
		Output	General purpose 6 outputs The function of general-purpose input is selected by parameters.			
	Analog signal	Input	None			
		Output	2 outputs (Analog monitor: 2 output)			
	Pulse signal	Input	2 inputs (Photo-coupler input, Line receiver input)			
		Output	4 outputs ( Line driver: 3 output, open collector: 1 output)			
Communication function	USB	USB interface to connect to computers for parameter setting or status monitoring.				
	RS232	1:1 communication	* RS485, RS232 connector is not installed on A6 SE series.			
	RS485	1: n communication (max 31)				
Front panel	(1) 5 keys (2) LED (6-digit)					
Regeneration	A-frame, B,-frame: no built-in regenerative resistor (external resistor only) C-frame to F-frame: Built-in regenerative resistor (external resistor is also enabled.)					
Dynamic brake	A-frame to F-frame: Built-in					
Control mode	(1) Position control (2) Internal velocity command (3) Position/Internal velocity command					

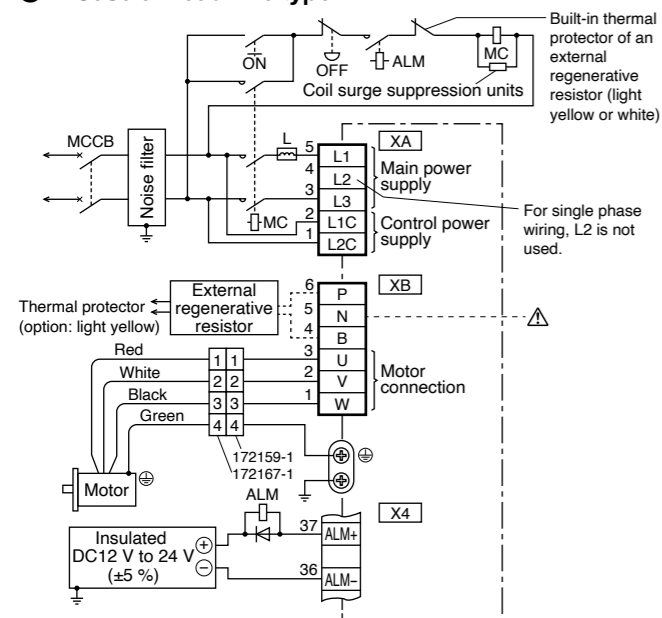
\*1 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

Function	Control input	(1) servo-ON input (2) Alarm clear input (3) Gain switch input (4) Positive direction drive inhibit input (5) Negative direction drive inhibit input (6) Forced alarm input (7) Inertia ratio switch input			
		Control output	(1) Servo-alarm output (2) Servo-ready output (3) External brake off output (4) At-speed output (5) Torque in-limit output (6) Zero speed detection output (7) Warning output (8) Alarm clear attribute output (9) Servo on status output		
	Position control		Control input	(1) Deviation counter clear input (2) Command pulse inhibit input (3) Command division/multiplication switch input (4) Anti-vibration switch input (5) Torque limit switch input (6) Control mode switch input	
		Control output	(1) In-position output (2) Position command ON/OFF output		
		Pulse input	Max. command pulse frequency	500 kpps (Optocoupler interface) 8 Mpps (Line receiver interface)	
			Input pulse signal format	Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)	
	Electronic gear (Division/Multiplication of command pulse)		Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 <sup>30</sup> can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution per motor revolution), but the combination has to be within the range shown above.		
	Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input			
	Anti-vibration control	Available			
	Two-degree-of-freedom control	Available			
	Load variation suppression control	Available			
	Block operation	Modbus (RS 232, RS 485) or interface is selectable. (A6SE : interface only.)			
	Speed control	Control input	(1) Internal command velocity selection input (2) Speed zero clamp input (3) Velocity command sign input (4) Control mode switch input		
		Control output	(1) Speed coincidence output (2) Velocity command ON/OFF output		
		Internal velocity command	Switching the internal 8 speed is enabled by command input.		
		Soft-start/down function	Individual setup of acceleration and deceleration is enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled.		
		Zero-speed clamp	Internal velocity command can be clamped to 0 with speed zero clamp input.		
		Two-degree-of-freedom control	Available		
	Common	Auto tuning	The load inertia is identified in real time by the driving state of the motor operating according to the command given by the controlling device and set up support software "PANATERM". The gain is set automatically in accordance with the rigidity setting.		
		Division of encoder feedback pulse	Set up of any value is enabled (encoder pulses count is the max.).		
Protective function		Hard error	Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current and encoder error etc.		
		Soft error	Excess position deviation, command pulse division error, EEPROM error etc.		
Alarm data trace back		Tracing back of alarm data is available			

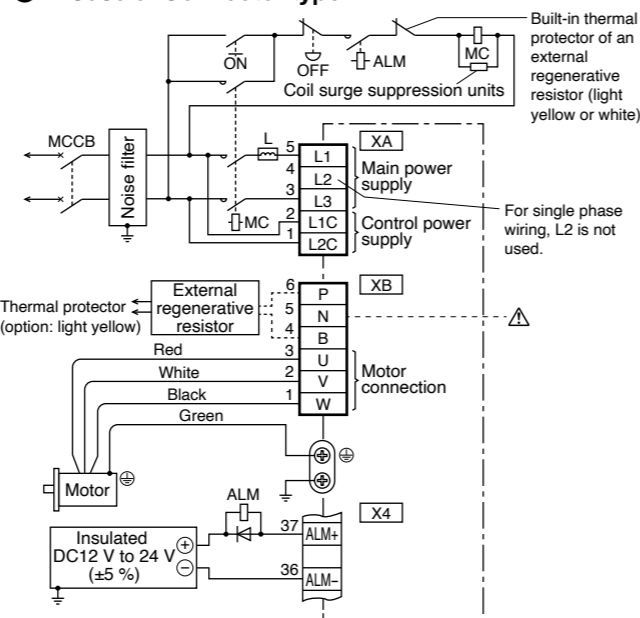


**In Case of Single phase, A-frame, B-frame, 100 V / 200 V type**

● In Case of Leadwire type



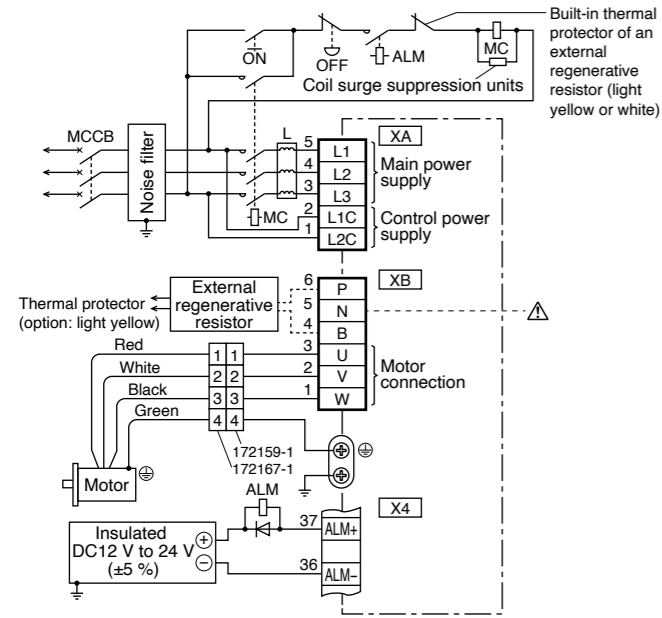
● In Case of Connector type



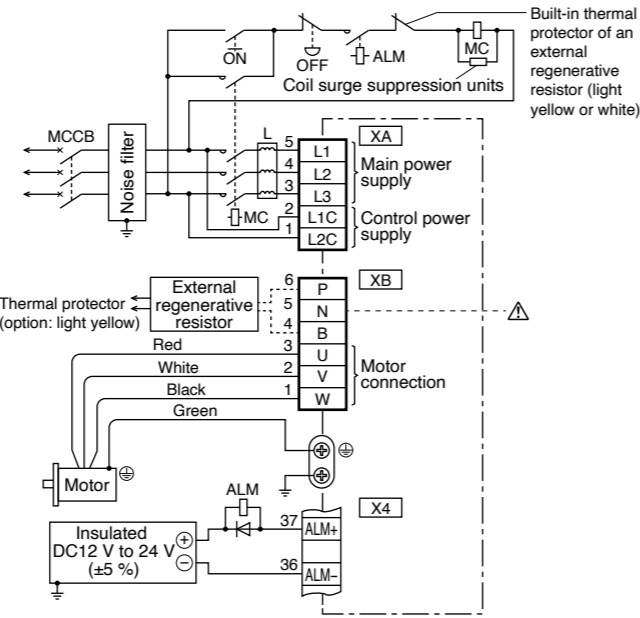
- The pin number of X4 is based on the factory setting parameters.
- \* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

**In Case of 3-phase, A-frame, B-frame, 200 V type**

● In Case of Leadwire type



● In Case of Connector type



- The pin number of X4 is based on the factory setting parameters.
- \* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

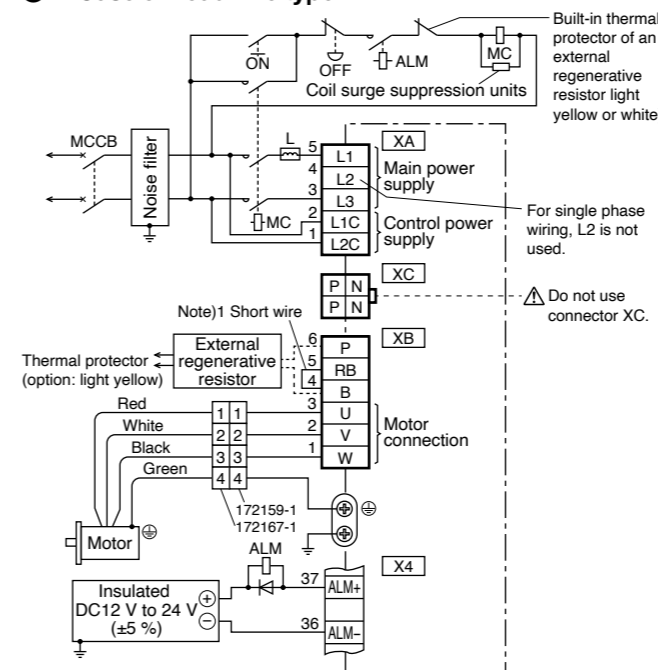
Connect an external regenerative resistor.

Frame No.	Short wire (Accessory)	Built-in regenerative resistor	Connection of the connector XB ⚠ Do not connect anything to N.	
			In case of using an external regenerative resistor	In case of not using an external regenerative resistor
A-frame B-frame	without	without	<ul style="list-style-type: none"> <li>• Connect an external regenerative resistor between P-B.</li> </ul>	<ul style="list-style-type: none"> <li>• Always open between P-B.</li> </ul>

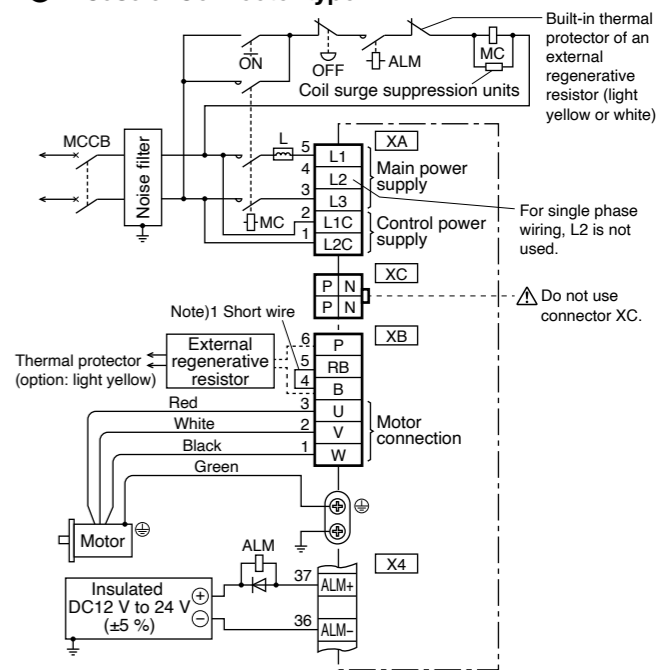
\* Refer to P.307 Specifications of Motor connector.

**In Case of Single phase, C-frame, D-frame, 100 V / 200 V type**

● In Case of Leadwire type



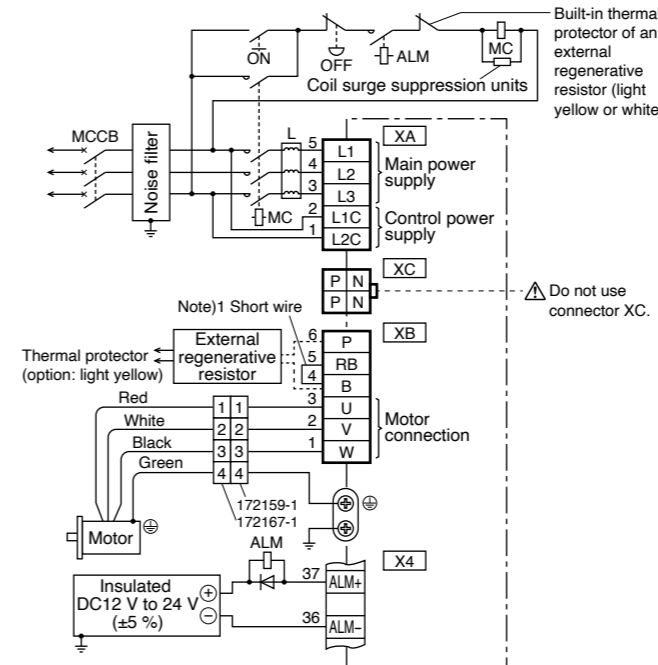
● In Case of Connector type



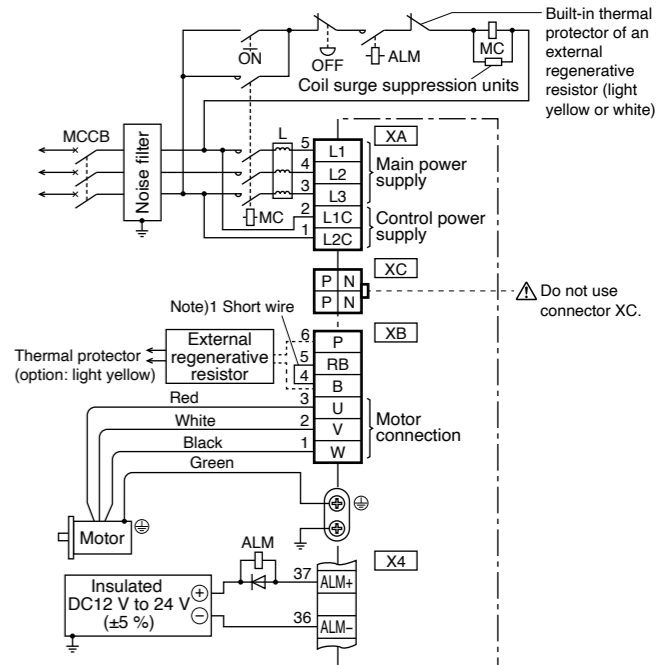
- The pin number of X4 is based on the factory setting parameters.
- \* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

**In Case of 3-phase, C-frame, D-frame, 200 V type**

● In Case of Leadwire type



● In Case of Connector type



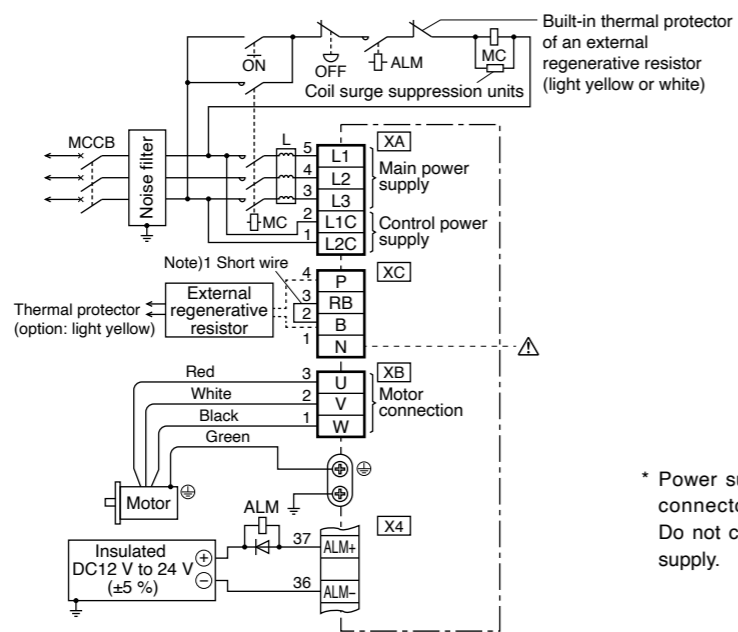
- The pin number of X4 is based on the factory setting parameters.
- \* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

Note)1

Frame No.	Short wire (Accessory)	Built-in regenerative resistor	Connection of the connector XB ⚠ Do not connect anything to N.	
			In case of using an external regenerative resistor	In case of not using an external regenerative resistor
C-frame D-frame	with	with	<ul style="list-style-type: none"> <li>• Remove the short wire accessory from between RB-B.</li> <li>• Connect an external regenerative resistor between P-B.</li> </ul>	<ul style="list-style-type: none"> <li>• Shorted between RB-B with an attached short wire</li> </ul>

\* Refer to P.307, P.308, Specifications of Motor connector.

**In Case of 3-phase, E-frame, 200 V type**



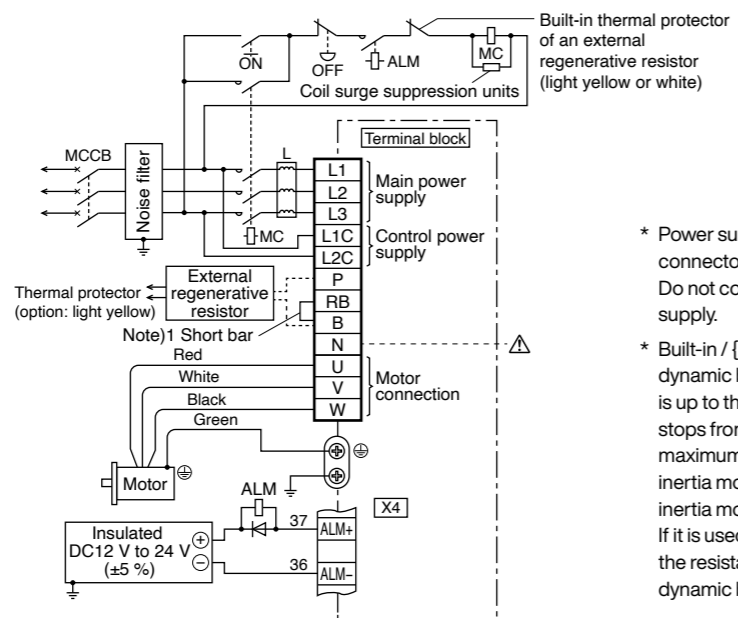
\* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

● The pin number of X4 is based on the factory setting parameters.

Note)1

Frame No.	Short wire (Accessory)	Built-in regenerative resistor	Connection of the connector XC ⚠ Do not connect anything to N.	
			In case of using an external regenerative resistor	In case of not using an external regenerative resistor
E-frame	with	with	<ul style="list-style-type: none"> <li>Remove the short wire accessory from between RB-B.</li> <li>Connect an external regenerative resistor between P-B.</li> </ul>	<ul style="list-style-type: none"> <li>Shorted between RB-B with an attached short wire</li> </ul>

**In Case of 3-phase, F-frame, 200 V type**



\* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

\* Built-in / {external} The standard of the dynamic brake resistance's capability is up to three consecutive emergency stops from the rated speed at the maximum allowable inertia (load inertia moment ratio 10 times the rotor inertia moment). If it is used under more conditions, the resistance may be broken and the dynamic brake may not operate.

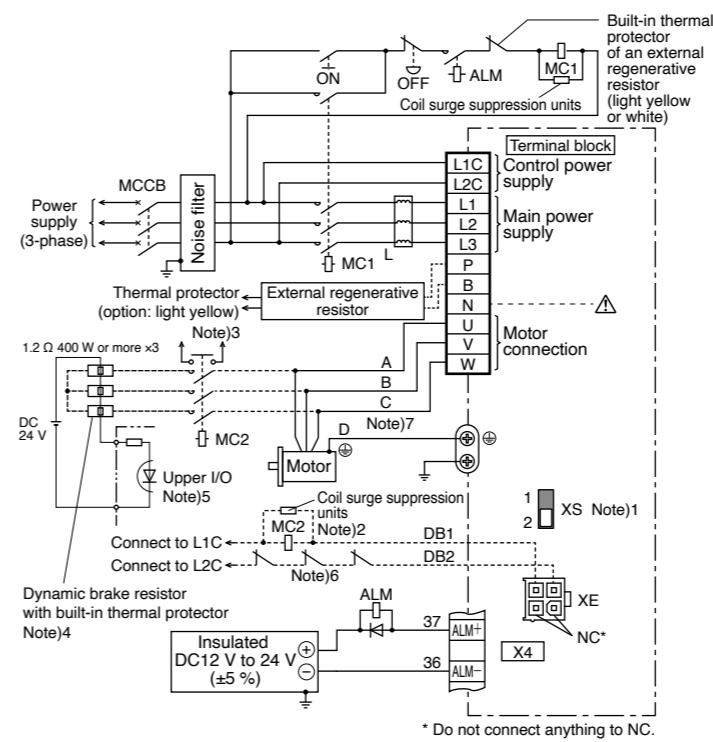
● The pin number of X4 is based on the factory setting parameters.

Note)1

Frame No.	Short bar (Accessory)	Built-in regenerative resistor	Connection of terminal block ⚠ Do not connect anything to N.	
			In case of using an external regenerative resistor	In case of not using an external regenerative resistor
F-frame	with	with	<ul style="list-style-type: none"> <li>Remove the short bar accessory from between RB-B.</li> <li>Connect an external regenerative resistor between P-B.</li> </ul>	<ul style="list-style-type: none"> <li>Shorted between RB-B with an attached short bar</li> </ul>

\* Refer to P.308, Specifications of Motor connector.

**In Case of 3-phase, G-frame, 200 V type**



■ **About the Dynamic Brake**  
G frame has built-in dynamic brake resistor. When using built-in dynamic brake, set switch XS to "1" side. When exceeding the capacity of built-in dynamic brake resistor, set switch XS to "2" side and use external dynamic brake resistor.

■ **When using external dynamic brake**

- Note 1) Set switch XS to "2" side.
- Note 2) Make the electromagnetic contactor (MC2) the same as the electromagnetic contactor (MC1) of the main circuit.
- Note 3) Provide an auxiliary contact, and configure protection so that the servo will not turn on in the external sequence if the main contact is welded.
- Note 4) Mount the dynamic brake resistor on incombustible material such as metal.
- Note 5) Install a thermal protector on the dynamic brake resistor and monitor it with the upper I/O, and configure protection so that the servo is not turned on in the external sequence when the thermal protector is operating.
- Note 6) If the upper I/O cannot monitor the thermal protector, input the output of the thermal protector between L2C and DB2 so that the dynamic brake does not operate when the temperature protection works.

■ **About motor wiring**

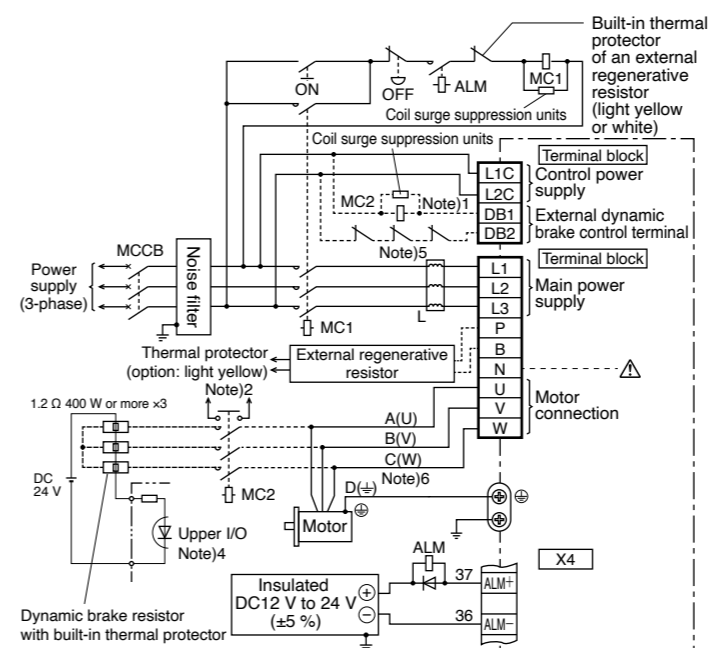
- Note 7) This is the terminal symbol of the connector.
- \* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.
- \* Do not use built-in dynamic brake and external dynamic brake at the same time.

● The pin number of X4 is based on the factory setting parameters.

■ Connection of regenerative resistor

Frame No.	Short bar (Accessory)	Built-in regenerative resistor	Connection of terminal block ⚠ Do not connect anything to N.	
			In case of using an external regenerative resistor	In case of not using an external regenerative resistor
G-frame	without	without	<ul style="list-style-type: none"> <li>Connect an external regenerative resistor between P-B.</li> </ul>	<ul style="list-style-type: none"> <li>Always open between P-B.</li> </ul>

**In Case of 3-phase, H-frame, 200 V type**



■ **About the Dynamic Brake**  
The H frame does not have a built-in dynamic brake resistor, so it will be in a free run state when the motor does emergency stop. Use an external dynamic brake resistor if it may cause a machine collision.

■ **When using external dynamic brake**

- Note 1) Make the electromagnetic contactor (MC2) the same as the electromagnetic contactor (MC1) of the main circuit.
- Note 2) Provide an auxiliary contact, and configure protection so that the servo will not turn on in the external sequence if the main contact is welded.
- Note 3) Mount the dynamic brake resistor on incombustible material such as metal.
- Note 4) Install a thermal protector on the dynamic brake resistor and monitor it with the upper I/O, and configure protection so that the servo is not turned on in the external sequence when the thermal protector is operating.
- Note 5) If the upper I/O cannot monitor the thermal protector, input the output of the thermal protector between L2C and DB2 so that the dynamic brake does not operate when the temperature protection works.

■ **About motor wiring**

- Note 6) This is the terminal symbol of the connector. ( ) is the terminal symbol of 22.0 kW motor.
- \* Do not use built-in dynamic brake and external dynamic brake at the same time.

● The pin number of X4 is based on the factory setting parameters.

■ Connection of regenerative resistor

Frame No.	Short bar (Accessory)	Built-in regenerative resistor	Connection of terminal block ⚠ Do not connect anything to N.	
			In case of using an external regenerative resistor	In case of not using an external regenerative resistor
H-frame	without	without	<ul style="list-style-type: none"> <li>Connect an external regenerative resistor between P-B.</li> </ul>	<ul style="list-style-type: none"> <li>Always open between P-B.</li> </ul>

\* Refer to P.308, Specifications of Motor connector.

Connecting the host controller can configure a safety circuit that controls the safety functions.

When not constructing the safety circuit, use the supplied safety bypass plug.

### Outline Description of Safe Torque Off (STO)

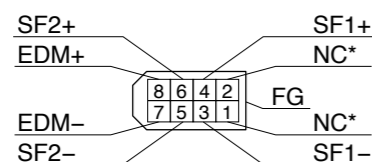
The safe torque off (STO) function is a safety function that shuts the motor current and turns off motor output torque by forcibly turning off the driving signal of the servo driver internal power transistor. For this purpose, the STO uses safety input signal and hardware (circuit).

When STO function operates, the servo driver turns off the servo ready output signal (S-RDY) and enters STO state. When the driver becomes STO state, front panel displays the "St.". Then, when the driver's state is STO input is off and servo-on input is off, the driver automatically becomes servo-off.

### Safety Precautions

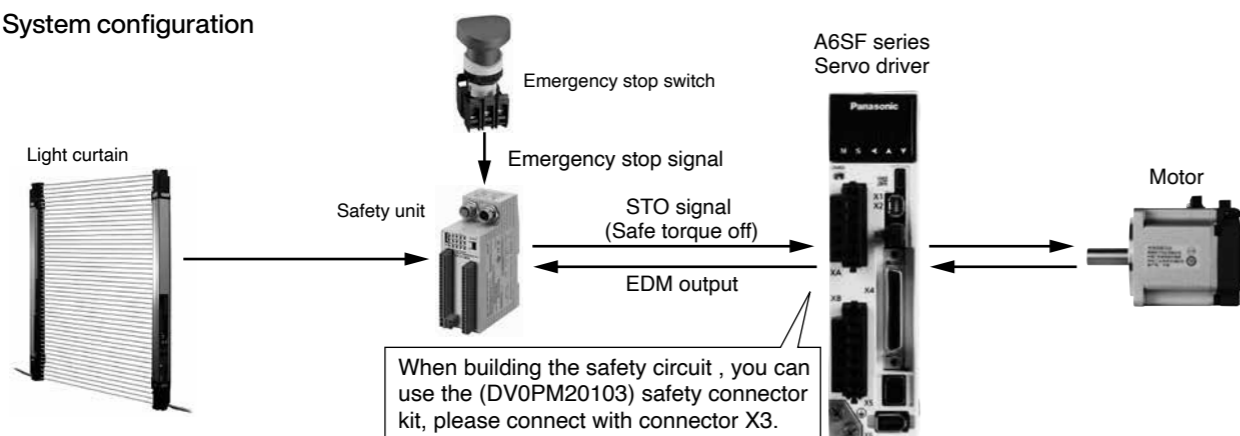
- When using the STO function, be sure to perform equipment risk assessment to ensure that the system conforms to the safety requirements.
- Even while the STO function is working, the following potential safety hazards exist. Check safety in risk assessment.
  - The motor may move when external force (e.g. gravity force on vertical axis) is exerted on it. Provide an external brake, etc., as necessary to secure the motor. Note that the purpose of motor with brake is holding and it cannot be used for braking application.
  - When parameter Pr5.10 Sequence at alarm is set to free run (disable dynamic brake), the motor is free run state and requires longer stop distance even if no external force is applied. Make sure that this does not cause any problem.
  - When power transistor, etc., becomes defective, the motor will move to the extent equivalent of 180 electrical angle (max.). Make sure that this does not cause any problem.
  - The STO turns off the current to the motor but does not turn off power to the servo driver and does not isolate it. When starting maintenance service on the servo driver, turn off the driver by using a different disconnecting device.
- External device monitor (EDM) output signal is not a safety signal. Do not use it for an application other than failure monitoring.
- Dynamic brake and external brake release signal output are not related to safety function. When designing the system, make sure that the failure of external brake release during STO condition does not result in danger condition.
- When using STO function, connect equipment conforming to the safety standards.

[Connector pin assignment] (Viewed from cable)



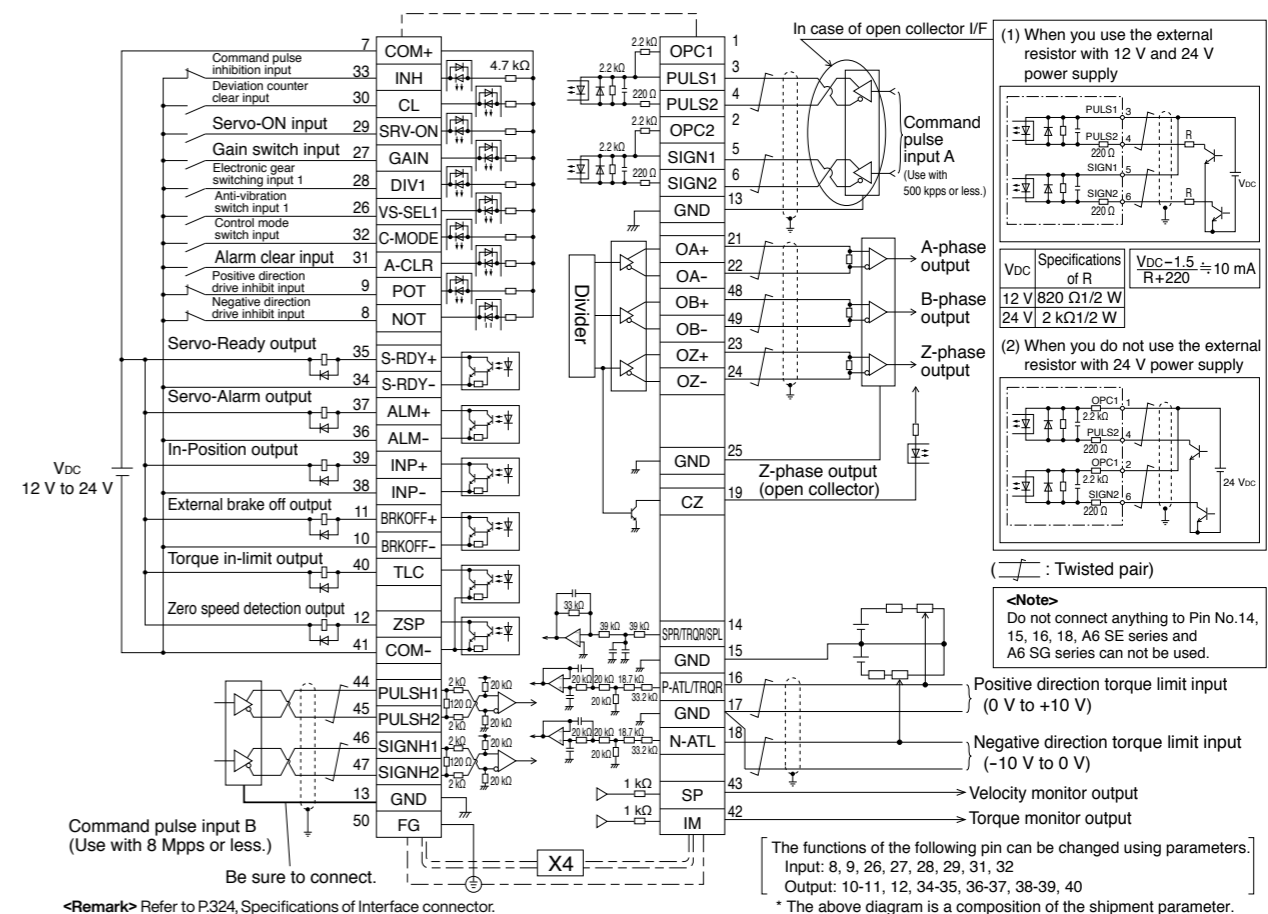
\* Do not connect anything to NC.

### System configuration



When building the safety circuit, you can use the (DV0PM20103) safety connector kit, please connect with connector X3.

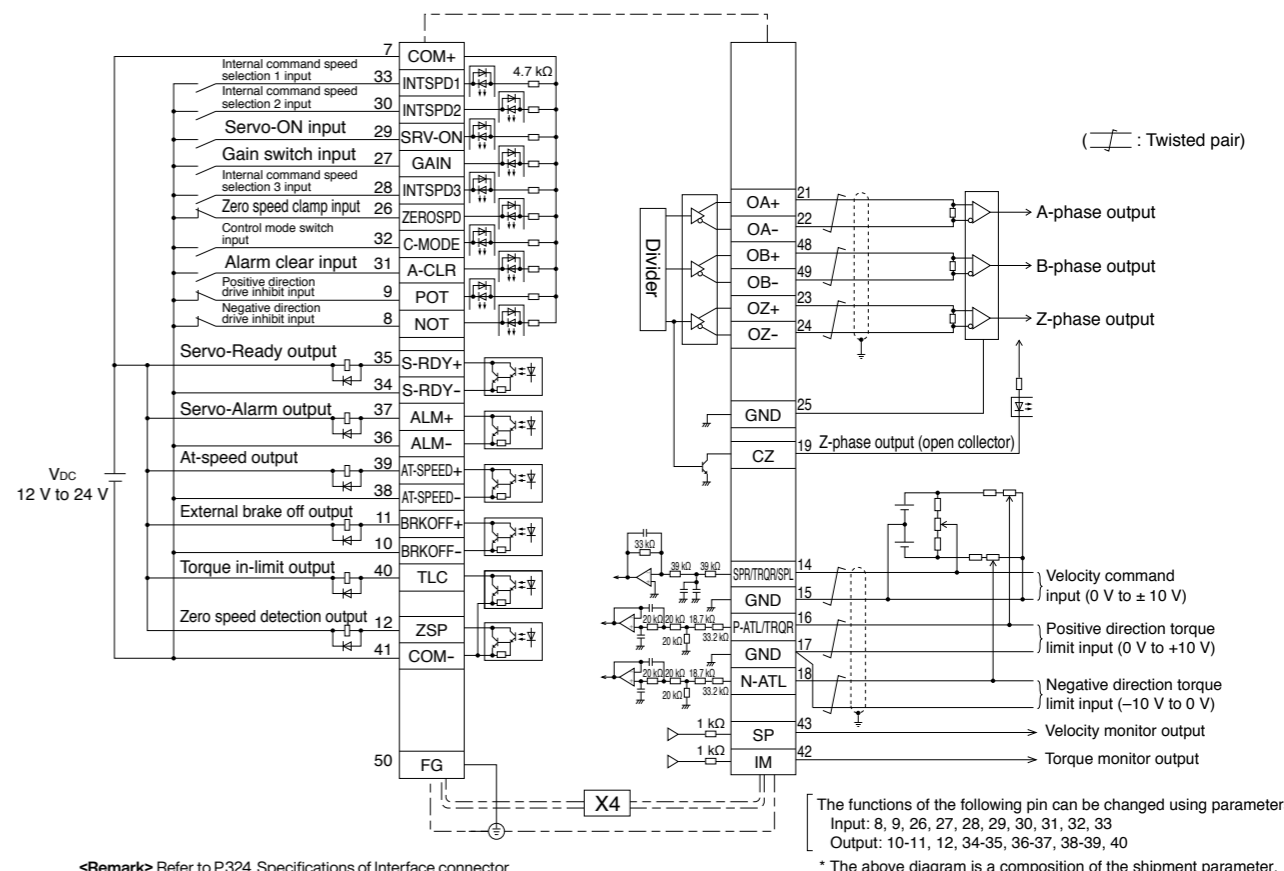
### Wiring Example of Position Control Mode



<Remark> Refer to P.324, Specifications of Interface connector.

### Wiring Example of Velocity Control Mode

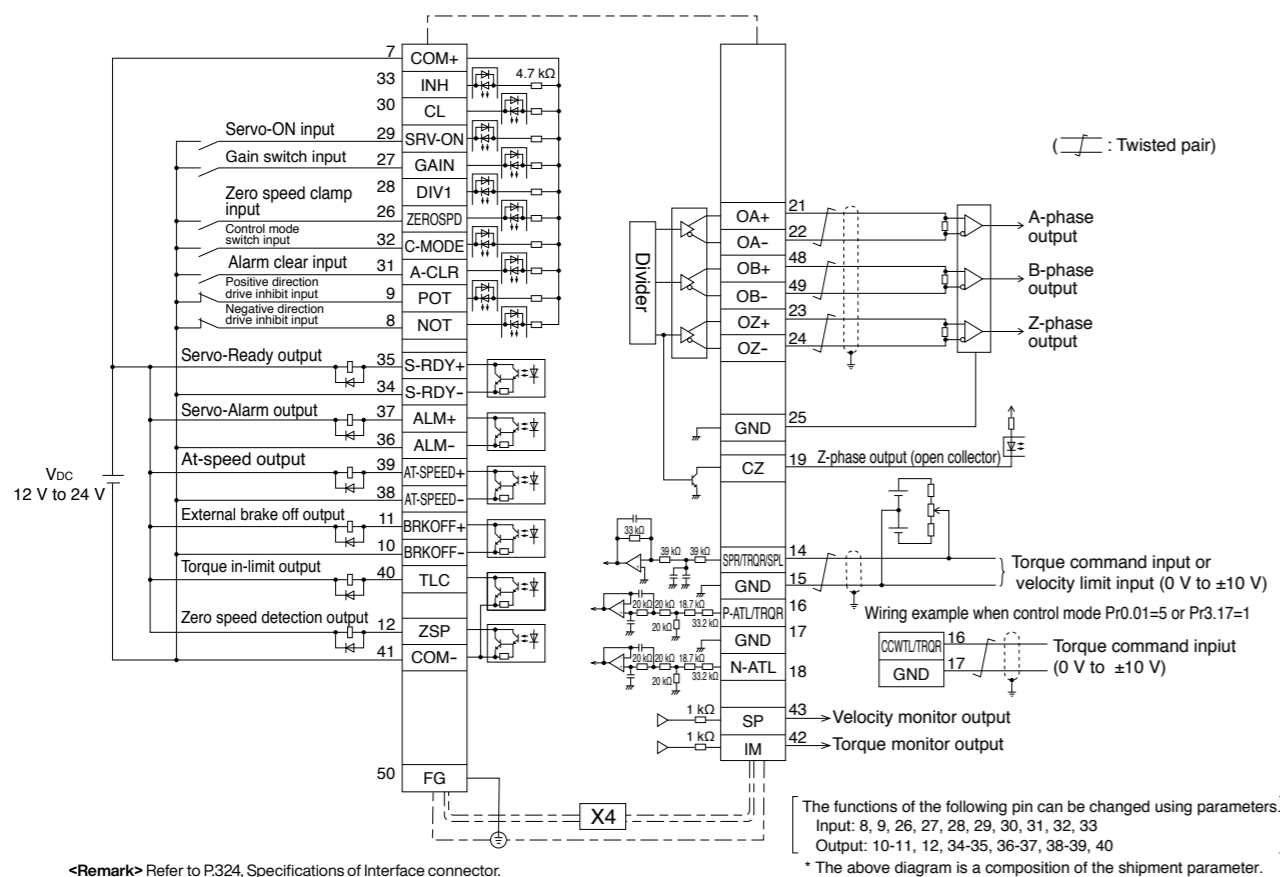
\* Internal velocity command is available only for A6SE and A6SG series



<Remark> Refer to P.324, Specifications of Interface connector.

Wiring Example of Torque Control Mode

\* Excluding A6SE, A6SG Series

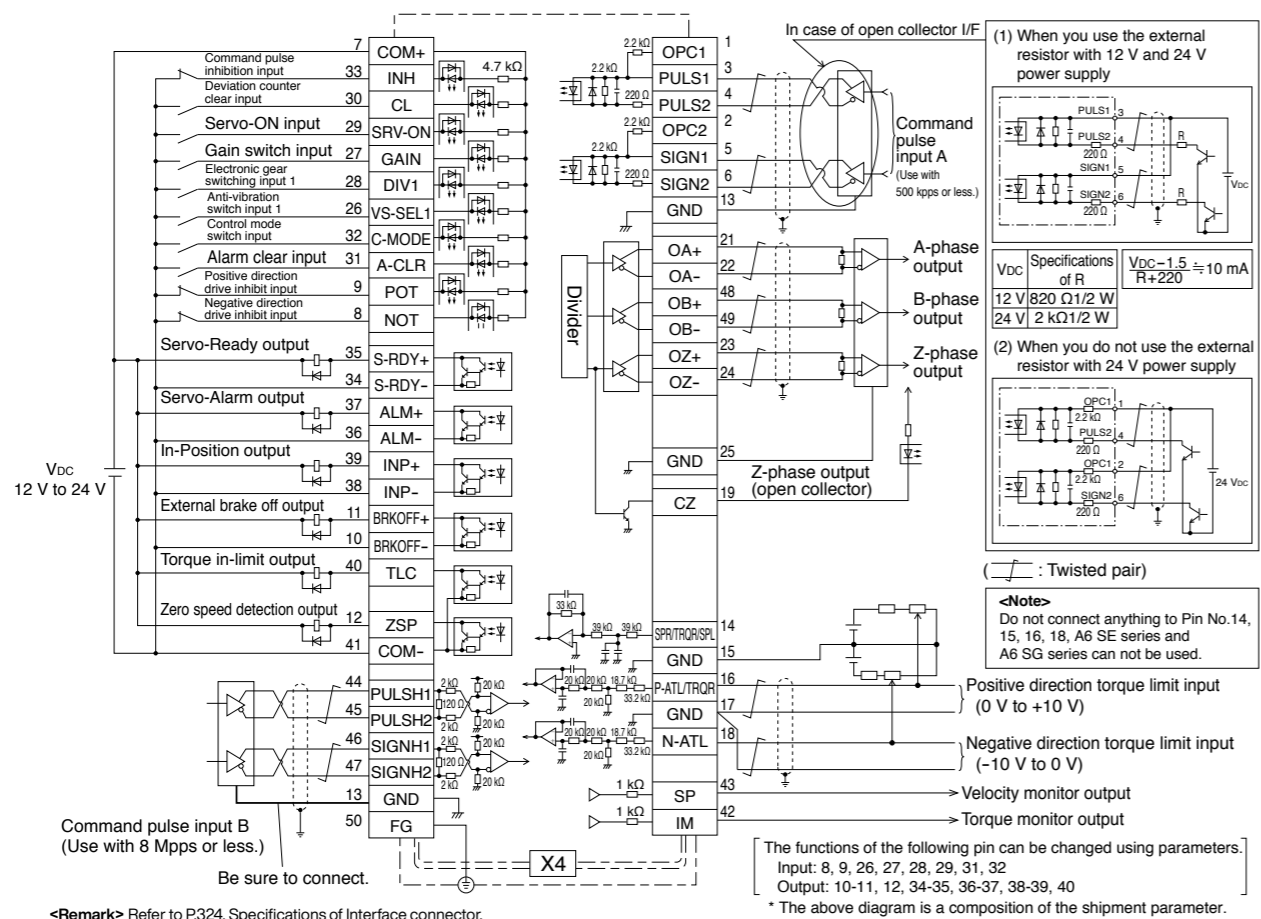


<Remark> Refer to P.324, Specifications of Interface connector.

\* The above diagram is a composition of the shipment parameter.

Wiring Example of Full-closed Control Mode

\* Excluding A6SE, A6SG Series



<Remark> Refer to P.324, Specifications of Interface connector.

\* The above diagram is a composition of the shipment parameter.

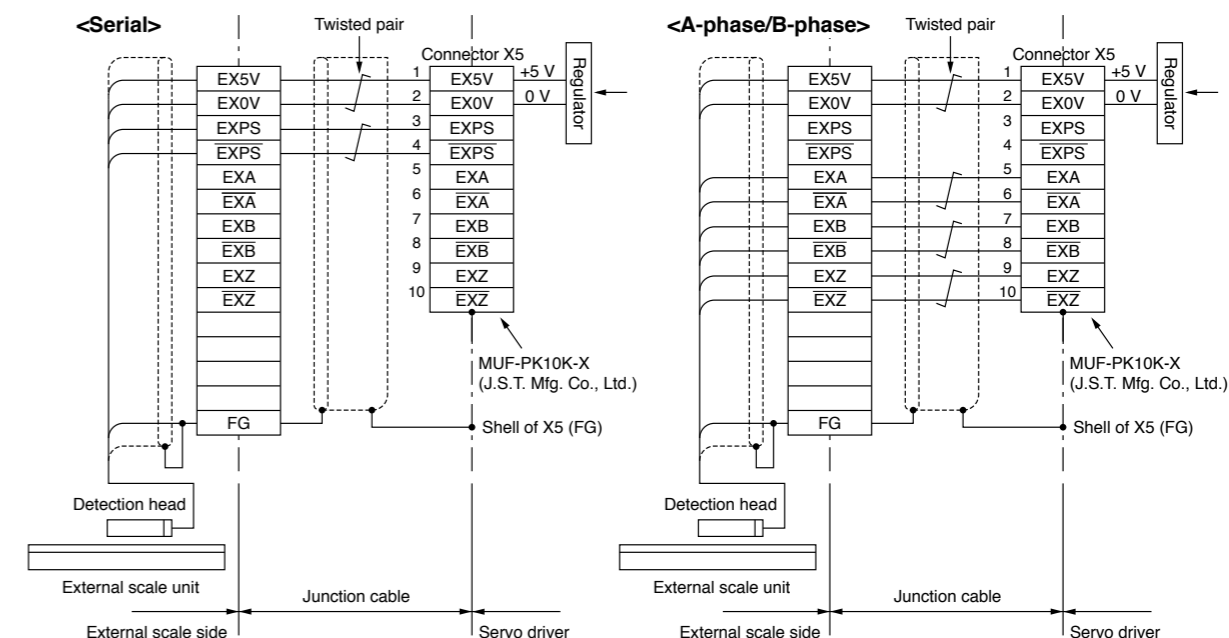
Applicable External Scale

Scale Type	Partner	Series	Resolution*1 [μm]	Max. rate*1 [m/s]
Parallel Type (A/B/Z phase)	General	Maximum speed after 4× multiplication : 4 Mpps		
Serial communication (Incremental)	Magnescale Co., Ltd.	SL700-PL101RP/RHP SL710-PL101RP/RHP	0.1	10
		SR75/SR85	0.01 to 1	3.3
		BF1	0.001/0.01	0.4/1.8
	NIDEC MACHINE TOOL CORPORATION	SQ10	0.05/0.1/0.5/1	3
		MPLIN	0.1	30
	Nidec Sankyo Corporation		PSLH041+PSLG	0.1
Serial communication (Absolute)	FAGOR AUTOMATION	S3BP/G3BP	0.01/0.05	3
		LAP	0.01/0.05	3
		EXA/ EXG/ EXT	0.01/0.05	8
		H2AP-D200/H2AP-D90	29 bit/23 bit	750 r/min/1500 r/min
		S2AP-D90	23 bit	1500 rpm
		LIC 2197P/LIC 2199P	0.05/0.1	10
HEIDENHAIN	LIC 4193P/LIC 4195P LIC 4197P/LIC 4199P	0.001/0.005/0.01	10	
	LC 195P/LC 495P	0.001/0.01	3	
	ECA 4490P	27 bits to 29 bits	7000 r/min~550 r/min (Depends on drum size)	
	RCN 2x90P/RCN 5x90P	26 bits/28 bits	1500 r/min	
Magnescale Co.,Ltd.		SR77/SR87	0.01 to 1	3.3
Mitutoyo Corporation		AT573-SC/H	0.05	2.5
NIDEC MACHINE TOOL CORPORATION		ST700	0.1	5
		ST1300	0.001/0.01	8
Renishaw plc		RESOLUTE	0.001	4
RSF Elektronik		MC 15P MP/MC 15P MK	0.05	100
			0.1	100
		MCR 15P	0.05/0.1	10
			0.05/0.1	4
			0.05	100
			0.1	100
			0.05/0.1	10
			22 bits~25 bits	—

\*1 The maximum speed is a characteristic of the driver. It is limited by the configuration of the machine and the system.

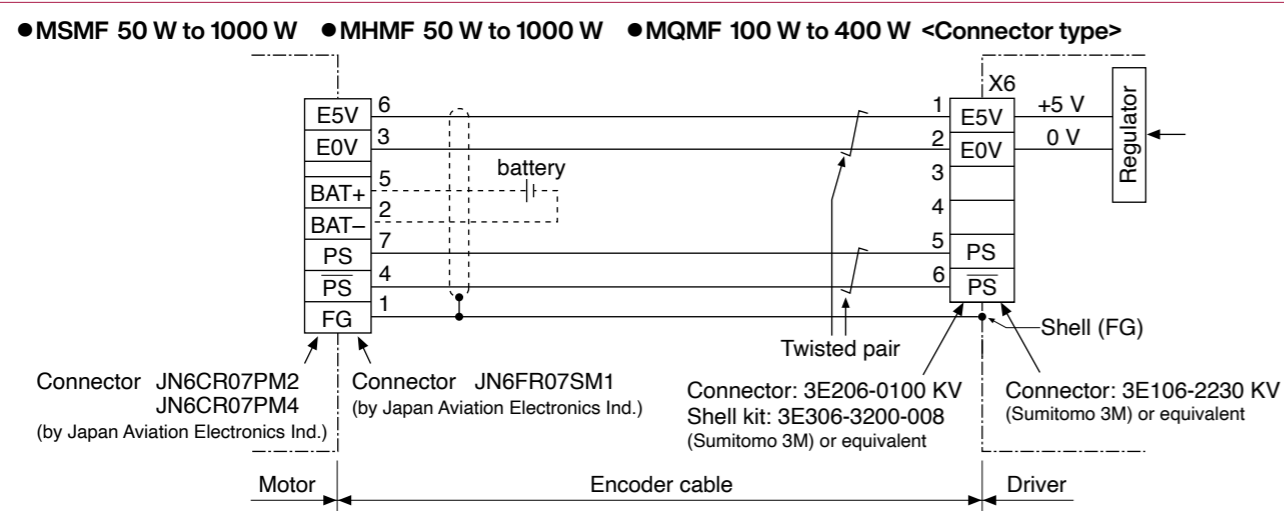
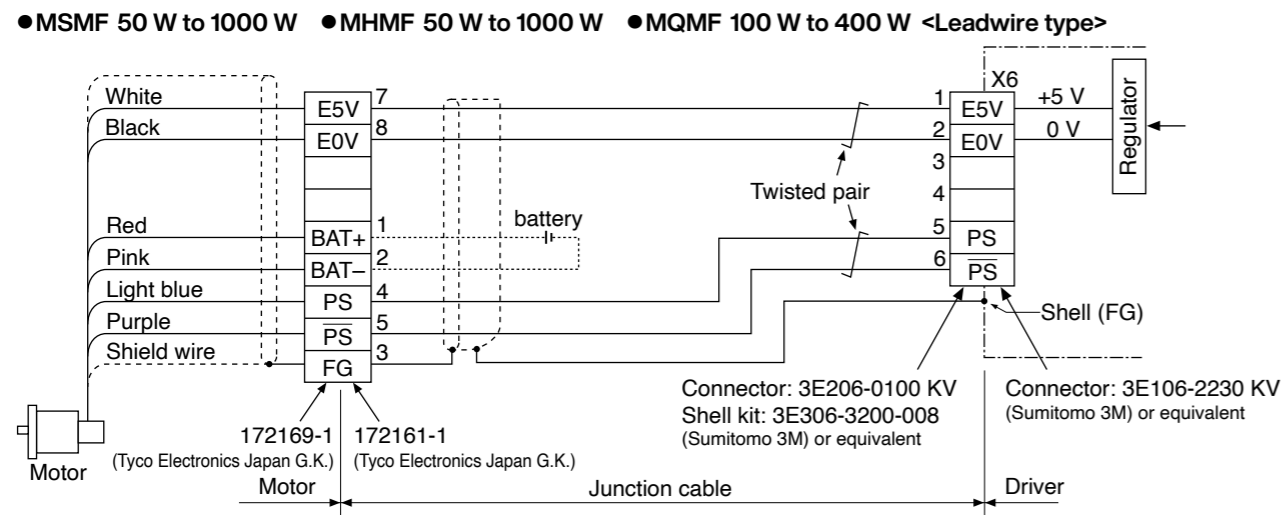
\* For more information about the external scale product, please contact the manufacturer.

Wiring Diagram of X5



When using a 23-bit absolute encoder as an absolute system\*.

\* When use a multi-turn data.



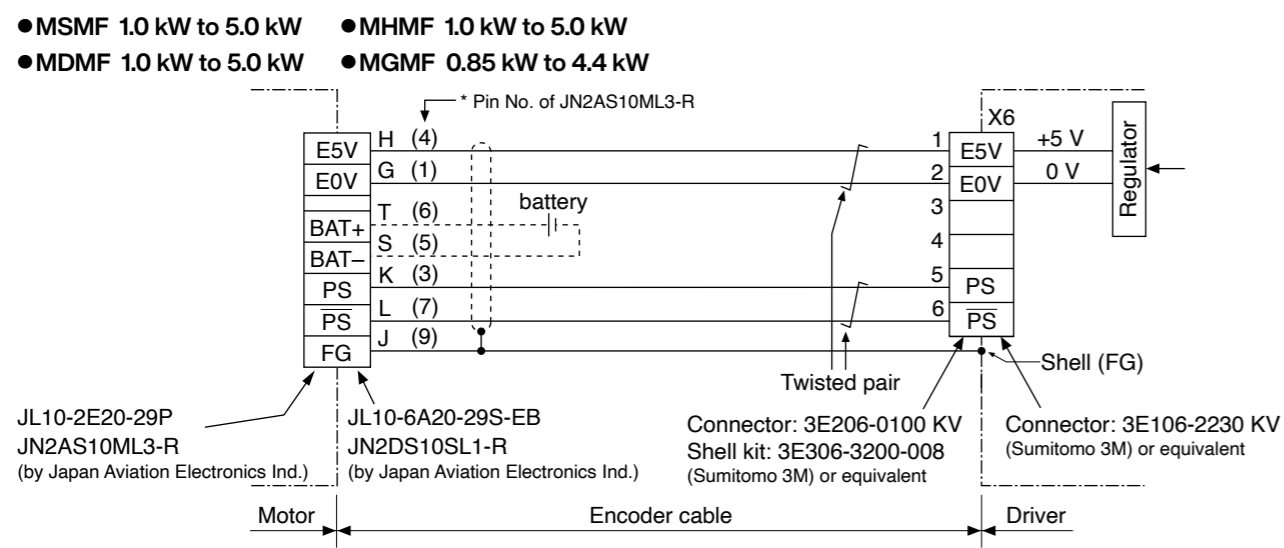
**<Caution>**

- Tighten the motor connector mounting screw (M2) with a torque between 0.19 N·m and 0.21 N·m. To avoid damage, be sure to use only the screw supplied with the connector.
- Do not remove the gasket supplied with the junction cable connector. Securely install the gasket in place. Otherwise, the degree of protection of IP67 will not be guaranteed.

[Connector pin assignment (Motor side)]

1	5
2	6
3	7
4	

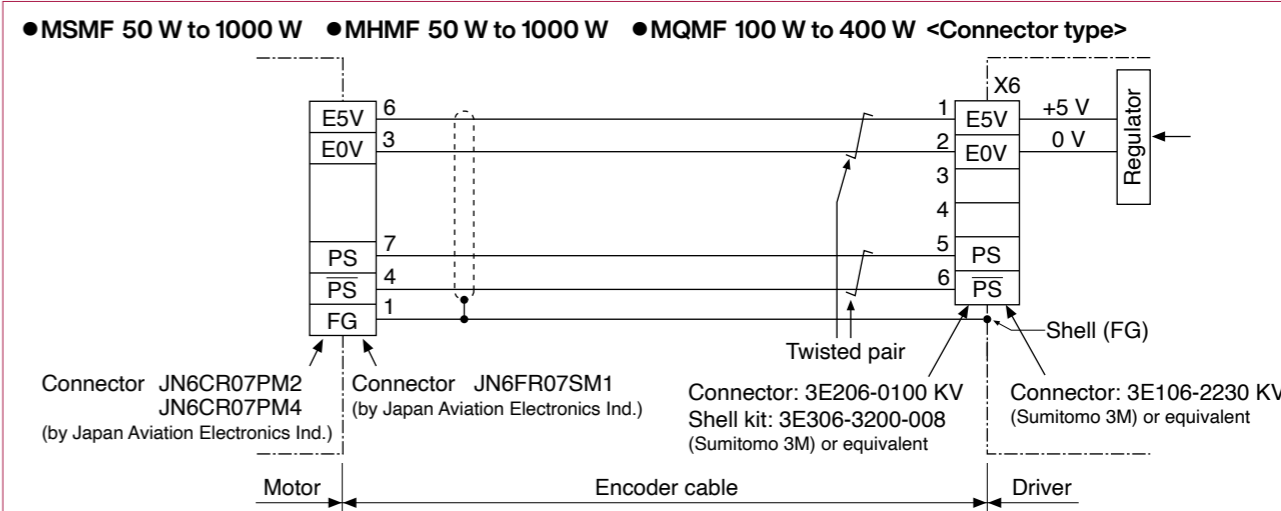
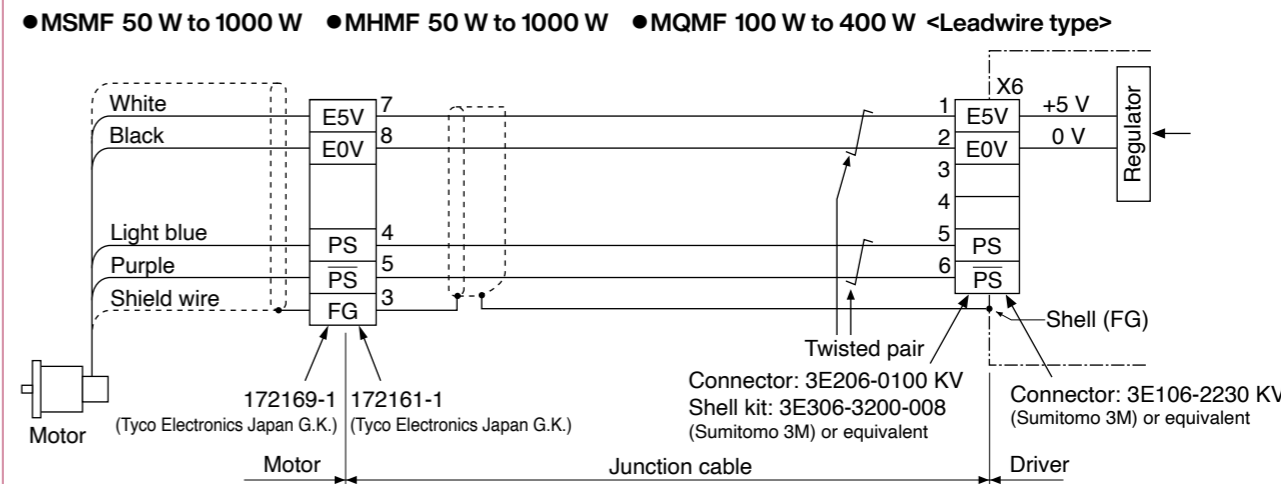
(Viewed from cable)



[Connector pin assignment] Refer to P.307, P.308 "Specifications of Motor connector".

When using a 23-bit absolute encoder as a incremental system\*.

\* When do not use a multi-turn data.



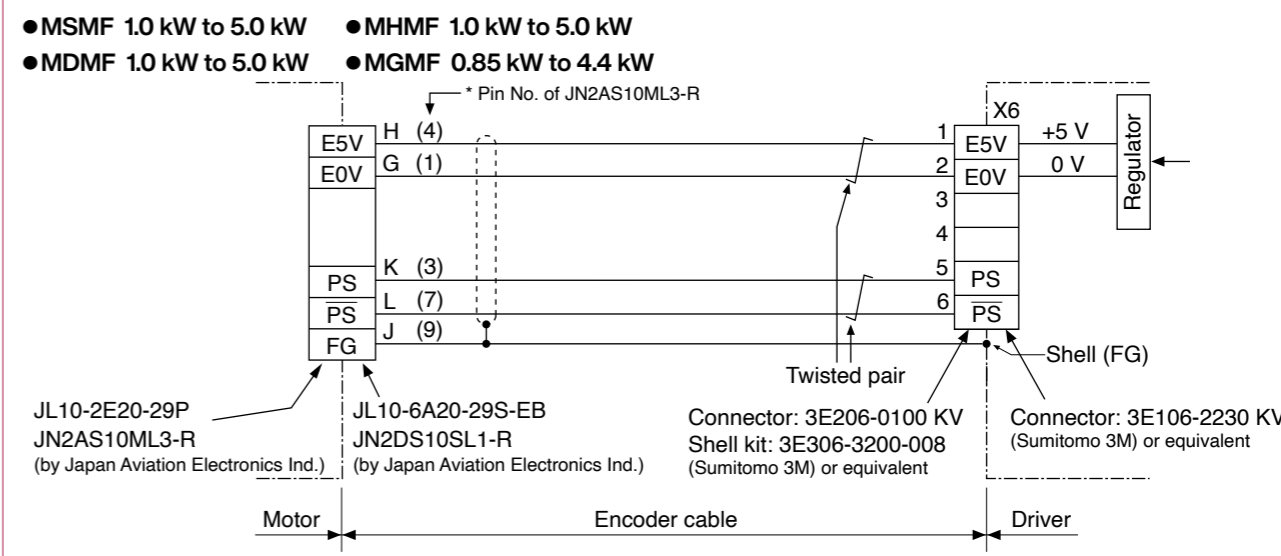
**<Caution>**

- Tighten the motor connector mounting screw (M2) with a torque between 0.19 N·m and 0.21 N·m. To avoid damage, be sure to use only the screw supplied with the connector.
- Do not remove the gasket supplied with the junction cable connector. Securely install the gasket in place. Otherwise, the degree of protection of IP67 will not be guaranteed.

[Connector pin assignment (Motor side)]

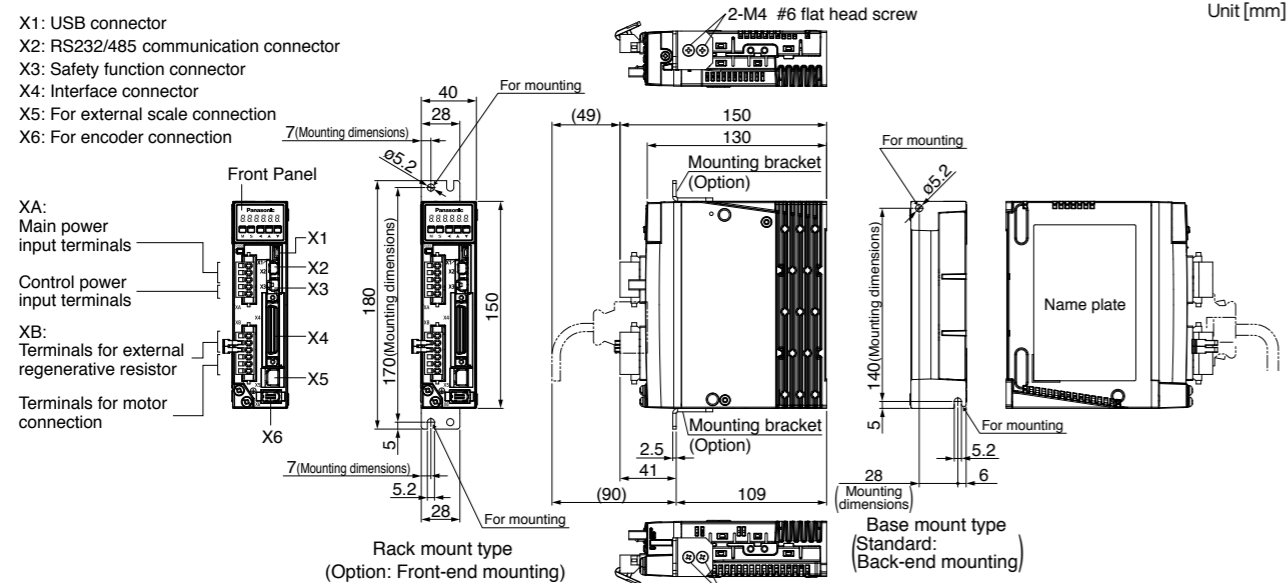
1	5
2	6
3	7
4	

(Viewed from cable)



[Connector pin assignment] Refer to P.307, P.308 "Specifications of Motor connector".

### A-frame

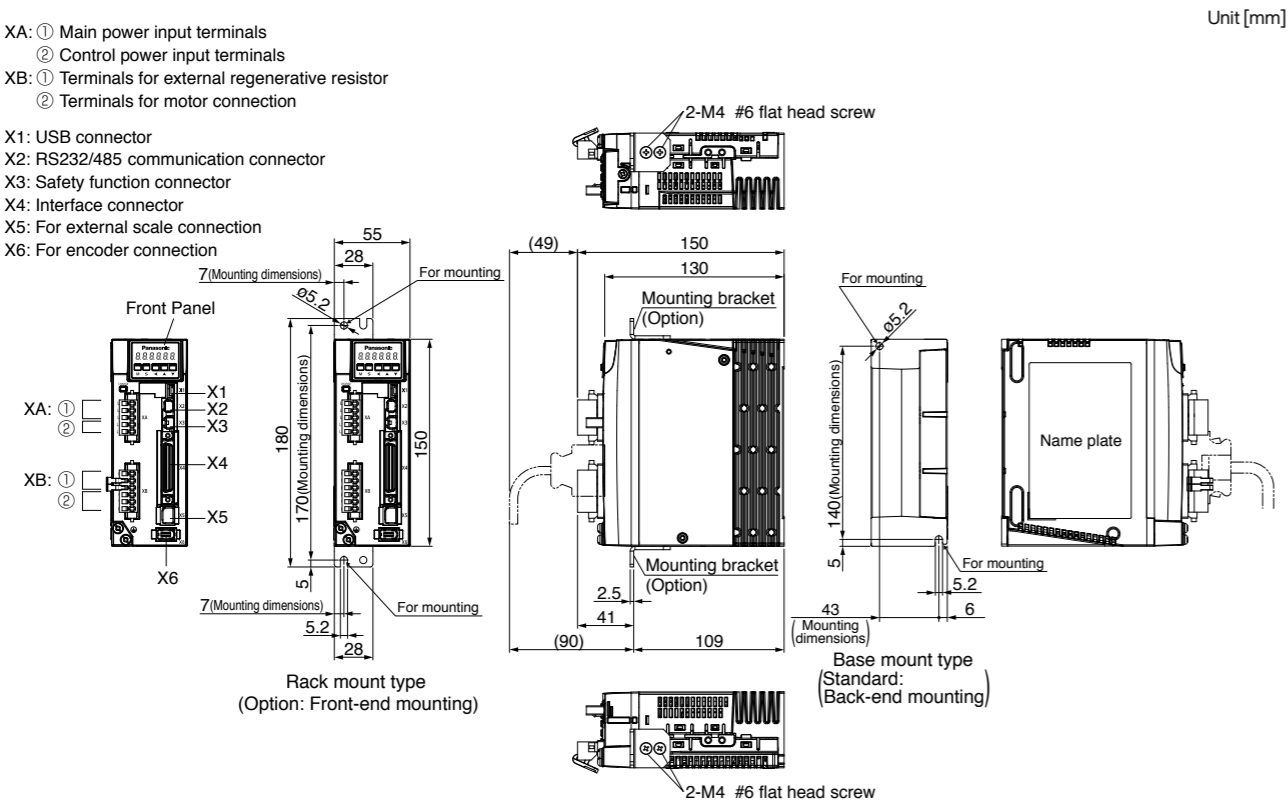


A-frame: Connector of driver side		Multifunction type	RS485 communication type	Basic type
Connector XA	S05B-F32SK-GGXR	J.S.T. Mfg. Co., Ltd.	●	●
Connector XB	S06B-F32SK-GGXR	J.S.T. Mfg. Co., Ltd.	●	●
Connector X1	UB-M5BR-DMP14-4S (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X2	1-2040537-1 (or equivalent)	Tyco Electronics Japan G.K.	●	—
Connector X3	2040537-1 (or equivalent)	Tyco Electronics Japan G.K.	—	—
Connector X4	10250-52A2PE (or equivalent)	Sumitomo 3M	●	●
Connector X5	MUF-RS10DK-GKXR (or equivalent)	J.S.T. Mfg. Co., Ltd.	—	—
Connector X6	3E106-2230 KV (or equivalent)	Sumitomo 3M	●	●

<Attached to the driver>		Multifunction type	RS485 communication type	Basic type
Connector of power and motor side				
Connector XA	05JFAT-SAX-GGKK-A	J.S.T. Mfg. Co., Ltd.	●	●
Connector XB	06JFAT-SAX-GGKK-A	J.S.T. Mfg. Co., Ltd.	●	●

Mass: 0.8 kg

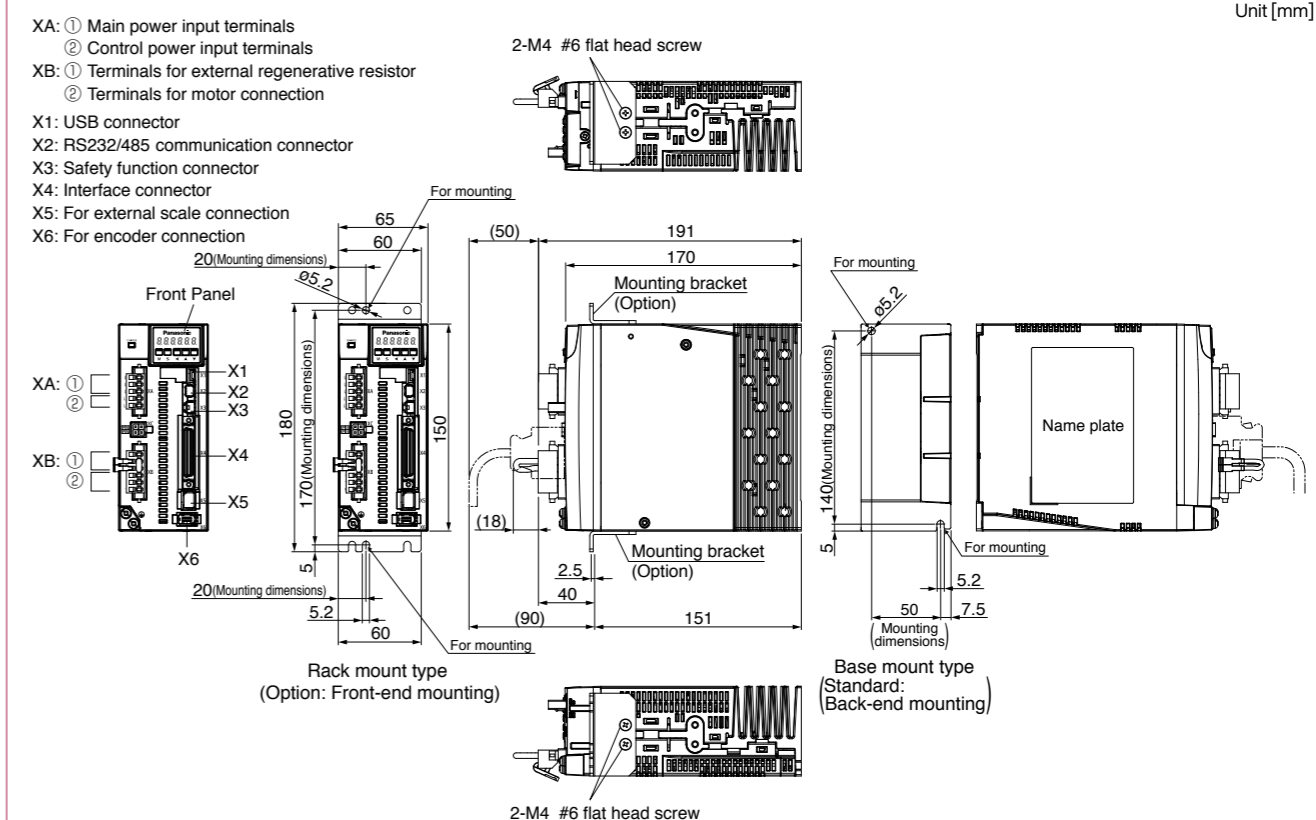
### B-frame



\*For connectors used to connect to the driver, power supply and motor, refer to the A-frame table because both frames use the same connectors.

Mass: 1.0 kg

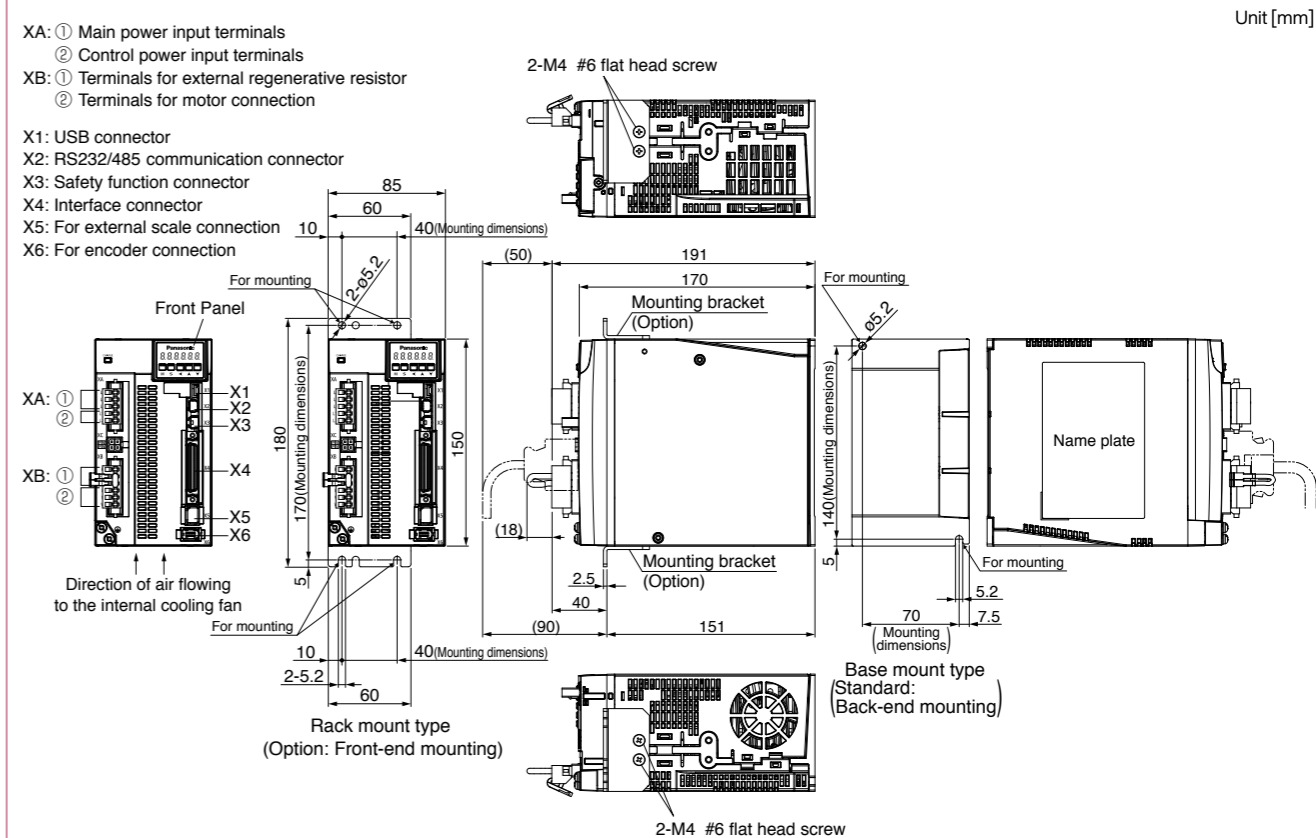
### C-frame



\*For connectors used to connect to the driver, power supply and motor, refer to the A-frame table because both frames use the same connectors.

Mass: 1.6 kg

### D-frame (200 V)



\*For connectors used to connect to the driver, power supply and motor, refer to the A-frame table because both frames use the same connectors.

Mass: 2.1 kg

E-frame (200 V)

Unit [mm]

X1: USB connector  
 X2: RS232/485 communication connector  
 X3: Safety function connector  
 X4: Interface connector  
 X5: For external scale connection  
 X6: For encoder connection

XA: ① Main power input terminals  
 ② Control power input terminals  
 XB: Terminals for motor connection  
 XC: Terminals for external regenerative resistor

2-M4 #6 flat head screw

2-M4 #6 flat head screw

Mounting bracket (If re-positioned from front end)

196.5

2.5

160

2.5

33

(70)

3.5

Mounting bracket (If re-positioned from front end)

216

52

(18)

2-M4 #6 flat head screw

2-M4 #6 flat head screw

85

50 (Mounting dimensions)

2-5.2

For mounting

198

168

5

2-5.2

50

(Mounting dimensions)

Direction of air flowing to the internal cooling fan

Front Panel

XA: ① X1 X2 X3 XC X4 X5 X6

Mass: 2.7 kg

\* For connectors X1 to X6, refer to the list provided in the A-frame table because both frames use the same connectors.

E-frame: Connector of driver side		
Connector XA	S05B-JTSLSK-GSANXR	J.S.T. Mfg. Co., Ltd.
Connector XB	S03B-JTSLSK-GSANXR	J.S.T. Mfg. Co., Ltd.
Connector XC	S04B-JTSLSS-GSANXR	J.S.T. Mfg. Co., Ltd.

E-frame: Connector of power and motor side		
Connector XA	05JFAT-SAXGSA-L	J.S.T. Mfg. Co., Ltd.
Connector XB	03JFAT-SAXGSA-L	J.S.T. Mfg. Co., Ltd.
Connector XC	04JFAT-SAXGSA-L	J.S.T. Mfg. Co., Ltd.

F-frame (200 V)

Unit [mm]

X1: USB connector  
 X2: RS232/485 communication connector  
 X3: Safety function connector  
 X4: Interface connector  
 X5: For external scale connection  
 X6: For encoder connection

① Main power input terminals  
 ② Control power input terminals  
 ③ Terminals for external regenerative resistor  
 ④ Terminals for motor connection

2-M4 #6 flat head screw

2-M4 #6 flat head screw

Mounting bracket (If re-positioned from front end)

219.5

2.5

169

47

(20)

3.5

Mounting bracket (If re-positioned from front end)

169

56

(20)

2.5

Mounting bracket (If re-positioned from front end)

169

2.5

67

100

130

100 (Mounting dimensions)

2-5.2

For mounting

250

240 (Mounting dimensions)

220

5

2-5.2

100

(Mounting dimensions)

Direction of air flowing to the internal cooling fan

Front Panel

① X1 X2 X3 X4 X5 X6

Mass: 5.2 kg

\* For connectors X1 to X6, refer to the list provided in the A-frame table because both frames use the same connectors.

G-frame (200 V) (The lineup of A6SE and A6SG series is not available.)

Unit [mm]

X1: USB connector  
 X2: RS232/485 communication connector  
 X3: Safety function connector  
 X4: Interface connector  
 X5: For external scale connection  
 X6: For encoder connection  
 XE: Connector for external dynamic brake signal  
 XS: Built-in dynamic brake switch

Control power input terminals

Main power input terminals

Terminals for external regenerative resistor

Terminals for motor connection

Front Panel

X1: USB connector

X2: RS232/485 communication connector

X3: Safety function connector

X4: Interface connector

X5: For external scale connection

X6: For encoder connection

XE: Connector for external dynamic brake signal

XS: Built-in dynamic brake switch

Direction of air flowing to the internal cooling fan

3-M4 #6 flat head screw

3-M4 #6 flat head screw

184

90

47 (Mounting dimensions)

2-6.2

For mounting

257

(50)

2.5

Mounting bracket (If re-positioned from front end)

197

56

(50)

2.5

Mounting bracket (If re-positioned from front end)

199

2.5

56

(106)

8

2-6.2

47

(Mounting dimensions)

90

257

241 (Mounting dimensions)

220

For mounting

3-M4 #6 flat head screw

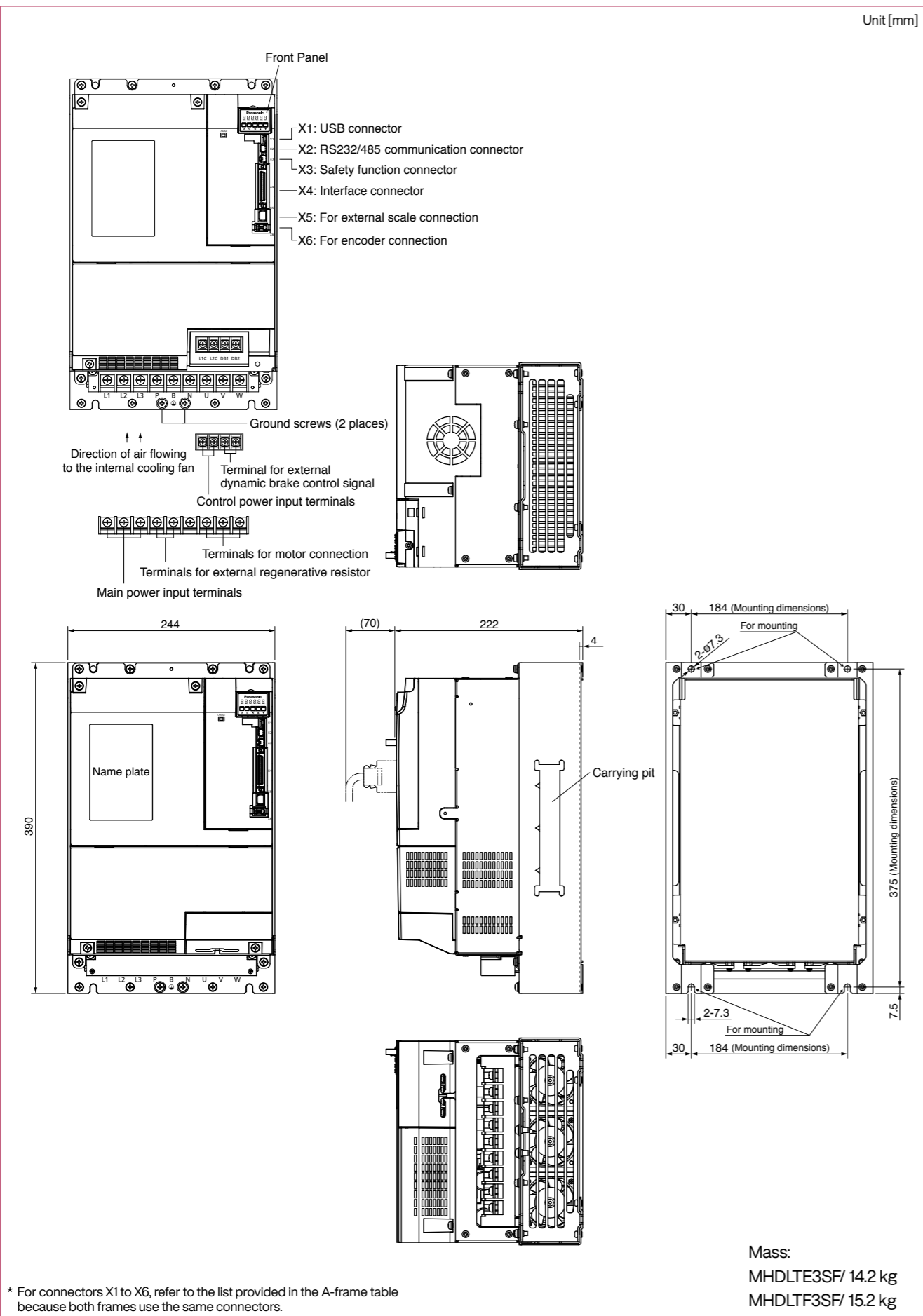
3-M4 #6 flat head screw

Connector of driver side	Controlor side (customer prepares)
Connector XE : 5569-04A2-210 (MOLEX)	Connector : 5557-04R-210 (MOLEX)
	Pin : 5556PBT

Mass: 8.2 kg

\* For connectors X1 to X6, refer to the list provided in the A-frame table because both frames use the same connectors.








H-frame (200 V) (The lineup of A6SE and A6SG series is not available.)



Features

- Line-up IP67 motor: 50 W to 5.0 kW
- Max speed: 6500r/min (MHMF 50 W to 400 W)
- Low inertia (MSMF) to High inertia (MHMF).
- Low cogging torque: Rated torque ratio 0.5 % (typical value).
- 23-bit absolute encoder (8388608 pulse).

Motor Lineup

80 mm sq. or less	 <p><b>MSMF</b> Low inertia</p> <p>Max. speed : 6000 r/min Rated speed : 3000 r/min Rated output : 50 W to 1000 W Enclosure: IP65: Leadwire type IP67: Connector type</p>	 <p><b>MQMF</b> (Flat type) Middle inertia</p> <p>Max. speed : 6500 r/min Rated speed : 3000 r/min Rated output : 100 W to 400 W Enclosure: IP65: Leadwire type IP67: Connector type</p>	 <p><b>MHMF</b> High inertia</p> <p>Max. speed : 6500 r/min 6000 r/min (750 W, 1000 W) Rated speed : 3000 r/min Rated output : 50 W to 1000 W Enclosure: IP65: Leadwire type IP67: Connector type</p>
	 <p><b>MSMF</b> Low inertia</p> <p>Max. speed : 5000 r/min 4500 r/min (4.0 kW, 5.0 kW) Rated speed : 3000 r/min Rated output : 1.0 kW to 5.0 kW Enclosure : IP67</p>	 <p><b>MDMF</b> Middle inertia</p> <p>Max. speed : 3000 r/min 2000 r/min (11.0 kW to 22.0 kW) Rated speed : 2000 r/min 1500 r/min (11.0 kW to 22.0 kW) Rated output : 1.0 kW to 22.0 kW Enclosure : IP67, IP44 (22.0 kW)</p>	
	 <p><b>MGMF</b> (Low speed/ High torque type) Middle inertia</p> <p>Max. speed : 3000 r/min Rated speed : 1500 r/min Rated output : 0.85 kW to 5.5 kW Enclosure : IP67</p>	 <p><b>MHMF</b> High inertia</p> <p>Max. speed : 3000 r/min Rated speed : 2000 r/min 1500 r/min (7.5 kW) Rated output : 1.0 kW to 7.5 kW Enclosure : IP67</p>	

Motor Contents

**MSMF**  
50 W to 5.0 kW ..... P.63

**MQMF**  
100 W to 400 W ..... P.79

**MHMF**  
50 W to 7.5 kW ..... P.85

**MDMF**  
1.0 kW to 22.0 kW ..... P.102

**MGMF**  
0.85 kW to 5.5 kW ..... P.112

**Dimensions**  
MSMF (50 W to 1000 W) ..... P.119

MSMF (1.0 kW to 5.0 kW) ..... P.127

MQMF (100 W to 400 W) ..... P.135

MHMF (50 W to 1000 W) ..... P.147

MHMF (1.0 kW to 7.5 kW) ..... P.171

MDMF (1.0 kW to 22.0 kW) ..... P.180

MGMF (0.85 kW to 5.5 kW) ..... P.193

Special Order Product ..... P.203

Motors with Gear Reducer ..... P.293

Motor Specification Description

Environmental Conditions ..... P.303  
Notes on [Motor specification] page ..... P.303  
Permissible Load at Output Shaft ..... P.304  
Built-in Holding Brake ..... P.305



Specifications

		AC100 V
Motor model <sup>*1</sup>		MSMF5AZL1□□
Applicable driver	Model No.	Multifunction type RS485 communication type <sup>*2</sup> Basic type <sup>*2</sup>
		MADLT01SF MADLN01SG MADLN01SE
	Frame symbol	A-frame
Power supply capacity	(kVA)	0.4
Rated output	(W)	50
Rated torque	(N·m)	0.16
Continuous stall torque	(N·m)	0.16
Momentary Max. peak torque	(N·m)	0.48
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	4.7
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4280	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.026
	With brake	0.029
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

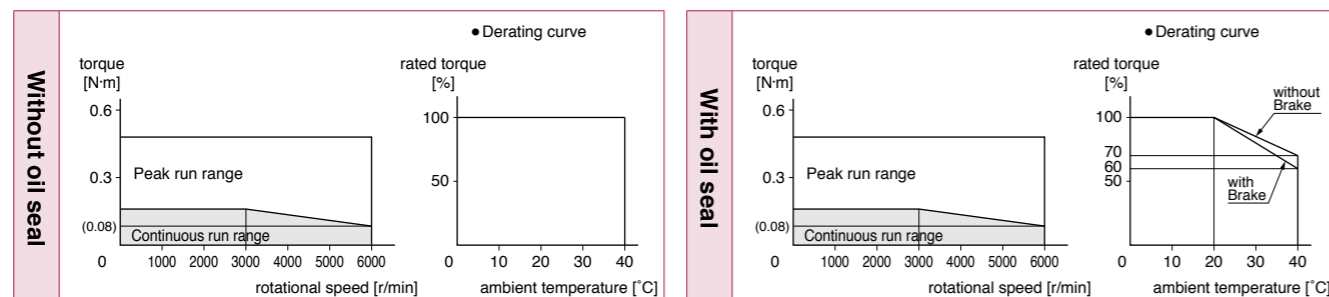
Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.119			P.119		
Connector type (IP67)	P.119			P.120		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF5AZL1□□
Applicable driver	Model No.	Multifunction type RS485 communication type <sup>*2</sup> Basic type <sup>*2</sup>
		MADLT05SF MADLN05SG MADLN05SE
	Frame symbol	A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	50
Rated torque	(N·m)	0.16
Continuous stall torque	(N·m)	0.16
Momentary Max. peak torque	(N·m)	0.48
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	4.7
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4281	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.026
	With brake	0.029
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

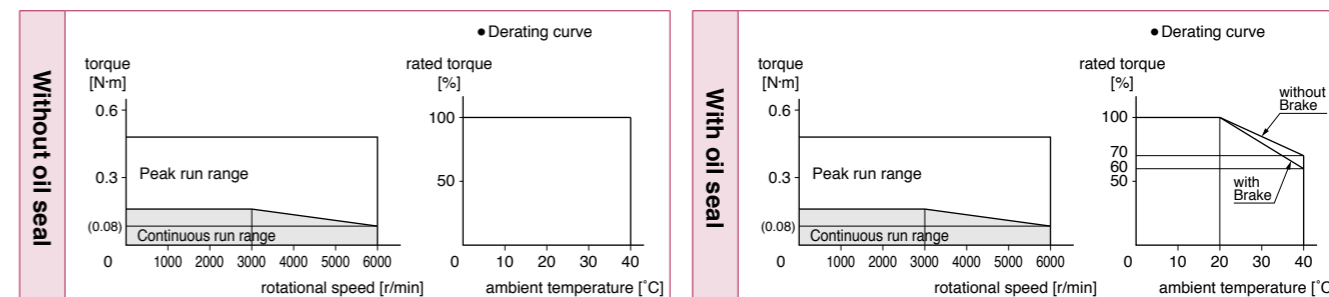
Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.119			P.119		
Connector type (IP67)	P.119			P.120		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC100 V
Motor model <sup>*1</sup>		MSMF011L1□□
Applicable driver	Model No.	Multifunction type <b>MADLT11SF</b>
		RS485 communication type <sup>*2</sup> <b>MADLN11SG</b>
		Basic type <sup>*2</sup> <b>MADLN11SE</b>
Frame symbol		A-frame
Power supply capacity (kVA)		0.4
Rated output (W)		100
Rated torque (N·m)		0.32
Continuous stall torque (N·m)		0.32
Momentary Max. peak torque (N·m)		0.95
Rated current (A(rms))		1.6
Max. current (A(o-p))		6.9
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4280	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.048
	With brake	0.051
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

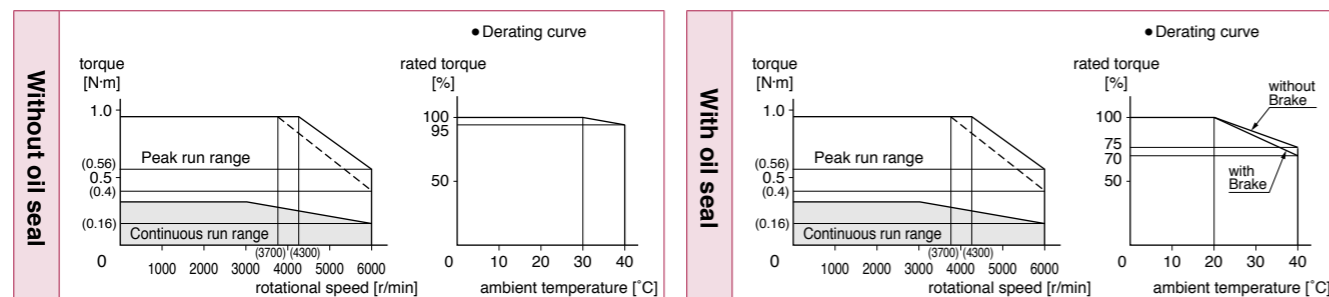
Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.120			P.120		
Connector type (IP67)	P.121			P.121		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF012L1□□
Applicable driver	Model No.	Multifunction type <b>MADLT05SF</b>
		RS485 communication type <sup>*2</sup> <b>MADLN05SG</b>
		Basic type <sup>*2</sup> <b>MADLN05SE</b>
Frame symbol		A-frame
Power supply capacity (kVA)		0.5
Rated output (W)		100
Rated torque (N·m)		0.32
Continuous stall torque (N·m)		0.32
Momentary Max. peak torque (N·m)		0.95
Rated current (A(rms))		1.1
Max. current (A(o-p))		4.7
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4281	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.048
	With brake	0.051
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

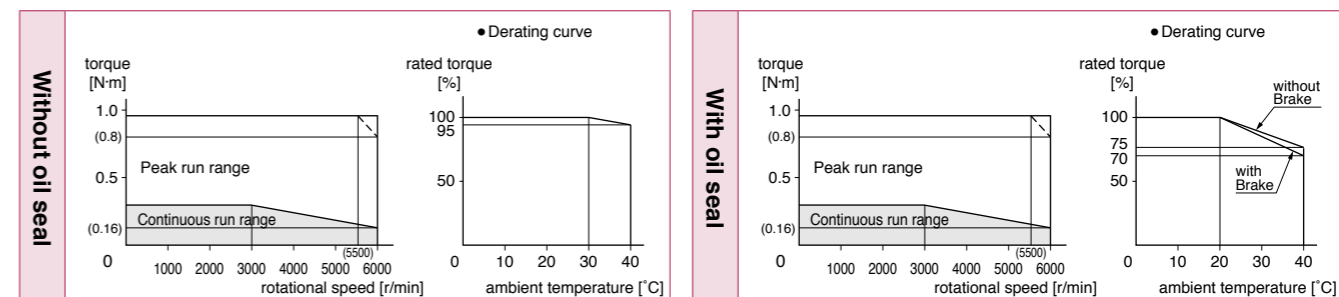
Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.120			P.120		
Connector type (IP67)	P.121			P.121		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC100 V
Motor model <sup>*1</sup>		MSMF021L1□□
Applicable driver	Model No.	Multifunction type MBDLT21SF
		RS485 communication type <sup>*2</sup> MBDLN21SG
		Basic type <sup>*2</sup> MBDLN21SE
Frame symbol		B-frame
Power supply capacity (kVA)		0.5
Rated output (W)		200
Rated torque (N·m)		0.64
Continuous stall torque (N·m)		0.64
Momentary Max. peak torque (N·m)		1.91
Rated current (A(rms))		2.5
Max. current (A(o-p))		10.6
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.14
	With brake	0.17
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

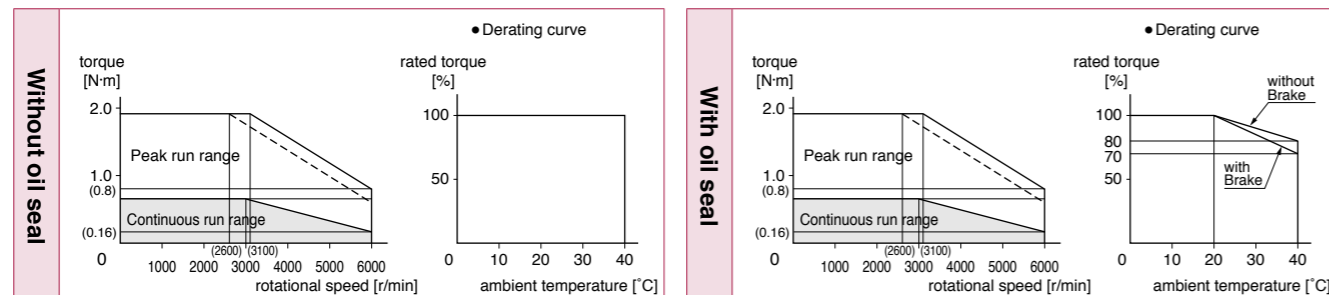
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.22.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.121			P.122		
Connector type (IP67)	P.122			P.122		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF022L1□□
Applicable driver	Model No.	Multifunction type MADLT15SF
		RS485 communication type <sup>*2</sup> MADLN15SG
		Basic type <sup>*2</sup> MADLN15SE
Frame symbol		A-frame
Power supply capacity (kVA)		0.5
Rated output (W)		200
Rated torque (N·m)		0.64
Continuous stall torque (N·m)		0.64
Momentary Max. peak torque (N·m)		1.91
Rated current (A(rms))		1.5
Max. current (A(o-p))		6.5
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.14
	With brake	0.17
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

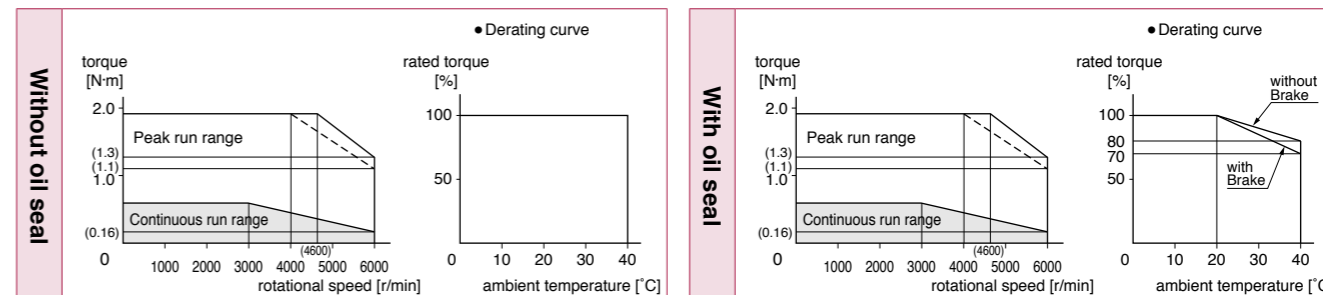
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.22.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.121			P.122		
Connector type (IP67)	P.122			P.122		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC100 V
Motor model <sup>*1</sup>		MSMF041L1□□
Applicable driver	Model No.	Multifunction type MCDLT31SF
		RS485 communication type <sup>*2</sup> MCDLN31SG
		Basic type <sup>*2</sup> MCDLN31SE
Frame symbol		C-frame
Power supply capacity	(kVA)	0.9
Rated output	(W)	400
Rated torque	(N·m)	1.27
Continuous stall torque	(N·m)	1.27
Momentary Max. peak torque	(N·m)	3.82
Rated current	(A(rms))	4.6
Max. current	(A(o-p))	19.5
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4282	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.27
	With brake	0.30
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

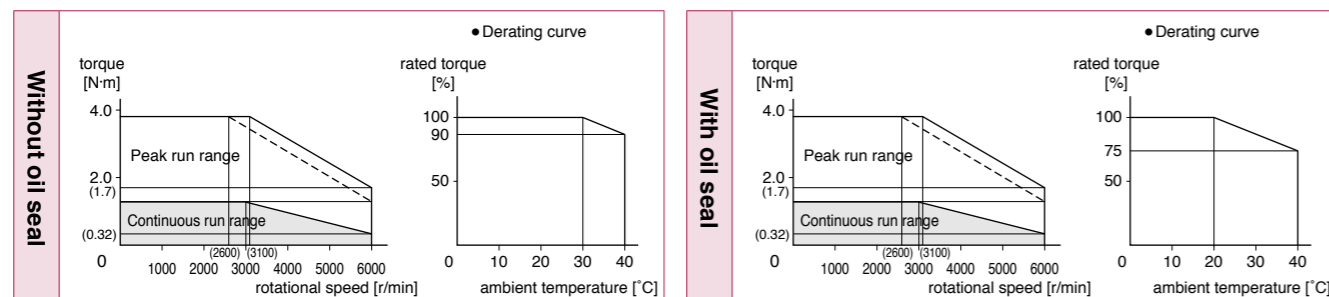
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.123	—	—	P.123	—	—
Connector type (IP67)	P.123	—	—	P.124	—	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF042L1□□
Applicable driver	Model No.	Multifunction type MBDLT25SF
		RS485 communication type <sup>*2</sup> MBDLN25SG
		Basic type <sup>*2</sup> MBDLN25SE
Frame symbol		B-frame
Power supply capacity	(kVA)	0.9
Rated output	(W)	400
Rated torque	(N·m)	1.27
Continuous stall torque	(N·m)	1.27
Momentary Max. peak torque	(N·m)	3.82
Rated current	(A(rms))	2.4
Max. current	(A(o-p))	10.2
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.27
	With brake	0.30
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

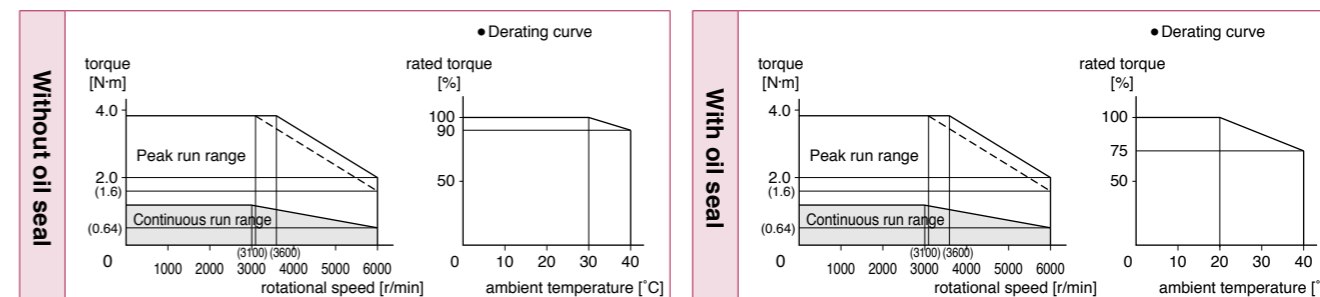
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.123	—	—	P.123	—	—
Connector type (IP67)	P.123	—	—	P.124	—	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF082L1□□
Applicable driver	Model No.	Multifunction type <b>MCDLT35SF</b>
		RS485 communication type <sup>*2</sup> <b>MCDLN35SG</b>
		Basic type <sup>*2</sup> <b>MCDLN35SE</b>
Frame symbol		C-frame
Power supply capacity (kVA)		1.8
Rated output (W)		750
Rated torque (N·m)		2.39
Continuous stall torque (N·m)		2.39
Momentary Max. peak torque (N·m)		7.16
Rated current (A(rms))		4.1
Max. current (A(o-p))		17.4
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.96
	With brake	1.06
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		20 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

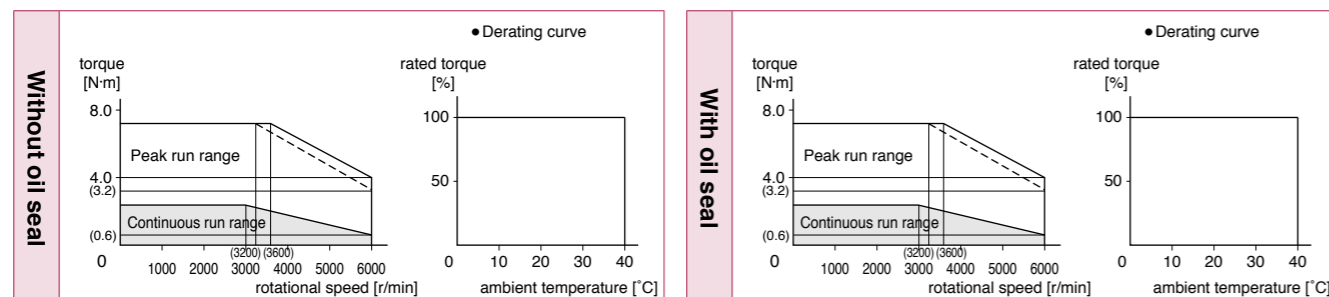
Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.124			P.124		
Connector type (IP67)	P.125			P.125		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF092L1□□
Applicable driver	Model No.	Multifunction type <b>MDDLTL45SF</b>
		RS485 communication type <sup>*2</sup> <b>MDDLNL45SG</b>
		Basic type <sup>*2</sup> <b>MDDLNL45SE</b>
Frame symbol		D-frame
Power supply capacity (kVA)		2.4
Rated output (W)		1000
Rated torque (N·m)		3.18
Continuous stall torque (N·m)		3.18
Momentary Max. peak torque (N·m)		9.55
Rated current (A(rms))		5.7
Max. current (A(o-p))		24.2
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	1.26
	With brake	1.36
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

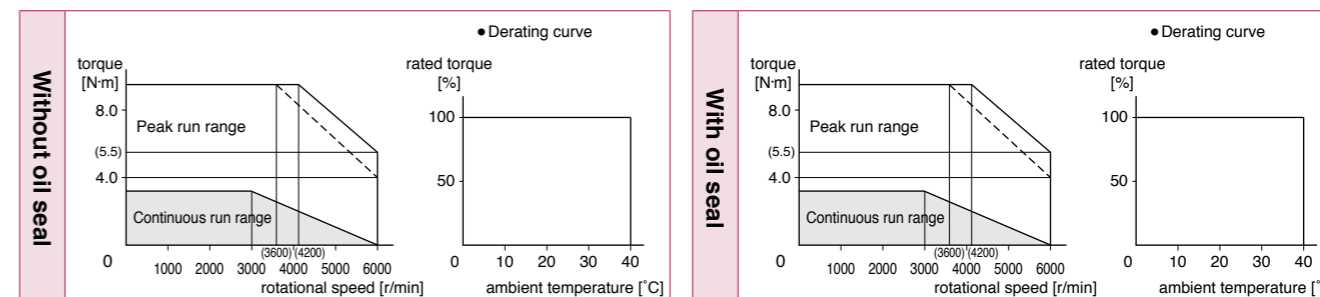
Static friction torque (N·m)	3.80 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.125			P.126		
Connector type (IP67)	P.126			P.126		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF102L1□□
Applicable driver	Model No.	Multifunction type <b>MDDL55SF</b>
	RS485 communication type <sup>2</sup>	<b>MDDL55SG</b>
	Basic type <sup>2</sup>	<b>MDDL55SE</b>
Frame symbol		D-frame
Power supply capacity	(kVA)	2.4
Rated output	(W)	1000
Rated torque	(N·m)	3.18
Continuous stall torque	(N·m)	3.82
Momentary Max. peak torque	(N·m)	9.55
Rated current	(A(rms))	6.6
Max. current	(A(o-p))	28
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	5000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	2.15
	With brake	2.47
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

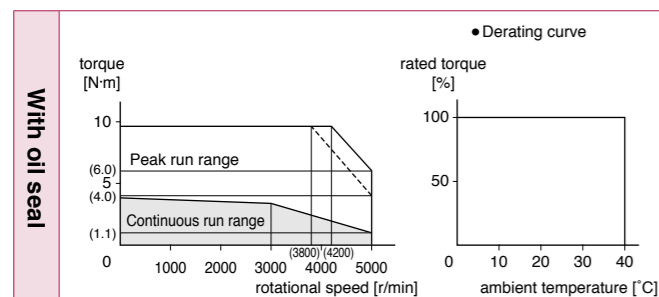
Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.127		—	P.127	
Encoder connector Small size (JN2) type	—	P.127		—	P.128	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF152L1□□
Applicable driver	Model No.	Multifunction type <b>MDDL55SF</b>
	RS485 communication type <sup>2</sup>	<b>MDDL55SG</b>
	Basic type <sup>2</sup>	<b>MDDL55SE</b>
Frame symbol		D-frame
Power supply capacity	(kVA)	2.9
Rated output	(W)	1500
Rated torque	(N·m)	4.77
Continuous stall torque	(N·m)	5.72
Momentary Max. peak torque	(N·m)	14.3
Rated current	(A(rms))	8.2
Max. current	(A(o-p))	35
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	5000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	3.10
	With brake	3.45
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

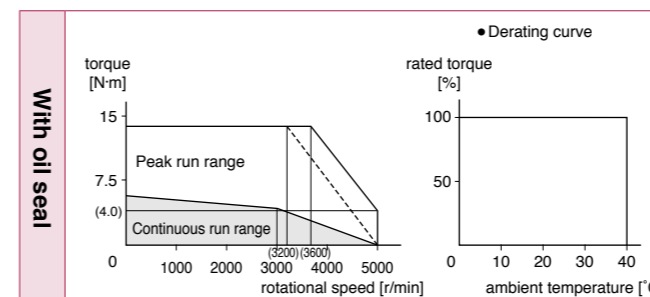
Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.128		—	P.128	
Encoder connector Small size (JN2) type	—	P.129		—	P.129	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF202L1□□
Applicable driver	Model No.	Multifunction type MEDLT83SF
	RS485 communication type <sup>2</sup>	MEDLN83SG
	Basic type <sup>2</sup>	MEDLN83SE
Frame symbol		E-frame
Power supply capacity (kVA)		3.8
Rated output (W)		2000
Rated torque (N·m)		6.37
Continuous stall torque (N·m)		7.64
Momentary Max. peak torque (N·m)		19.1
Rated current (A(rms))		11.3
Max. current (A(o-p))		48
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4285	No limit <sup>Note2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		5000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	4.06
	With brake	4.41
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		15 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

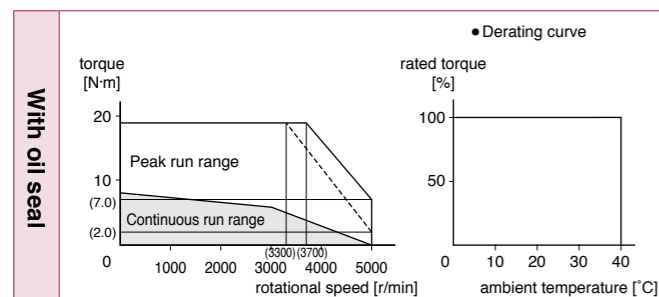
Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note4</sup>	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.129	—	—	P.130	—
Encoder connector Small size (JN2) type	—	P.130	—	—	P.130	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF302L1□□
Applicable driver	Model No.	Multifunction type MFDLTA3SF
	RS485 communication type <sup>2</sup>	MFDLNA3SG
	Basic type <sup>2</sup>	MFDLNA3SE
Frame symbol		F-frame
Power supply capacity (kVA)		5.2
Rated output (W)		3000
Rated torque (N·m)		9.55
Continuous stall torque (N·m)		11.0
Momentary Max. peak torque (N·m)		28.6
Rated current (A(rms))		18.1
Max. current (A(o-p))		77
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4285×2	No limit <sup>Note2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		5000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	7.04
	With brake	7.38
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		15 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

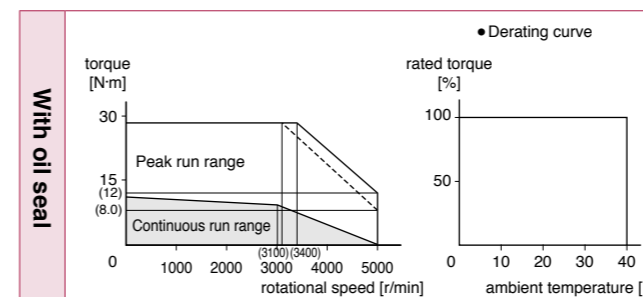
Static friction torque (N·m)	12.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) <sup>Note4</sup>	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.131	—	—	P.131	—
Encoder connector Small size (JN2) type	—	P.131	—	—	P.132	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF402L1□□
Applicable driver	Model No.	Multifunction type RS485 communication type <sup>2</sup> Basic type <sup>2</sup>
		MFDLTB3SF MFDLNB3SG MFDLNB3SE
	Frame symbol	F-frame
Power supply capacity	(kVA)	6.5
Rated output	(W)	4000
Rated torque	(N·m)	12.7
Continuous stall torque	(N·m)	15.2
Momentary Max. peak torque	(N·m)	38.2
Rated current	(A(rms))	19.6
Max. current	(A(o-p))	83
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x2	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	4500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	14.4
	With brake	15.6
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

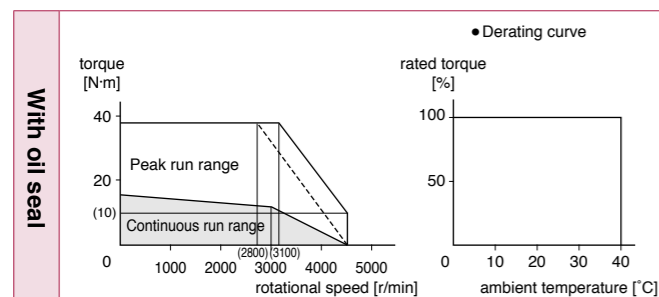
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.132		—	P.132	
Encoder connector Small size (JN2) type	—	P.133		—	P.133	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF502L1□□
Applicable driver	Model No.	Multifunction type RS485 communication type <sup>2</sup> Basic type <sup>2</sup>
		MFDLTB3SF MFDLNB3SG MFDLNB3SE
	Frame symbol	F-frame
Power supply capacity	(kVA)	7.8
Rated output	(W)	5000
Rated torque	(N·m)	15.9
Continuous stall torque	(N·m)	19.1
Momentary Max. peak torque	(N·m)	47.7
Rated current	(A(rms))	24.0
Max. current	(A(o-p))	102
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x2	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	4500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	19.0
	With brake	20.2
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

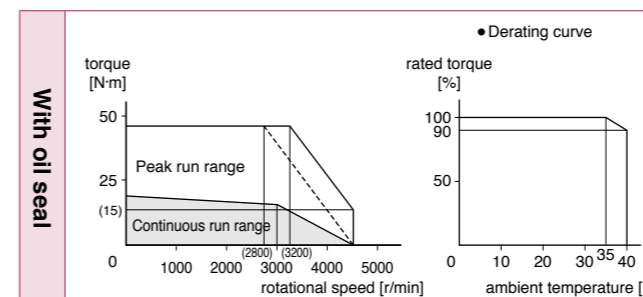
Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.133		—	P.134	
Encoder connector Small size (JN2) type	—	P.134		—	P.134	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.



Specifications

		AC100 V
Motor model <sup>1</sup>		<b>MQMF011L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MADLT11SF</b>
		RS485 communication type <sup>2</sup> <b>MADLN11SG</b>
		Basic type <sup>2</sup> <b>MADLN11SE</b>
Frame symbol		A-frame
Power supply capacity	(kVA)	0.4
Rated output	(W)	100
Rated torque	(N·m)	0.32
Continuous stall torque	(N·m)	0.33
Momentary Max. peak torque	(N·m)	1.11
Rated current	(A(rms))	1.6
Max. current	(A(o-p))	7.9
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4280	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.15
	With brake	0.18
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		20 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

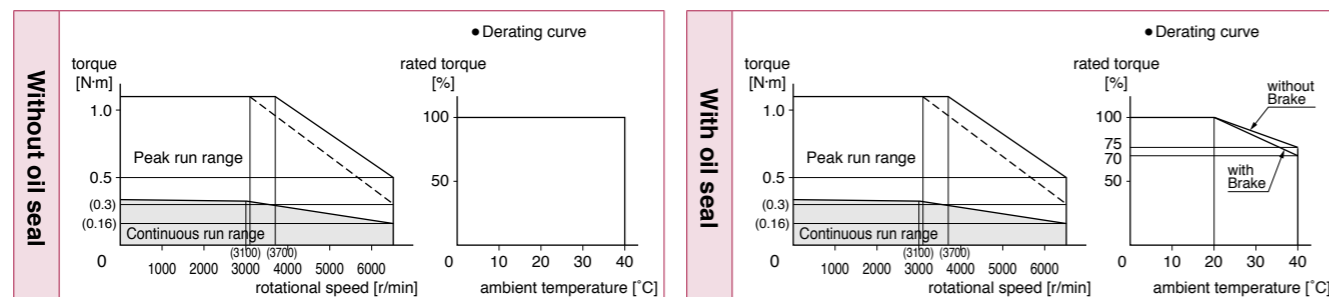
Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) <sup>Note4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.135	P.135	P.135	P.136	P.136	P.136
Connector type (IP67)	P.137	P.137	P.137	P.138	P.138	P.138

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		<b>MQMF012L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MADLT05SF</b>
		RS485 communication type <sup>2</sup> <b>MADLN05SG</b>
		Basic type <sup>2</sup> <b>MADLN05SE</b>
Frame symbol		A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	100
Rated torque	(N·m)	0.32
Continuous stall torque	(N·m)	0.33
Momentary Max. peak torque	(N·m)	1.11
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	5.5
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4281	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.15
	With brake	0.18
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		20 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

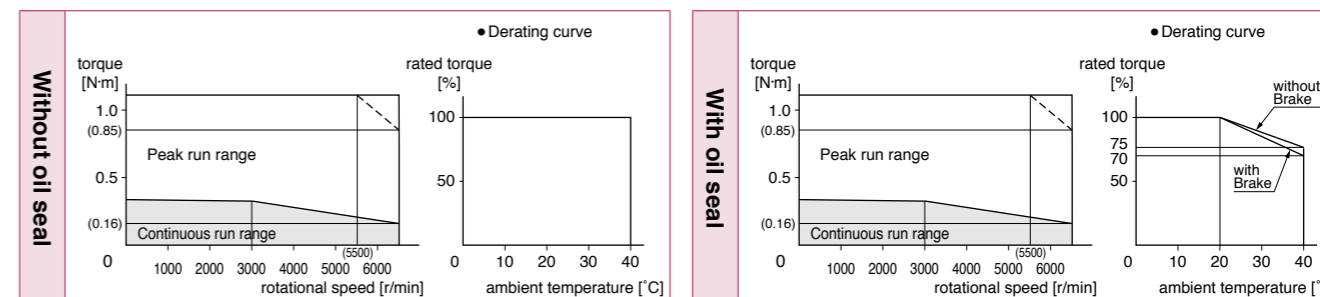
Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) <sup>Note4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.135	P.135	P.135	P.136	P.136	P.136
Connector type (IP67)	P.137	P.137	P.137	P.138	P.138	P.138

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC100 V
Motor model <sup>*1</sup>		<b>MQMF021L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MBDLT21SF</b>
		RS485 communication type <sup>*2</sup> <b>MBDLN21SG</b>
		Basic type <sup>*2</sup> <b>MBDLN21SE</b>
Frame symbol		B-frame
Power supply capacity (kVA)		0.5
Rated output (W)		200
Rated torque (N·m)		0.64
Continuous stall torque (N·m)		0.76
Momentary Max. peak torque (N·m)		2.23
Rated current (A(rms))		2.1
Max. current (A(o-p))		10.4
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.50
	With brake	0.59
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		20 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

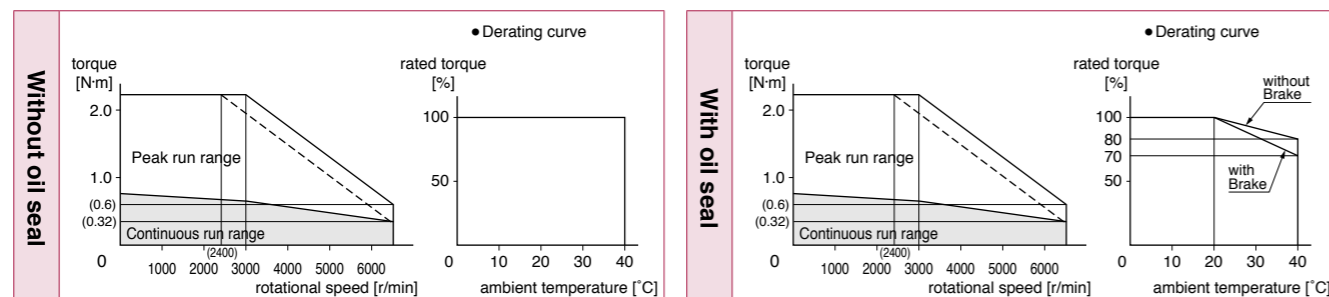
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.139	P.139	P.139	P.140	P.140	P.140
Connector type (IP67)	P.141	P.141	P.141	P.142	P.142	P.142

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		<b>MQMF022L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MADLT15SF</b>
		RS485 communication type <sup>*2</sup> <b>MADLN15SG</b>
		Basic type <sup>*2</sup> <b>MADLN15SE</b>
Frame symbol		A-frame
Power supply capacity (kVA)		0.5
Rated output (W)		200
Rated torque (N·m)		0.64
Continuous stall torque (N·m)		0.76
Momentary Max. peak torque (N·m)		2.23
Rated current (A(rms))		1.4
Max. current (A(o-p))		6.9
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.50
	With brake	0.59
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		20 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

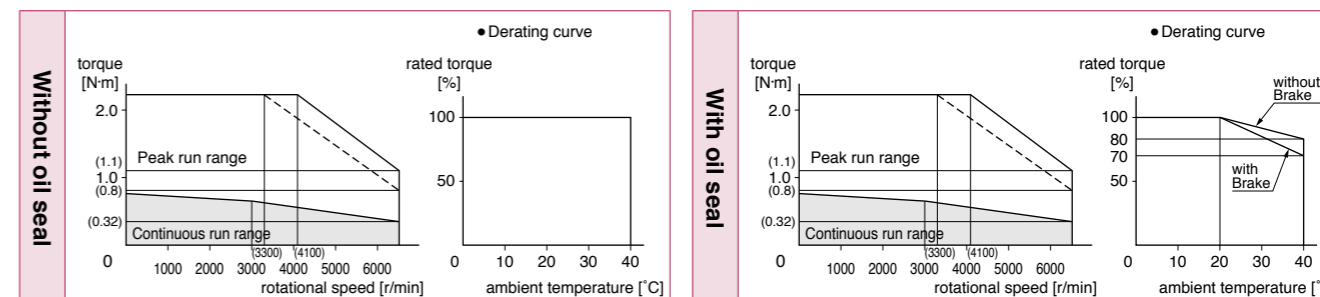
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.139	P.139	P.139	P.140	P.140	P.140
Connector type (IP67)	P.141	P.141	P.141	P.142	P.142	P.142

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC100 V
Motor model <sup>*1</sup>		<b>MQMF041L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MCDLT31SF</b>
		RS485 communication type <sup>*2</sup> <b>MCDLN31SG</b>
		Basic type <sup>*2</sup> <b>MCDLN31SE</b>
Frame symbol		C-frame
Power supply capacity	(kVA)	0.9
Rated output	(W)	400
Rated torque	(N·m)	1.27
Continuous stall torque	(N·m)	1.40
Momentary Max. peak torque	(N·m)	4.46
Rated current	(A(rms))	4.1
Max. current	(A(o-p))	20.3
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4282	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.98
	With brake	1.06
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		20 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

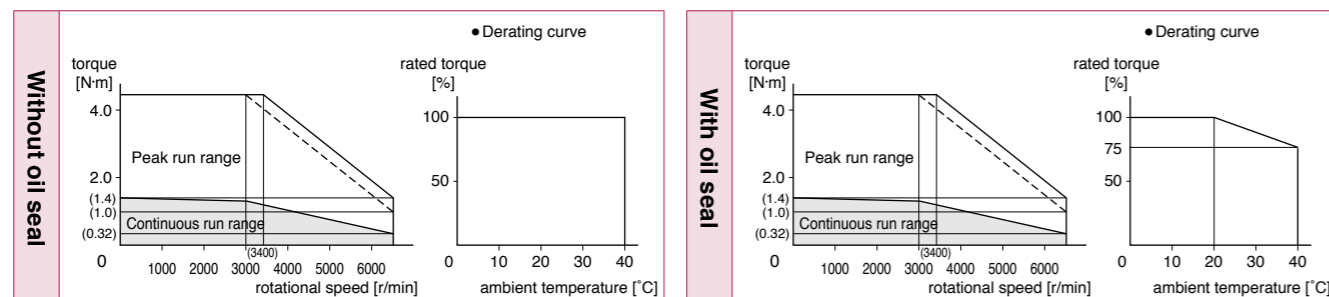
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.143	P.143	P.143	P.144	P.144	P.144
Connector type (IP67)	P.145	P.145	P.145	P.146	P.146	P.146

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		<b>MQMF042L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MBDLT25SF</b>
		RS485 communication type <sup>*2</sup> <b>MBDLN25SG</b>
		Basic type <sup>*2</sup> <b>MBDLN25SE</b>
Frame symbol		B-frame
Power supply capacity	(kVA)	0.9
Rated output	(W)	400
Rated torque	(N·m)	1.27
Continuous stall torque	(N·m)	1.40
Momentary Max. peak torque	(N·m)	4.46
Rated current	(A(rms))	2.1
Max. current	(A(o-p))	10.4
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.98
	With brake	1.06
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		20 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

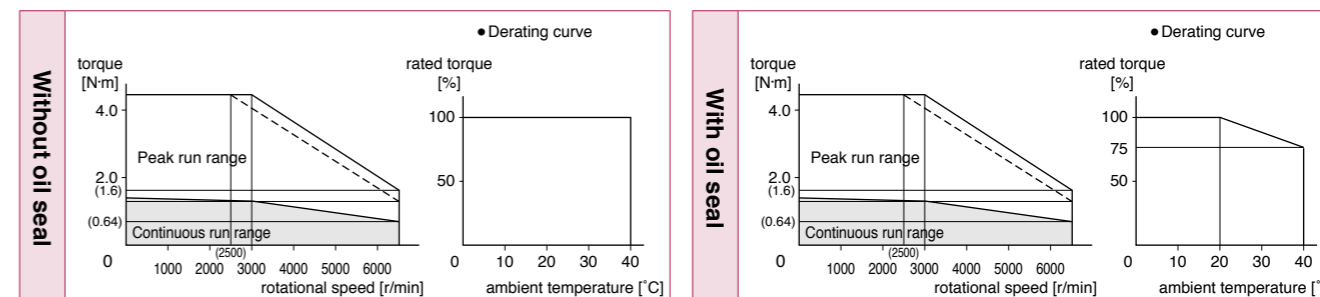
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.143	P.143	P.143	P.144	P.144	P.144
Connector type (IP67)	P.145	P.145	P.145	P.146	P.146	P.146

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC100 V
Motor model <sup>*1</sup>		MHPF5AZL1□□
Applicable driver	Model No.	MADLT01SF
	Multifunction type	MADLN01SG
	RS485 communication type <sup>*2</sup>	MADLN01SE
	Basic type <sup>*2</sup>	
	Frame symbol	A-frame
Power supply capacity	(kVA)	0.4
Rated output	(W)	50
Rated torque	(N·m)	0.16
Continuous stall torque	(N·m)	0.18
Momentary Max. peak torque	(N·m)	0.56
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	5.5
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4280	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.038
	With brake	0.042
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	49

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

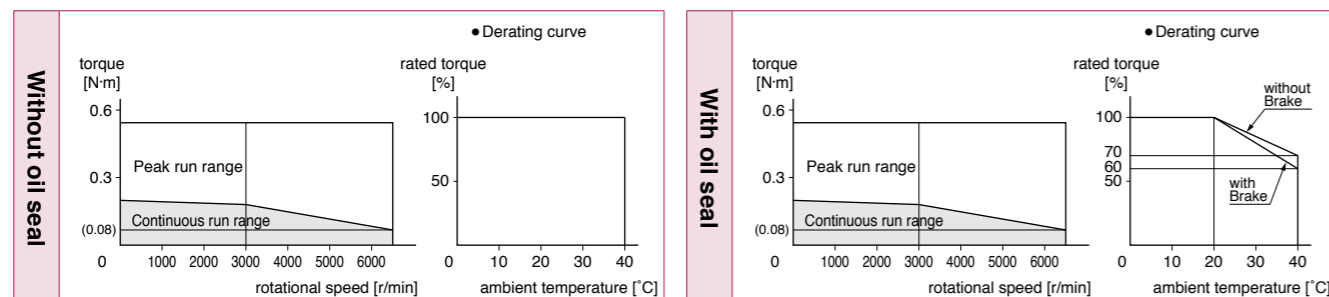
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.22.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.147	P.147	P.147	P.148	P.148	P.148
Connector type (IP67)	P.149	P.149	P.149	P.150	P.150	P.150

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MHPF5AZL1□□
Applicable driver	Model No.	MADLT05SF
	Multifunction type	MADLN05SG
	RS485 communication type <sup>*2</sup>	MADLN05SE
	Basic type <sup>*2</sup>	
	Frame symbol	A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	50
Rated torque	(N·m)	0.16
Continuous stall torque	(N·m)	0.18
Momentary Max. peak torque	(N·m)	0.56
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	5.5
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4281	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.038
	With brake	0.042
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	49

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

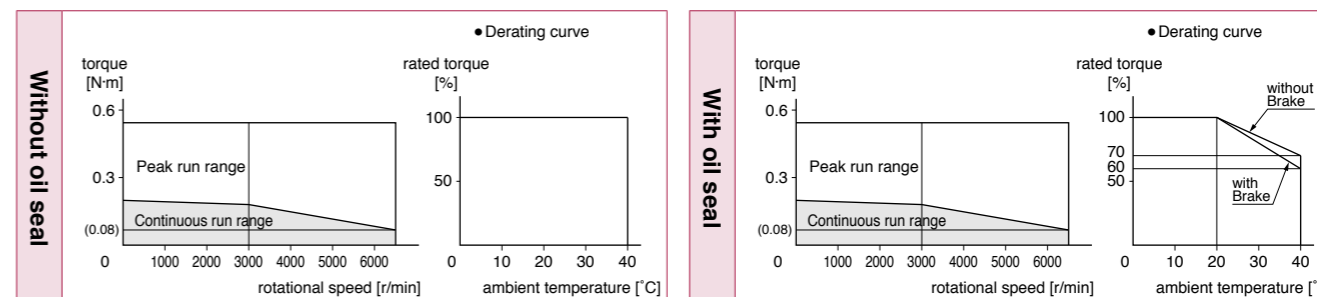
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.22.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.147	P.147	P.147	P.148	P.148	P.148
Connector type (IP67)	P.149	P.149	P.149	P.150	P.150	P.150

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC100 V
Motor model <sup>*1</sup>		MHPF011L1□□
Applicable driver	Model No.	MADLT11SF
	Multifunction type	MADLN11SG
	RS485 communication type <sup>*2</sup>	MADLN11SE
	Basic type <sup>*2</sup>	
	Frame symbol	A-frame
Power supply capacity	(kVA)	0.4
Rated output	(W)	100
Rated torque	(N·m)	0.32
Continuous stall torque	(N·m)	0.33
Momentary Max. peak torque	(N·m)	1.11
Rated current	(A(rms))	1.6
Max. current	(A(o-p))	7.9
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4280	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.071
	With brake	0.074
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

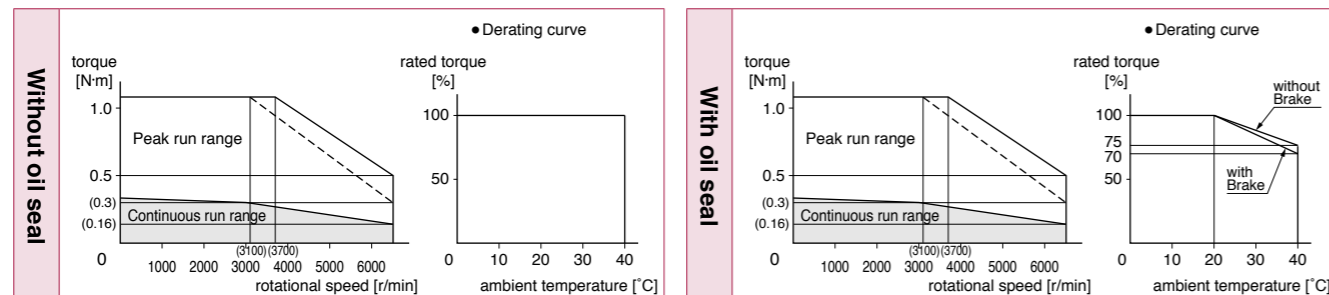
Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.151	P.151	P.151	P.152	P.152	P.152
Connector type (IP67)	P.153	P.153	P.153	P.154	P.154	P.154

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MHPF012L1□□
Applicable driver	Model No.	MADLT05SF
	Multifunction type	MADLN05SG
	RS485 communication type <sup>*2</sup>	MADLN05SE
	Basic type <sup>*2</sup>	
	Frame symbol	A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	100
Rated torque	(N·m)	0.32
Continuous stall torque	(N·m)	0.33
Momentary Max. peak torque	(N·m)	1.11
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	5.5
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4281	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.071
	With brake	0.074
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

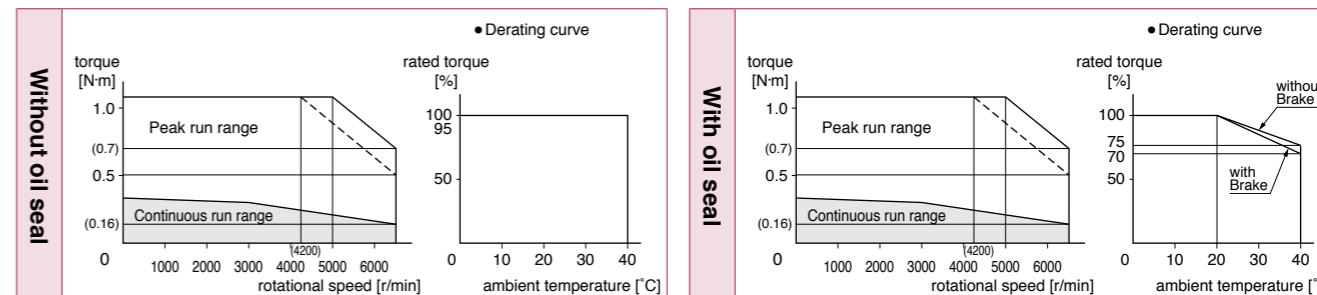
Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.151	P.151	P.151	P.152	P.152	P.152
Connector type (IP67)	P.153	P.153	P.153	P.154	P.154	P.154

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC100 V
Motor model <sup>1</sup>		MHPF021L1□□
Applicable driver	Model No.	Multifunction type MBDLT21SF
		RS485 communication type <sup>2</sup> MBDLN21SG
		Basic type <sup>2</sup> MBDLN21SE
Frame symbol		B-frame
Power supply capacity (kVA)		0.5
Rated output (W)		200
Rated torque (N·m)		0.64
Continuous stall torque (N·m)		0.76
Momentary Max. peak torque (N·m)		2.23
Rated current (A(rms))		2.1
Max. current (A(o-p))		10.4
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4283	No limit <sup>Note2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.29
	With brake	0.31
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

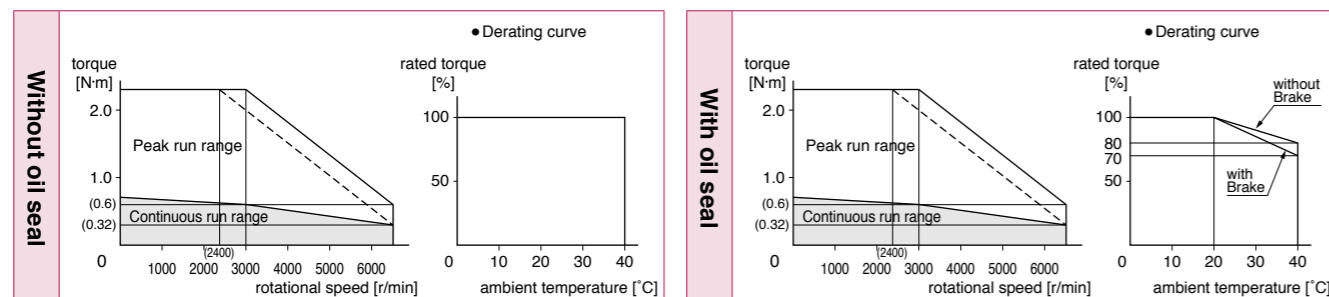
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.155	P.155	P.155	P.156	P.156	P.156
Connector type (IP67)	P.157	P.157	P.157	P.158	P.158	P.158

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHPF022L1□□
Applicable driver	Model No.	Multifunction type MADLT15SF
		RS485 communication type <sup>2</sup> MADLN15SG
		Basic type <sup>2</sup> MADLN15SE
Frame symbol		A-frame
Power supply capacity (kVA)		0.5
Rated output (W)		200
Rated torque (N·m)		0.64
Continuous stall torque (N·m)		0.76
Momentary Max. peak torque (N·m)		2.23
Rated current (A(rms))		1.4
Max. current (A(o-p))		6.9
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4283	No limit <sup>Note2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.29
	With brake	0.31
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

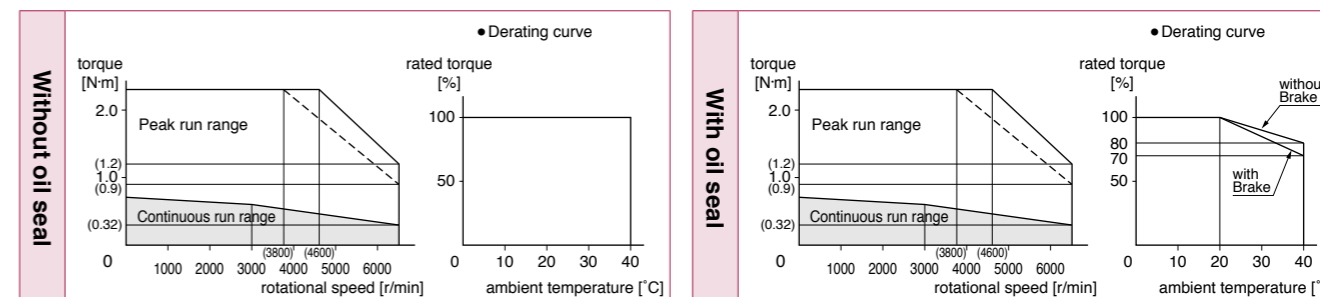
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.155	P.155	P.155	P.156	P.156	P.156
Connector type (IP67)	P.157	P.157	P.157	P.158	P.158	P.158

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC100 V
Motor model <sup>1</sup>		MHMF041L1□□
Applicable driver	Model No.	Multifunction type MCDLT31SF
		RS485 communication type <sup>2</sup> MCDLN31SG
		Basic type <sup>2</sup> MCDLN31SE
Frame symbol		C-frame
Power supply capacity	(kVA)	0.9
Rated output	(W)	400
Rated torque	(N·m)	1.27
Continuous stall torque	(N·m)	1.40
Momentary Max. peak torque	(N·m)	4.46
Rated current	(A(rms))	4.1
Max. current	(A(o-p))	20.3
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4282	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.56
	With brake	0.58
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

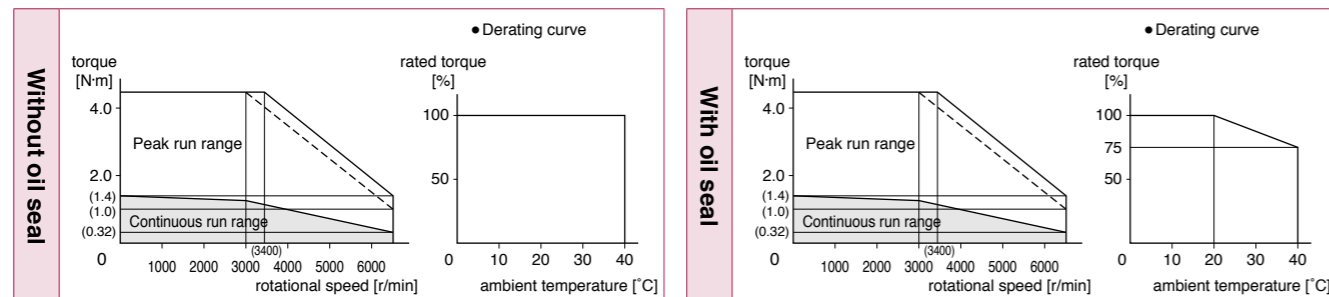
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.159	P.159	P.159	P.160	P.160	P.160
Connector type (IP67)	P.161	P.161	P.161	P.162	P.162	P.162

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF042L1□□
Applicable driver	Model No.	Multifunction type MBDLT25SF
		RS485 communication type <sup>2</sup> MBDLN25SG
		Basic type <sup>2</sup> MBDLN25SE
Frame symbol		B-frame
Power supply capacity	(kVA)	0.9
Rated output	(W)	400
Rated torque	(N·m)	1.27
Continuous stall torque	(N·m)	1.40
Momentary Max. peak torque	(N·m)	4.46
Rated current	(A(rms))	2.1
Max. current	(A(o-p))	10.4
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4283	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.56
	With brake	0.58
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

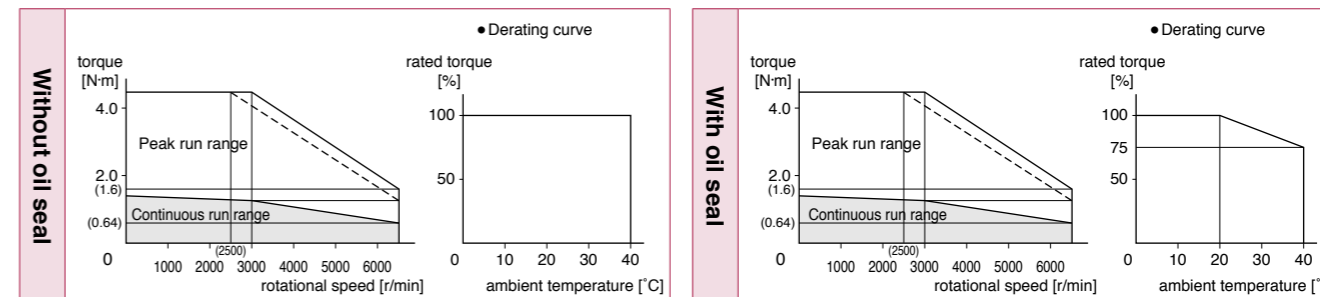
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.159	P.159	P.159	P.160	P.160	P.160
Connector type (IP67)	P.161	P.161	P.161	P.162	P.162	P.162

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MHPF082L1□□
Applicable driver	Model No.	MCDLT35SF
	Multifunction type	MCDLN35SG
	RS485 communication type <sup>*2</sup>	MCDLN35SE
Frame symbol		C-frame
Power supply capacity	(kVA)	1.8
Rated output	(W)	750
Rated torque	(N·m)	2.39
Continuous stall torque	(N·m)	2.86
Momentary Max. peak torque	(N·m)	8.36
Rated current	(A(rms))	3.8
Max. current	(A(o-p))	18.8
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	1.56
	With brake	1.66
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		20 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

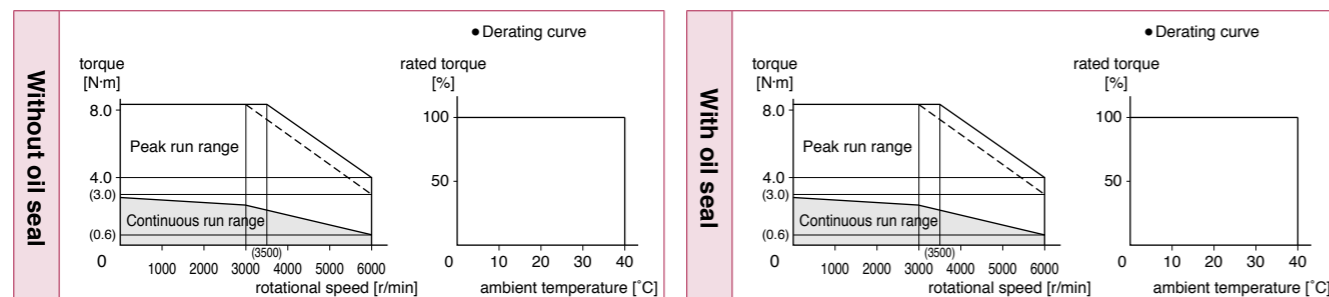
Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.163	P.163	P.163	P.164	P.164	P.164
Connector type (IP67)	P.165	P.165	P.165	P.166	P.166	P.166

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MHPF092L1□□
Applicable driver	Model No.	MDDL55SF
	Multifunction type	MDDL55SG
	RS485 communication type <sup>*2</sup>	MDDL55SE
Frame symbol		D-frame
Power supply capacity	(kVA)	2.4
Rated output	(W)	1000
Rated torque	(N·m)	3.18
Continuous stall torque	(N·m)	3.34
Momentary Max. peak torque	(N·m)	11.1
Rated current	(A(rms))	5.7
Max. current	(A(o-p))	28.2
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	2.03
	With brake	2.13
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

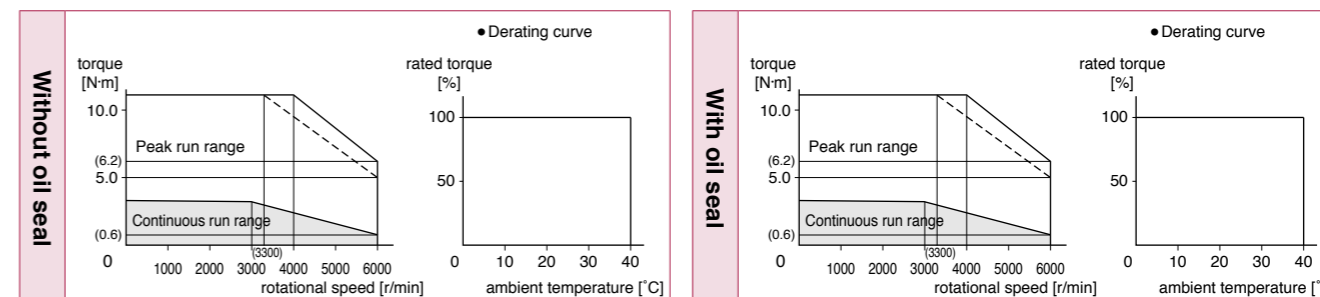
Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.167	P.167	P.167	P.168	P.168	P.168
Connector type (IP67)	P.169	P.169	P.169	P.170	P.170	P.170

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.



Specifications

		AC200 V
Motor model <sup>1</sup>		MHPF102L1□□
Applicable driver	Model No.	MDDL45SF
	Multifunction type	MDDL45SG
	RS485 communication type <sup>2</sup>	MDDL45SE
	Basic type <sup>2</sup>	
	Frame symbol	D-frame
Power supply capacity	(kVA)	2.4
Rated output	(W)	1000
Rated torque	(N·m)	4.77
Continuous stall torque	(N·m)	5.25
Momentary Max. peak torque	(N·m)	14.3
Rated current	(A(rms))	5.2
Max. current	(A(o-p))	22
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	22.9
	With brake	24.1
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

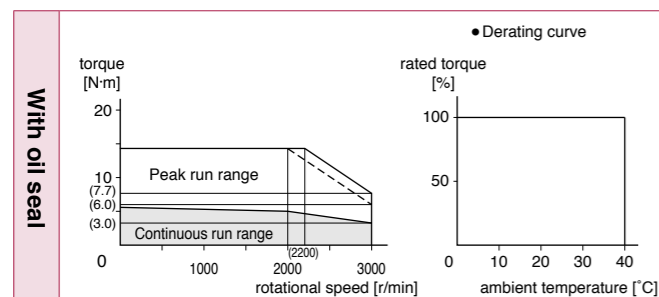
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.171		—	P.171	
Encoder connector Small size (JN2) type	—	P.171		—	P.172	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHPF152L1□□
Applicable driver	Model No.	MDDL55SF
	Multifunction type	MDDL55SG
	RS485 communication type <sup>2</sup>	MDDL55SE
	Basic type <sup>2</sup>	
	Frame symbol	D-frame
Power supply capacity	(kVA)	2.9
Rated output	(W)	1500
Rated torque	(N·m)	7.16
Continuous stall torque	(N·m)	7.52
Momentary Max. peak torque	(N·m)	21.5
Rated current	(A(rms))	8.0
Max. current	(A(o-p))	34
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	33.4
	With brake	34.6
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

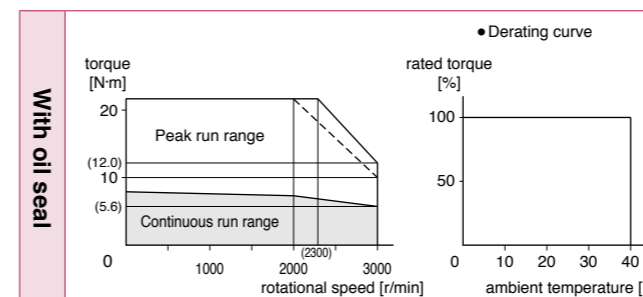
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.172		—	P.172	
Encoder connector Small size (JN2) type	—	P.173		—	P.173	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHPF202L1□□
Applicable driver	Model No.	MEDLT83SF
	Multifunction type	MEDLN83SG
	RS485 communication type <sup>2</sup>	MEDLN83SE
	Basic type <sup>2</sup>	
	Frame symbol	E-frame
Power supply capacity	(kVA)	3.8
Rated output	(W)	2000
Rated torque	(N·m)	9.55
Continuous stall torque	(N·m)	11.5
Momentary Max. peak torque	(N·m)	28.6
Rated current	(A(rms))	12.5
Max. current	(A(o-p))	53
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	55.7
	With brake	61.0
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

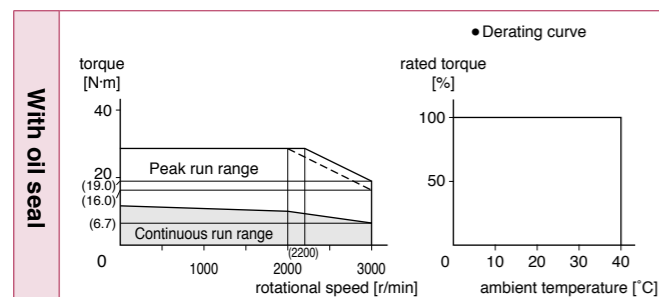
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) <sup>Note)4</sup>	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.173		—	P.174	
Encoder connector Small size (JN2) type	—	P.174		—	P.174	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHPF302L1□□
Applicable driver	Model No.	MFDLTA3SF
	Multifunction type	MFDLNA3SG
	RS485 communication type <sup>2</sup>	MFDLNA3SE
	Basic type <sup>2</sup>	
	Frame symbol	F-frame
Power supply capacity	(kVA)	5.2
Rated output	(W)	3000
Rated torque	(N·m)	14.3
Continuous stall torque	(N·m)	17.2
Momentary Max. peak torque	(N·m)	43.0
Rated current	(A(rms))	17.0
Max. current	(A(o-p))	72
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285×2	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	85.3
	With brake	90.7
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

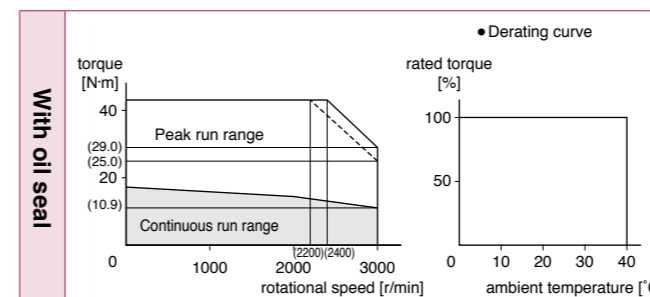
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) <sup>Note)4</sup>	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.175		—	P.175	
Encoder connector Small size (JN2) type	—	P.175		—	P.176	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHPF402L1□□
Applicable driver	Model No.	MFDLTB3SF
	Multifunction type	MFDLNB3SG
	RS485 communication type <sup>2</sup>	MFDLNB3SE
	Basic type <sup>2</sup>	
	Frame symbol	F-frame
Power supply capacity	(kVA)	6.5
Rated output	(W)	4000
Rated torque	(N·m)	19.1
Continuous stall torque	(N·m)	22.0
Momentary Max. peak torque	(N·m)	57.3
Rated current	(A(rms))	20
Max. current	(A(o-p))	85
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4285x2	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	104
	With brake	110
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) <sup>Note4</sup>	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note1 to Note4, refer to P.303.

• Dimensions of Driver, refer to P.59.

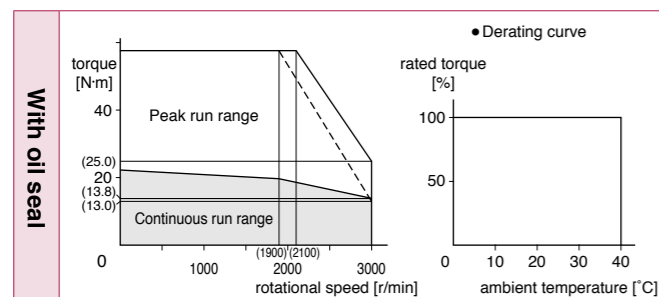
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.22.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.176		—	P.176	
Encoder connector Small size (JN2) type	—	P.177		—	P.177	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHPF502L1□□
Applicable driver	Model No.	MFDLTB3SF
	Multifunction type	MFDLNB3SG
	RS485 communication type <sup>2</sup>	MFDLNB3SE
	Basic type <sup>2</sup>	
	Frame symbol	F-frame
Power supply capacity	(kVA)	7.8
Rated output	(W)	5000
Rated torque	(N·m)	23.9
Continuous stall torque	(N·m)	26.3
Momentary Max. peak torque	(N·m)	71.6
Rated current	(A(rms))	23.3
Max. current	(A(o-p))	99
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4285x2	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	146
	With brake	151
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) <sup>Note4</sup>	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note1 to Note4, refer to P.303.

• Dimensions of Driver, refer to P.59.

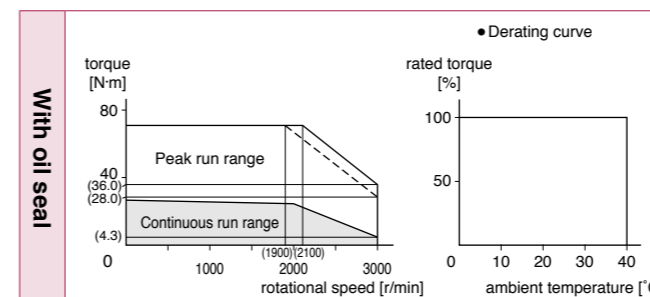
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.22.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.177		—	P.178	
Encoder connector Small size (JN2) type	—	P.178		—	P.178	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF752L1□□
Applicable driver	Model No.	Multifunction type
		RS485 communication type <sup>2</sup>
		Basic type <sup>2</sup>
Frame symbol		G-frame
Power supply capacity (kVA)		11
Rated output (W)		7500
Rated torque (N·m)		47.8
Continuous stall torque (N·m)		47.8
Momentary Max. peak torque (N·m)		125
Rated current (A(rms))		40.2
Max. current (A(o-p))		154
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x3	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		1500
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	272
	With brake	279
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

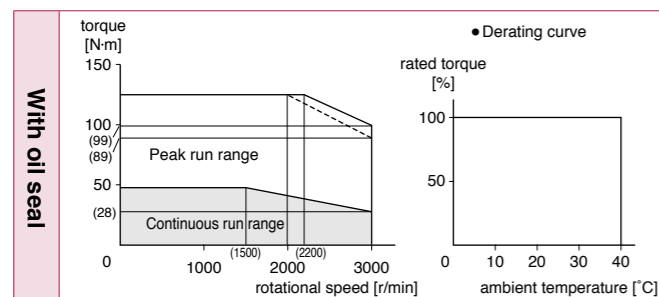
Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) <sup>Note)4</sup>	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.60.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.179	—	—	P.179	—
Encoder connector Small size (JN2) type	—	P.179	—	—	P.180	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MDMF102L1□□
Applicable driver	Model No.	Multifunction type
		RS485 communication type <sup>2</sup>
		Basic type <sup>2</sup>
Frame symbol		D-frame
Power supply capacity (kVA)		2.4
Rated output (W)		1000
Rated torque (N·m)		4.77
Continuous stall torque (N·m)		5.25
Momentary Max. peak torque (N·m)		14.3
Rated current (A(rms))		5.2
Max. current (A(o-p))		22
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		2000
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	6.18
	With brake	7.40
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

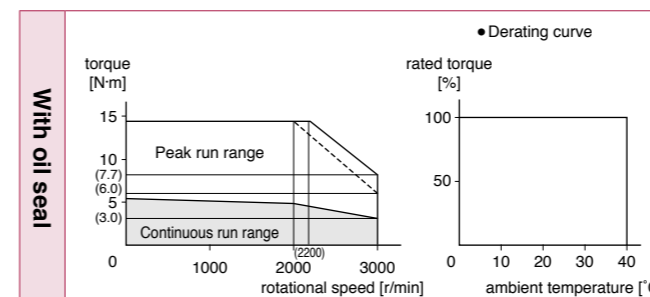
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.180	—	—	P.180	—
Encoder connector Small size (JN2) type	—	P.181	—	—	P.181	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		<b>MDMF152L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MDDL55SF</b>
	RS485 communication type <sup>2</sup>	<b>MDDL55SG</b>
	Basic type <sup>2</sup>	<b>MDDL55SE</b>
Frame symbol		D-frame
Power supply capacity (kVA)		2.9
Rated output (W)		1500
Rated torque (N·m)		7.16
Continuous stall torque (N·m)		7.52
Momentary Max. peak torque (N·m)		21.5
Rated current (A(rms))		8.0
Max. current (A(o-p))		34
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		2000
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	9.16
	With brake	10.4
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

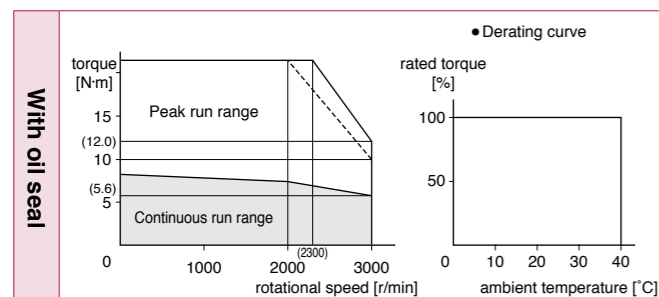
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.181		—	P.182	
Encoder connector Small size (JN2) type	—	P.182		—	P.182	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		<b>MDMF202L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MEDLT83SF</b>
	RS485 communication type <sup>2</sup>	<b>MEDLN83SG</b>
	Basic type <sup>2</sup>	<b>MEDLN83SE</b>
Frame symbol		E-frame
Power supply capacity (kVA)		3.8
Rated output (W)		2000
Rated torque (N·m)		9.55
Continuous stall torque (N·m)		10.0
Momentary Max. peak torque (N·m)		28.6
Rated current (A(rms))		9.9
Max. current (A(o-p))		42
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		2000
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	12.1
	With brake	13.3
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

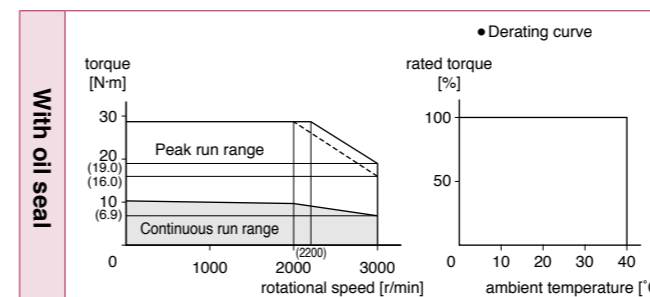
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.183		—	P.183	
Encoder connector Small size (JN2) type	—	P.183		—	P.184	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		<b>MDMF302L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MFDLTA3SF</b>
	RS485 communication type <sup>2</sup>	<b>MFDLNA3SG</b>
	Basic type <sup>2</sup>	<b>MFDLNA3SE</b>
Frame symbol		F-frame
Power supply capacity (kVA)		5.2
Rated output (W)		3000
Rated torque (N·m)		14.3
Continuous stall torque (N·m)		15.0
Momentary Max. peak torque (N·m)		43.0
Rated current (A(rms))		16.4
Max. current (A(o-p))		70
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x2	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		2000
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	18.6
	With brake	19.6
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

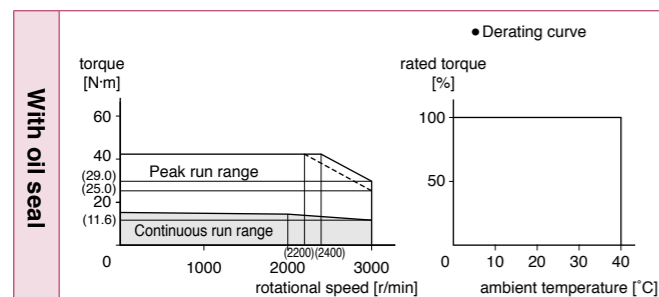
Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.184		—	P.184	
Encoder connector Small size (JN2) type	—	P.185		—	P.185	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		<b>MDMF402L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MFDLTB3SF</b>
	RS485 communication type <sup>2</sup>	<b>MFDLNB3SG</b>
	Basic type <sup>2</sup>	<b>MFDLNB3SE</b>
Frame symbol		F-frame
Power supply capacity (kVA)		6.5
Rated output (W)		4000
Rated torque (N·m)		19.1
Continuous stall torque (N·m)		22.0
Momentary Max. peak torque (N·m)		57.3
Rated current (A(rms))		20.0
Max. current (A(o-p))		85
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x2	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		2000
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	46.9
	With brake	52.3
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

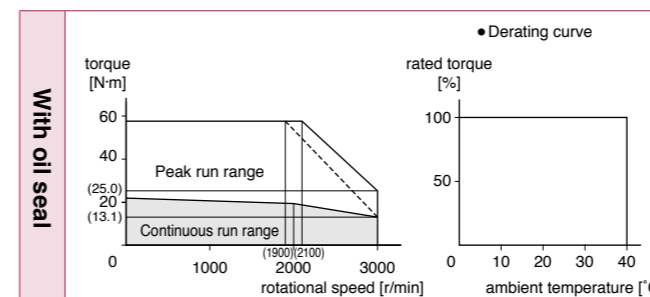
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) <sup>Note)4</sup>	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.185		—	P.186	
Encoder connector Small size (JN2) type	—	P.186		—	P.186	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		<b>MDMF502L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MFDLTB3SF</b>
	RS485 communication type <sup>2</sup>	<b>MFDLNB3SG</b>
	Basic type <sup>2</sup>	<b>MFDLNB3SE</b>
Frame symbol		F-frame
Power supply capacity	(kVA)	7.8
Rated output	(W)	5000
Rated torque	(N·m)	23.9
Continuous stall torque	(N·m)	26.3
Momentary Max. peak torque	(N·m)	71.6
Rated current	(A(rms))	23.3
Max. current	(A(o-p))	99
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4285x2	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	58.2
	With brake	63.0
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

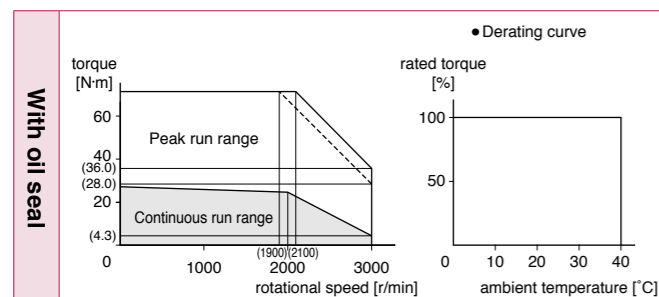
Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) <sup>Note4</sup>	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.187	—	—	P.187	—
Encoder connector Small size (JN2) type	—	P.187	—	—	P.188	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		<b>MDMF752L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MGDLTC3SF</b>
	RS485 communication type <sup>2</sup>	—
	Basic type <sup>2</sup>	—
Frame symbol		G-frame
Power supply capacity	(kVA)	11
Rated output	(W)	7500
Rated torque	(N·m)	47.8
Continuous stall torque	(N·m)	47.8
Momentary Max. peak torque	(N·m)	125
Rated current	(A(rms))	40.2
Max. current	(A(o-p))	154
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4285x3	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	122
	With brake	127
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

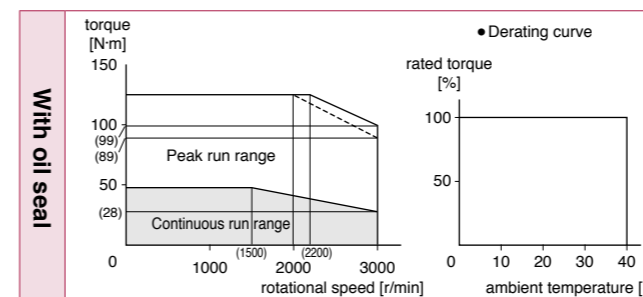
Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) <sup>Note4</sup>	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.60.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.188	—	—	P.188	—
Encoder connector Small size (JN2) type	—	P.189	—	—	P.189	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MDMFC12L1□□
Applicable driver	Model No.	MHDLTE3SF
	Multifunction type	—
	RS485 communication type <sup>2</sup>	—
	Basic type <sup>2</sup>	—
	Frame symbol	H-frame
Power supply capacity	(kVA)	15
Rated output	(W)	11000
Rated torque	(N·m)	70.0
Continuous stall torque	(N·m)	70.0
Momentary Max. peak torque	(N·m)	175
Rated current	(A(rms))	57.1
Max. current	(A(o-p))	209
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x6	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	2000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	205
	With brake	214
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

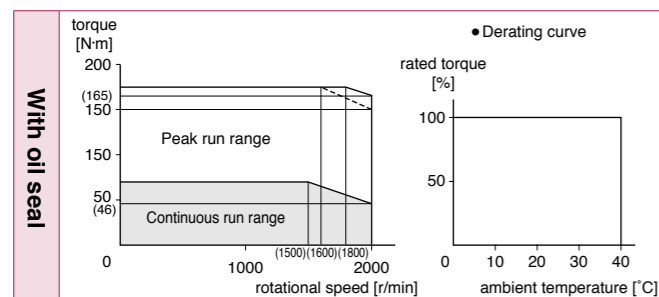
Static friction torque (N·m)	100 or more
Engaging time (ms)	300 or less
Releasing time (ms) <sup>Note)4</sup>	140 or less
Exciting current (DC) (A)	1.08
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	2646
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.61.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.189	—	—	P.190	—
Encoder connector Small size (JN2) type	—	P.190	—	—	P.190	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MDMFC52L1□□
Applicable driver	Model No.	MHDLTE3SF
	Multifunction type	—
	RS485 communication type <sup>2</sup>	—
	Basic type <sup>2</sup>	—
	Frame symbol	H-frame
Power supply capacity	(kVA)	20
Rated output	(W)	15000
Rated torque	(N·m)	95.5
Continuous stall torque	(N·m)	95.5
Momentary Max. peak torque	(N·m)	224
Rated current	(A(rms))	65.8
Max. current	(A(o-p))	225
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x6	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	2000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	280
	With brake	289
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

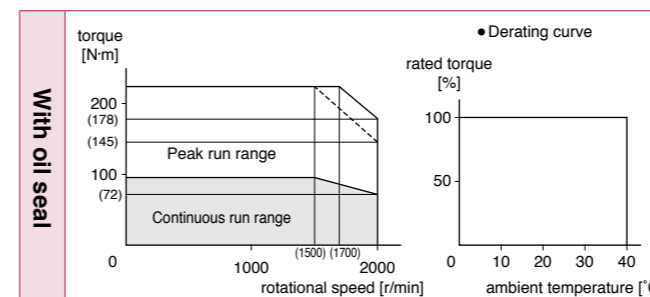
Static friction torque (N·m)	100 or more
Engaging time (ms)	300 or less
Releasing time (ms) <sup>Note)4</sup>	140 or less
Exciting current (DC) (A)	1.08
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	2646
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.61.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.191	—	—	P.191	—
Encoder connector Small size (JN2) type	—	P.191	—	—	P.192	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.



Specifications

		AC200 V
Motor model *1		<b>MDMFD22L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MHDLTF3SF</b>
		RS485 communication type *2 —
		Basic type *2 —
Frame symbol		H-frame
Power supply capacity	(kVA)	28
Rated output	(W)	22000
Rated torque	(N·m)	140
Continuous stall torque	(N·m)	140
Momentary Max. peak torque	(N·m)	350
Rated current	(A(rms))	80.9
Max. current	(A(o-p))	294
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285x6	No limit Note2
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	2000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	431
	With brake	455
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

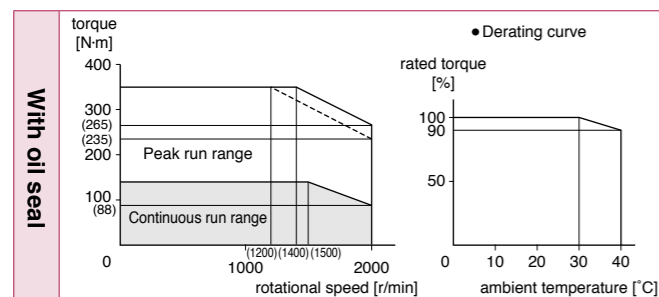
Static friction torque (N·m)	200 or more
Engaging time (ms)	300 or less
Releasing time (ms) Note4	150 or less
Exciting current (DC) (A)	1.72
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	2646
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.61.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.192	—	—	P.192	—
Encoder connector Small size (JN2) type	—	P.193	—	—	P.193	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model *1		<b>MGMF092L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MDDL45SF</b>
		RS485 communication type *2 <b>MDDL45SG</b>
		Basic type *2 <b>MDDL45SE</b>
Frame symbol		D-frame
Power supply capacity	(kVA)	2.0
Rated output	(W)	850
Rated torque	(N·m)	5.41
Continuous stall torque	(N·m)	5.41
Momentary Max. peak torque	(N·m)	14.3
Rated current	(A(rms))	5.9
Max. current	(A(o-p))	22
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4284	No limit Note2
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	6.18
	With brake	7.40
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

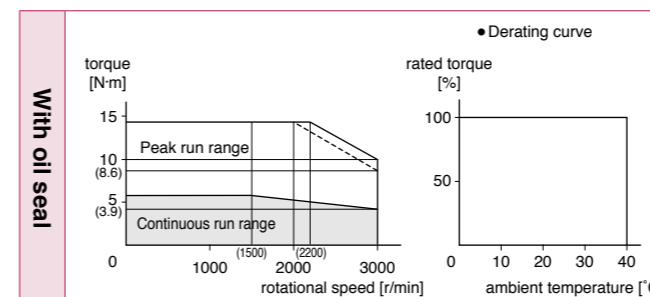
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.193	—	—	P.194	—
Encoder connector Small size (JN2) type	—	P.194	—	—	P.194	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MGMF132L1□□
Applicable driver	Model No.	Multifunction type <b>MDDL55SF</b>
	RS485 communication type <sup>2</sup>	<b>MDDL55SG</b>
	Basic type <sup>2</sup>	<b>MDDL55SE</b>
Frame symbol		D-frame
Power supply capacity (kVA)		2.6
Rated output (W)		1300
Rated torque (N·m)		8.28
Continuous stall torque (N·m)		8.28
Momentary Max. peak torque (N·m)		23.3
Rated current (A(rms))		9.3
Max. current (A(o-p))		37
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		1500
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	9.16
	With brake	10.4
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

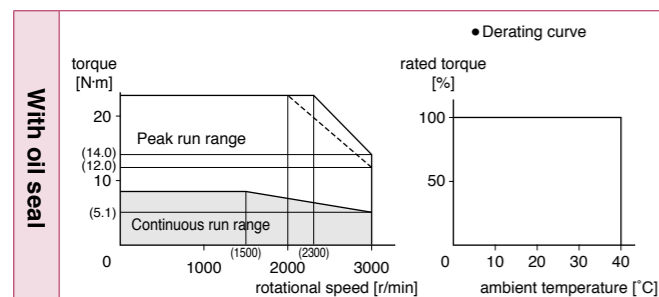
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.195		—	P.195	
Encoder connector Small size (JN2) type	—	P.195		—	P.196	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model <sup>1</sup>		MGMF182L1□□
Applicable driver	Model No.	Multifunction type <b>MEDLT83SF</b>
	RS485 communication type <sup>2</sup>	<b>MEDLN83SG</b>
	Basic type <sup>2</sup>	<b>MEDLN83SE</b>
Frame symbol		E-frame
Power supply capacity (kVA)		3.4
Rated output (W)		1800
Rated torque (N·m)		11.5
Continuous stall torque (N·m)		11.5
Momentary Max. peak torque (N·m)		28.7
Rated current (A(rms))		11.8
Max. current (A(o-p))		42
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285×2	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		1500
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	12.1
	With brake	13.3
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

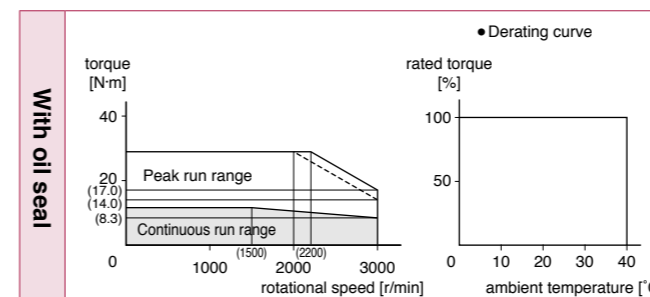
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.196		—	P.196	
Encoder connector Small size (JN2) type	—	P.197		—	P.197	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model *1		<b>MGMF242L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MEDLT93SF</b>
		RS485 communication type *2 <b>MEDLN93SG</b>
		Basic type *2 <b>MEDLN93SE</b>
Frame symbol		E-frame
Power supply capacity	(kVA)	4.5
Rated output	(W)	2400
Rated torque	(N·m)	15.3
Continuous stall torque	(N·m)	15.3
Momentary Max. peak torque	(N·m)	45.2
Rated current	(A(rms))	16.0
Max. current	(A(o-p))	67
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285x2	No limit Note2
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	46.9
	With brake	52.3
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

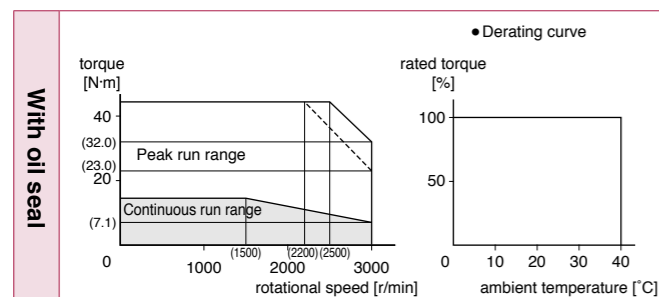
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.197		—	P.198	
Encoder connector Small size (JN2) type	—	P.198		—	P.198	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model *1		<b>MGMF292L1</b> □□
Applicable driver	Model No.	Multifunction type <b>MFDLTB3SF</b>
		RS485 communication type *2 <b>MFDLNB3SG</b>
		Basic type *2 <b>MFDLNB3SE</b>
Frame symbol		F-frame
Power supply capacity	(kVA)	5.0
Rated output	(W)	2900
Rated torque	(N·m)	18.5
Continuous stall torque	(N·m)	18.5
Momentary Max. peak torque	(N·m)	45.2
Rated current	(A(rms))	19.3
Max. current	(A(o-p))	67
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285x2	No limit Note2
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	46.9
	With brake	52.3
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

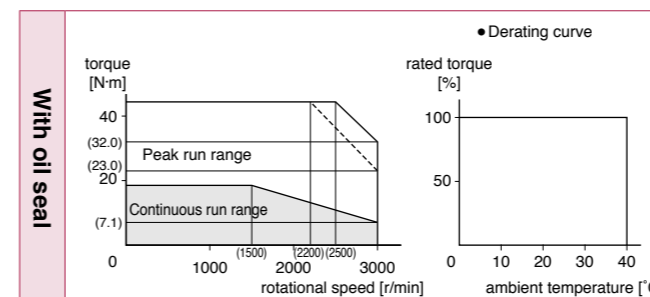
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.199		—	P.199	
Encoder connector Small size (JN2) type	—	P.199		—	P.200	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model *1		MGMF442L1□□
Applicable driver	Model No.	MFDLTB3SF
	Multifunction type	MFDLNB3SG
	RS485 communication type *2	MFDLNB3SE
	Basic type *2	
	Frame symbol	F-frame
Power supply capacity	(kVA)	7.0
Rated output	(W)	4400
Rated torque	(N·m)	28.0
Continuous stall torque	(N·m)	28.0
Momentary Max. peak torque	(N·m)	70.0
Rated current	(A(rms))	27.2
Max. current	(A(o-p))	96
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285x2	No limit Note2
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	58.2
	With brake	63.0
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note4	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

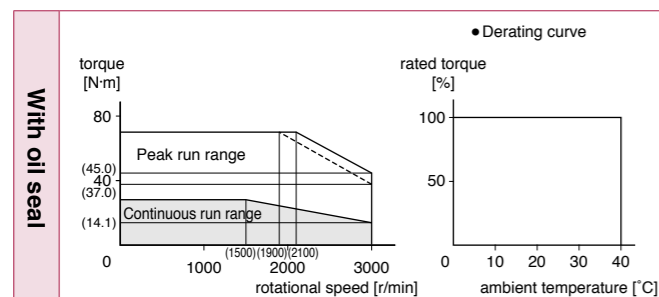
• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

• For details of Note1 to Note4, refer to P.303.  
• Dimensions of Driver, refer to P.59.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.200	—	—	P.200	—
Encoder connector Small size (JN2) type	—	P.201	—	—	P.201	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

		AC200 V
Motor model *1		MGMF552L1□□
Applicable driver	Model No.	MGDLTC3SF
	Multifunction type	—
	RS485 communication type *2	—
	Basic type *2	—
	Frame symbol	G-frame
Power supply capacity	(kVA)	8.5
Rated output	(W)	5500
Rated torque	(N·m)	35.0
Continuous stall torque	(N·m)	35.0
Momentary Max. peak torque	(N·m)	102
Rated current	(A(rms))	39.8
Max. current	(A(o-p))	164
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285x3	No limit Note2
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	83.0
	With brake	88.0
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) Note4	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

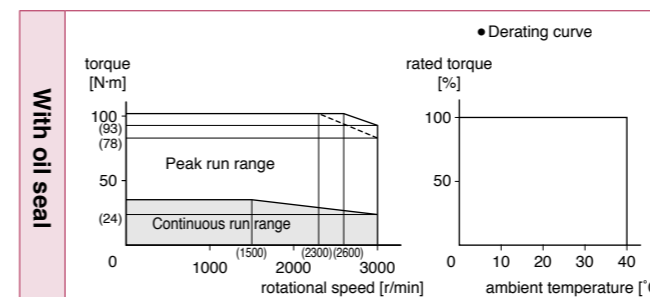
• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

• For details of Note1 to Note4, refer to P.303.  
• Dimensions of Driver, refer to P.60.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.22.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



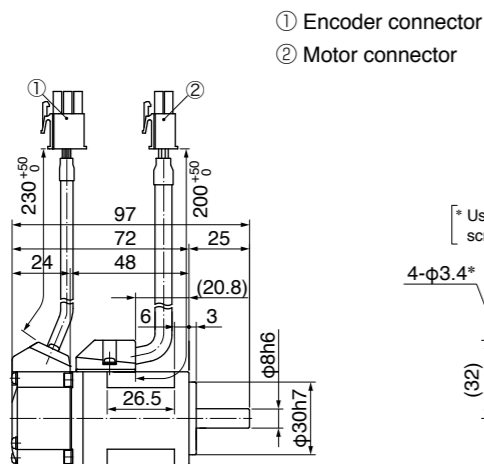
Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.201	—	—	P.202	—
Encoder connector Small size (JN2) type	—	P.202	—	—	P.202	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

MSMF 50 W

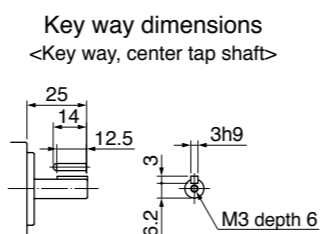
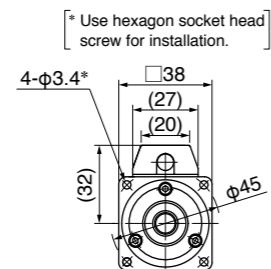
Leadwire type (IP65) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft



● Motor model Mass: 0.32 kg

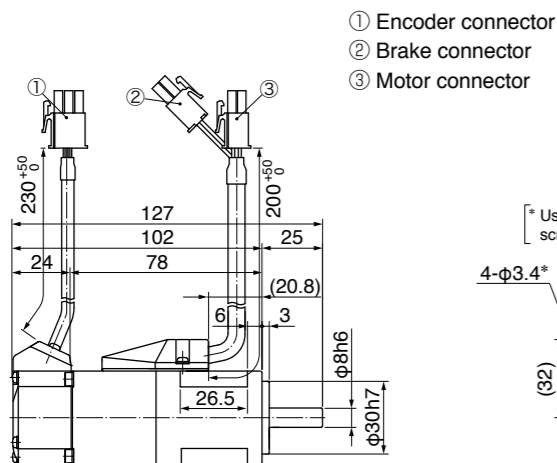
Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF5AZL1A2	MSMF5AZL1C2
	Key-way, center tap	MSMF5AZL1S2	MSMF5AZL1U2
200 V	Round	MSMF5AZL1A2	MSMF5AZL1C2
	Key-way, center tap	MSMF5AZL1S2	MSMF5AZL1U2

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



[Unit: mm]

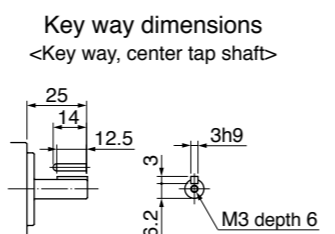
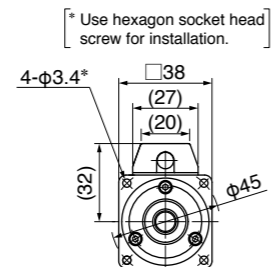
Leadwire type (IP65) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft



● Motor model Mass: 0.53 kg

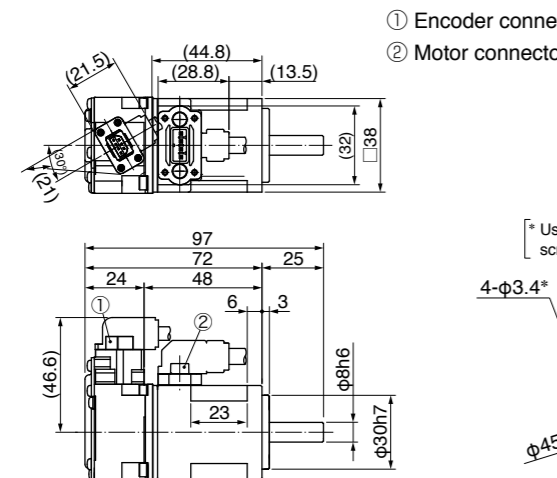
Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF5AZL1B2	MSMF5AZL1D2
	Key-way, center tap	MSMF5AZL1T2	MSMF5AZL1V2
200 V	Round	MSMF5AZL1B2	MSMF5AZL1D2
	Key-way, center tap	MSMF5AZL1T2	MSMF5AZL1V2

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



[Unit: mm]

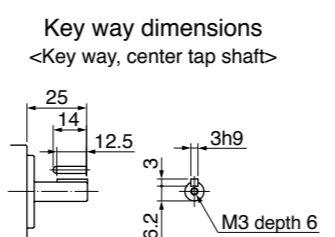
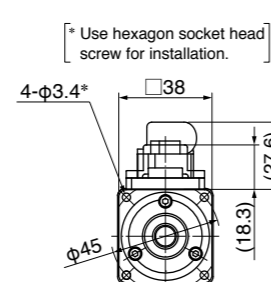
Connector type (IP67) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft



● Motor model Mass: 0.32 kg

Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF5AZL1A1	MSMF5AZL1C1
	Key-way, center tap	MSMF5AZL1S1	MSMF5AZL1U1
200 V	Round	MSMF5AZL1A1	MSMF5AZL1C1
	Key-way, center tap	MSMF5AZL1S1	MSMF5AZL1U1

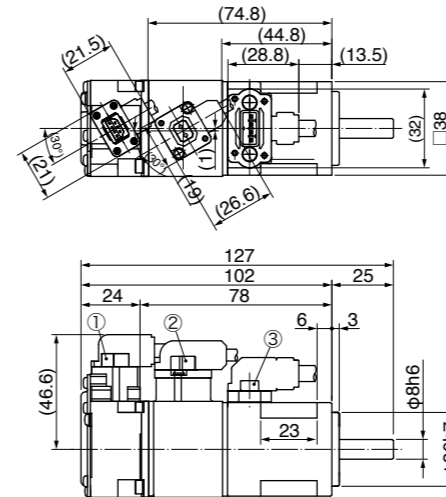
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



[Unit: mm]

MSMF 50 W

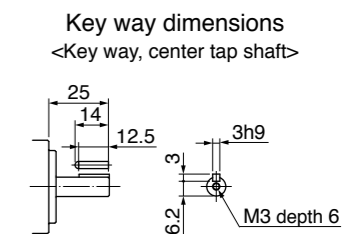
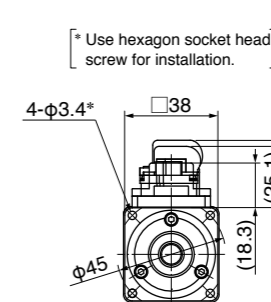
Connector type (IP67) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft



● Motor model Mass: 0.53 kg

Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF5AZL1B1	MSMF5AZL1D1
	Key-way, center tap	MSMF5AZL1T1	MSMF5AZL1V1
200 V	Round	MSMF5AZL1B1	MSMF5AZL1D1
	Key-way, center tap	MSMF5AZL1T1	MSMF5AZL1V1

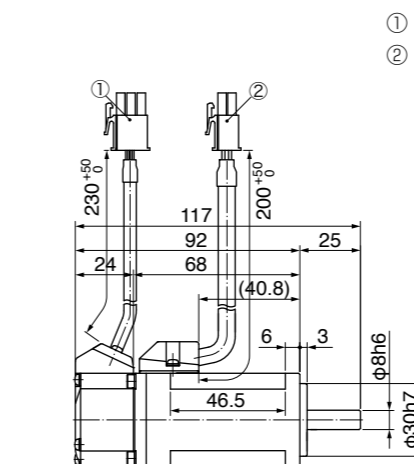
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



[Unit: mm]

MSMF 100 W

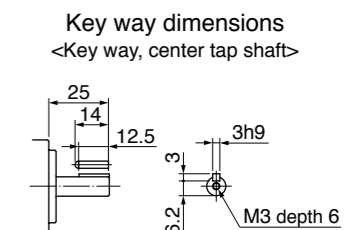
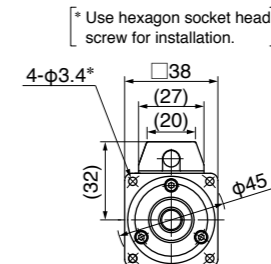
Leadwire type (IP65) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft



● Motor model Mass: 0.47 kg

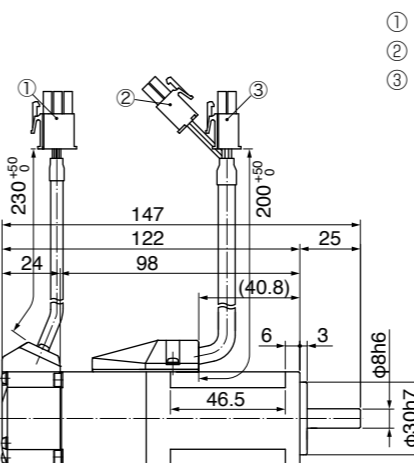
Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF011L1A2	MSMF011L1C2
	Key-way, center tap	MSMF011L1S2	MSMF011L1U2
200 V	Round	MSMF012L1A2	MSMF012L1C2
	Key-way, center tap	MSMF012L1S2	MSMF012L1U2

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



[Unit: mm]

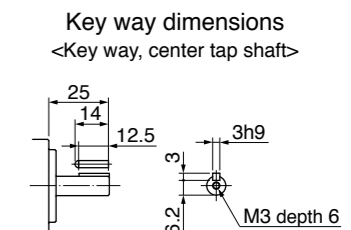
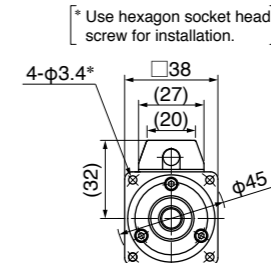
Leadwire type (IP65) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft



● Motor model Mass: 0.68 kg

Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF011L1B2	MSMF011L1D2
	Key-way, center tap	MSMF011L1T2	MSMF011L1V2
200 V	Round	MSMF012L1B2	MSMF012L1D2
	Key-way, center tap	MSMF012L1T2	MSMF012L1V2

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



[Unit: mm]

\* For motors specifications, refer to P63, P64.

\* For motors specifications, refer to P63 to P66.

A6 Family  
A6N Series  
A6B Series  
E Series  
Information  
Special Order Product

MSMF 100 W

Connector type (IP67) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor connector

● Motor model Mass: 0.47 kg

Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF011L1A1	MSMF011L1C1
	Key-way, center tap	MSMF011L1S1	MSMF011L1U1
200 V	Round	MSMF012L1A1	MSMF012L1C1
	Key-way, center tap	MSMF012L1S1	MSMF012L1U1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

Connector type (IP67) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Brake connector  
③ Motor connector

● Motor model Mass: 0.68 kg

Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF011L1B1	MSMF011L1D1
	Key-way, center tap	MSMF011L1T1	MSMF011L1V1
200 V	Round	MSMF012L1B1	MSMF012L1D1
	Key-way, center tap	MSMF012L1T1	MSMF012L1V1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

MSMF 200 W

Leadwire type (IP65) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor connector

● Motor model Mass: 0.82 kg

Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF021L1A2	MSMF021L1C2
	Key-way, center tap	MSMF021L1S2	MSMF021L1U2
200 V	Round	MSMF022L1A2	MSMF022L1C2
	Key-way, center tap	MSMF022L1S2	MSMF022L1U2

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

\* For motors specifications, refer to P65 to P68.

MSMF 200 W

Leadwire type (IP65) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Brake connector  
③ Motor connector

● Motor model Mass: 1.3 kg

Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF021L1B2	MSMF021L1D2
	Key-way, center tap	MSMF021L1T2	MSMF021L1V2
200 V	Round	MSMF022L1B2	MSMF022L1D2
	Key-way, center tap	MSMF022L1T2	MSMF022L1V2

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

Connector type (IP67) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor connector

● Motor model Mass: 0.82 kg

Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF021L1A1	MSMF021L1C1
	Key-way, center tap	MSMF021L1S1	MSMF021L1U1
200 V	Round	MSMF022L1A1	MSMF022L1C1
	Key-way, center tap	MSMF022L1S1	MSMF022L1U1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

Connector type (IP67) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Brake connector  
③ Motor connector

● Motor model Mass: 1.3 kg

Power supply	Shaft	without oil seal	with oil seal
100 V	Round	MSMF021L1B1	MSMF021L1D1
	Key-way, center tap	MSMF021L1T1	MSMF021L1V1
200 V	Round	MSMF022L1B1	MSMF022L1D1
	Key-way, center tap	MSMF022L1T1	MSMF022L1V1

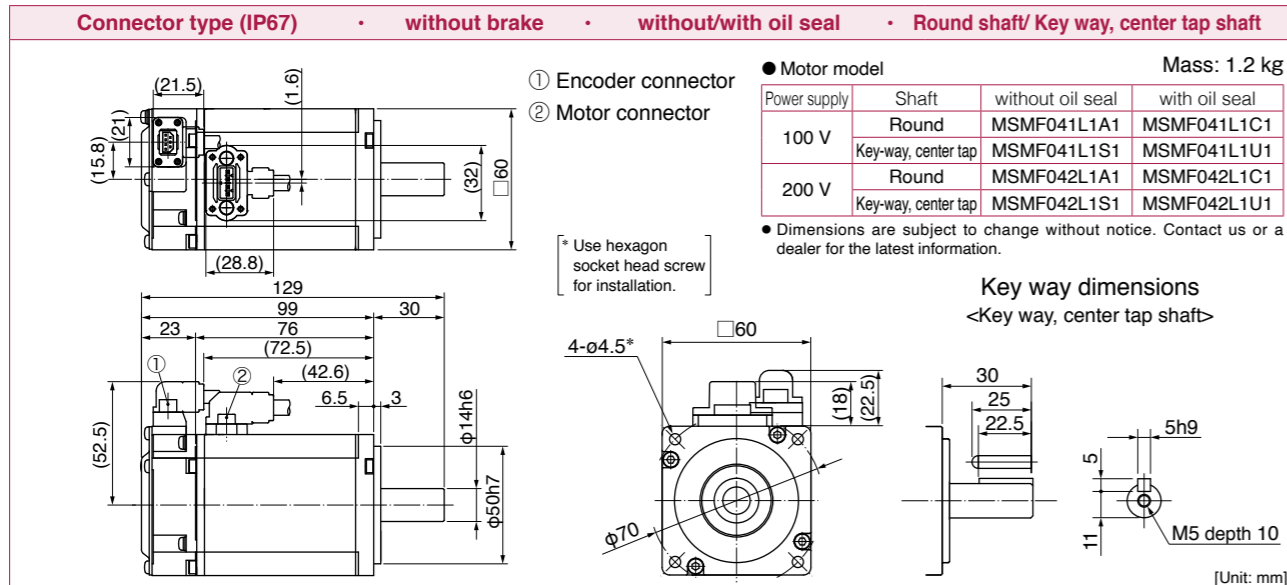
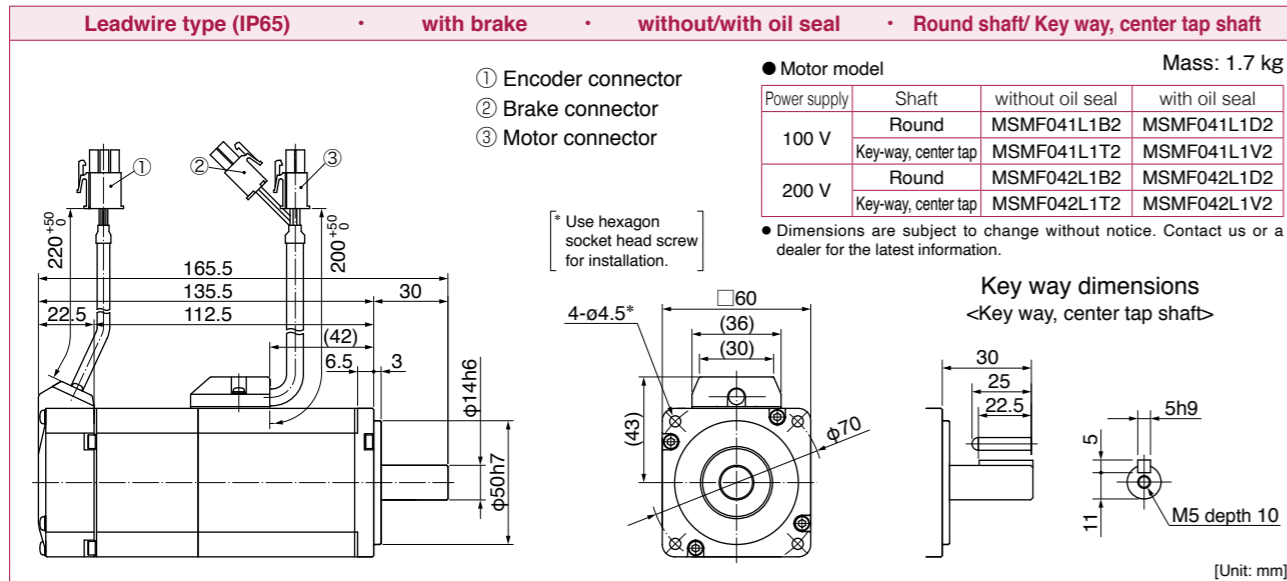
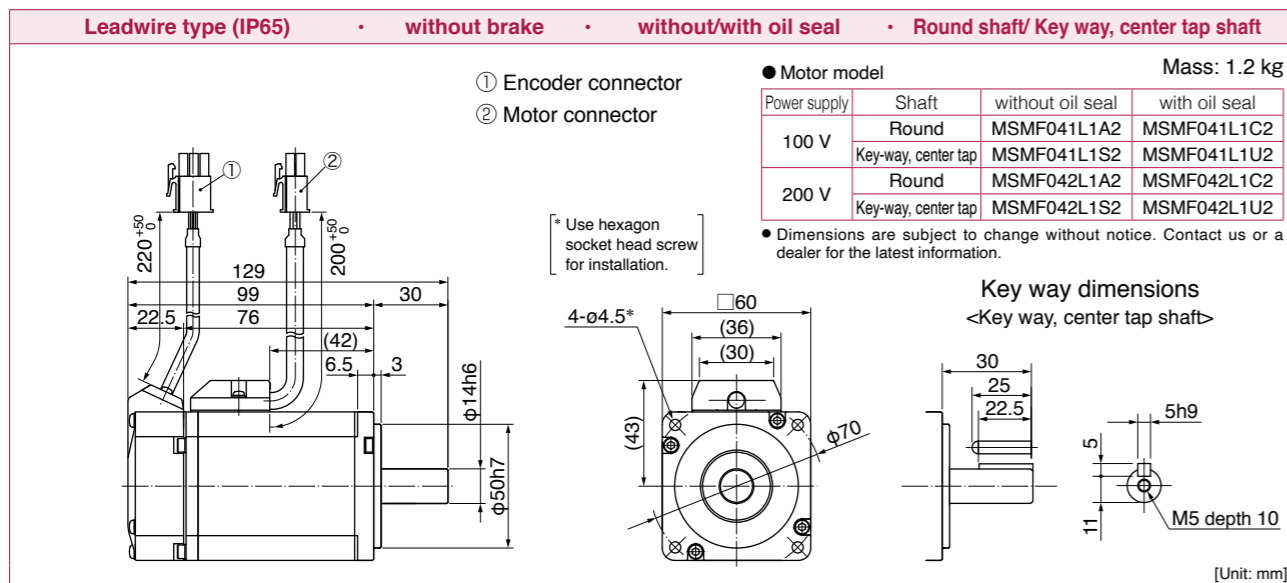
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

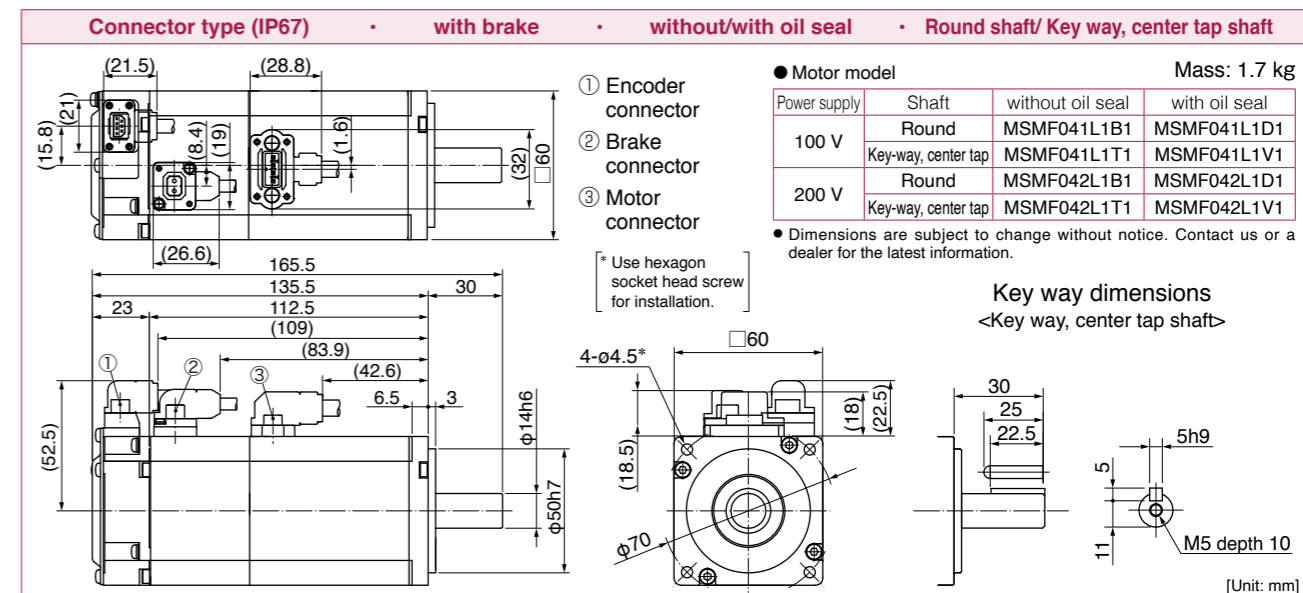
\* For motors specifications, refer to P67, P68.

MSMF 400 W

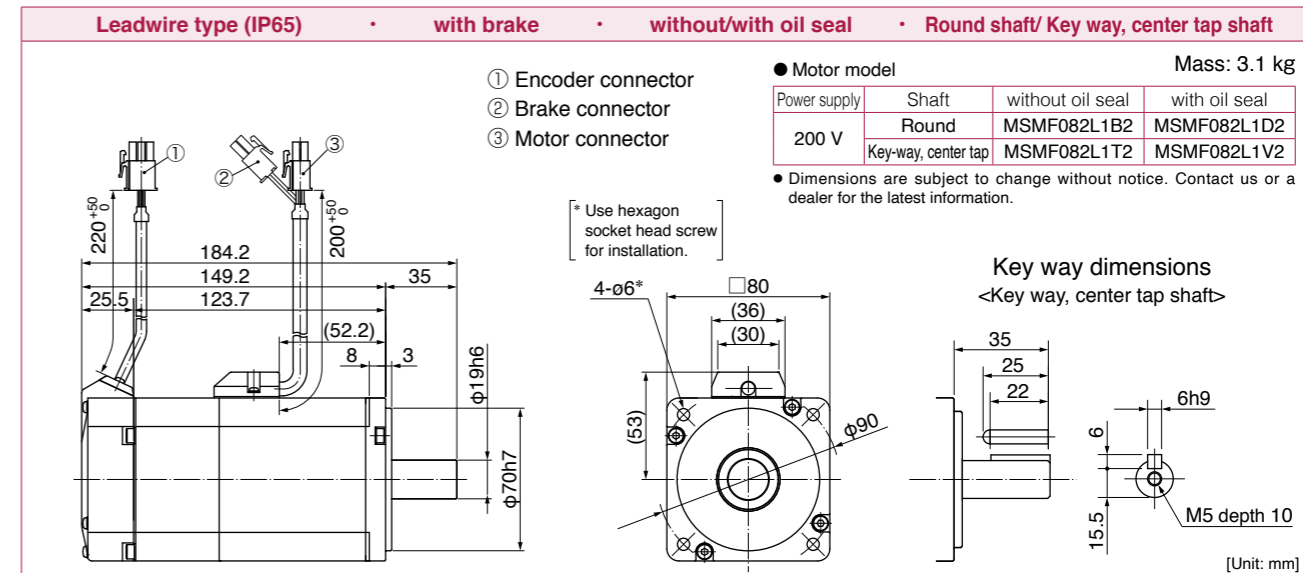
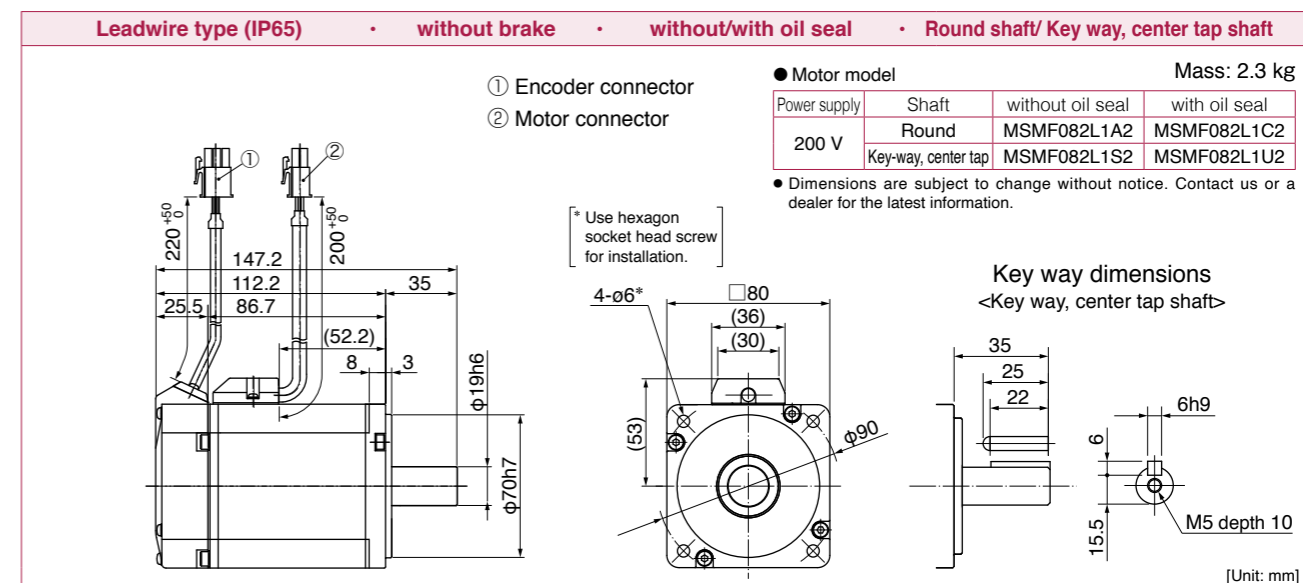


\* For motors specifications, refer to P.69, P.70.

MSMF 400 W



MSMF 750 W



\* For motors specifications, refer to P.69 to P.71.

MSMF 750 W

Connector type (IP67) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor connector

● Motor model Mass: 2.3 kg

Power supply	Shaft	without oil seal	with oil seal
200 V	Round	MSMF082L1A1	MSMF082L1C1
	Key-way, center tap	MSMF082L1S1	MSMF082L1U1

• Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
-Key way, center tap shaft

[Unit: mm]

Connector type (IP67) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Brake connector  
③ Motor connector

● Motor model Mass: 3.1 kg

Power supply	Shaft	without oil seal	with oil seal
200 V	Round	MSMF082L1B1	MSMF082L1D1
	Key-way, center tap	MSMF082L1T1	MSMF082L1V1

• Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
-Key way, center tap shaft

[Unit: mm]

MSMF 1000 W

Leadwire type (IP65) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor connector

● Motor model Mass: 2.8 kg

Power supply	Shaft	without oil seal	with oil seal
200 V	Round	MSMF092L1A2	MSMF092L1C2
	Key-way, center tap	MSMF092L1S2	MSMF092L1U2

• Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
-Key way, center tap shaft

[Unit: mm]

\* For motors specifications, refer to P.71, P.72.

MSMF 1000 W

Leadwire type (IP65) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Brake connector  
③ Motor connector

● Motor model Mass: 3.6 kg

Power supply	Shaft	without oil seal	with oil seal
200 V	Round	MSMF092L1B2	MSMF092L1D2
	Key-way, center tap	MSMF092L1T2	MSMF092L1V2

• Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
-Key way, center tap shaft

[Unit: mm]

Connector type (IP67) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor connector

● Motor model Mass: 2.8 kg

Power supply	Shaft	without oil seal	with oil seal
200 V	Round	MSMF092L1A1	MSMF092L1C1
	Key-way, center tap	MSMF092L1S1	MSMF092L1U1

• Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
-Key way, center tap shaft

[Unit: mm]

Connector type (IP67) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Brake connector  
③ Motor connector

● Motor model Mass: 3.6 kg

Power supply	Shaft	without oil seal	with oil seal
200 V	Round	MSMF092L1B1	MSMF092L1D1
	Key-way, center tap	MSMF092L1T1	MSMF092L1V1

• Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
-Key way, center tap shaft

[Unit: mm]

\* For motors specifications, refer to P.72.



MSMF 1.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Large size JL10)  
② Motor connector

● Motor model Mass: 3.6 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MSMF102L1C6	MSMF102L1C8
	Key-way	MSMF102L1G6	MSMF102L1G8

\* Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions

[Unit: mm]

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Large size JL10)  
② Motor/Brake connector

● Motor model Mass: 4.7 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MSMF102L1D6	MSMF102L1D8
	Key-way	MSMF102L1H6	MSMF102L1H8

\* Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions

[Unit: mm]

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Small size JN2)  
② Motor connector

● Motor model Mass: 3.6 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MSMF102L1C5	MSMF102L1C7
	Key-way	MSMF102L1G5	MSMF102L1G7

\* Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions

[Unit: mm]

\* For motors specifications, refer to P.73.

MSMF 1.0 kW

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Small size JN2)  
② Motor/Brake connector

● Motor model Mass: 4.7 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MSMF102L1D5	MSMF102L1D7
	Key-way	MSMF102L1H5	MSMF102L1H7

\* Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions

[Unit: mm]

MSMF 1.5 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Large size JL10)  
② Motor connector

● Motor model Mass: 4.6 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MSMF152L1C6	MSMF152L1C8
	Key-way	MSMF152L1G6	MSMF152L1G8

\* Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions

[Unit: mm]

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Large size JL10)  
② Motor/Brake connector

● Motor model Mass: 5.6 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MSMF152L1D6	MSMF152L1D8
	Key-way	MSMF152L1H6	MSMF152L1H8

\* Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

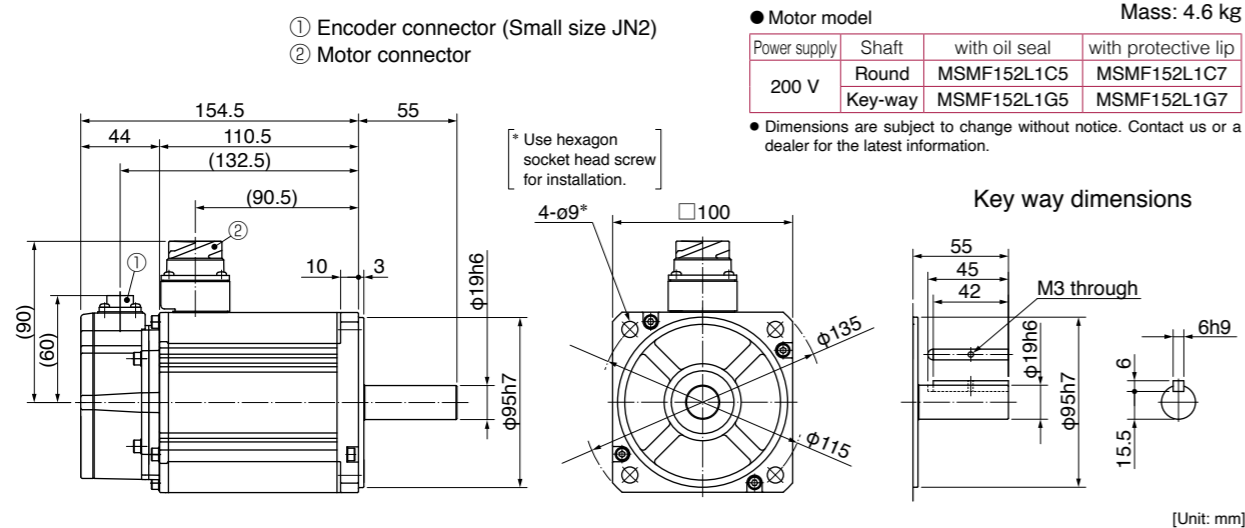
Key way dimensions

[Unit: mm]

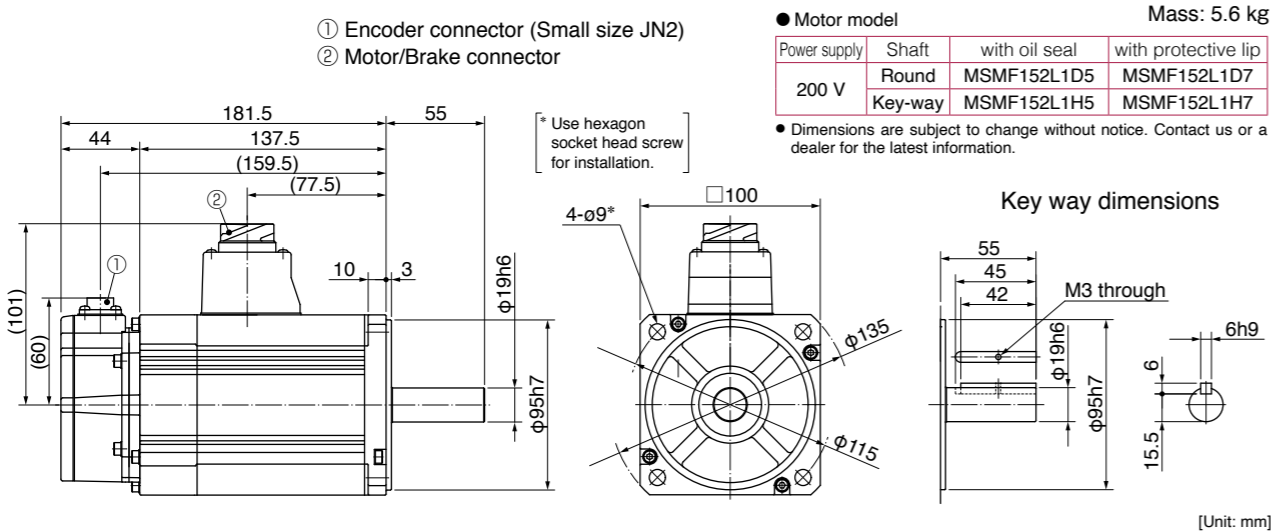
\* For motors specifications, refer to P.73, P.74.

**MSMF 1.5 kW**

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

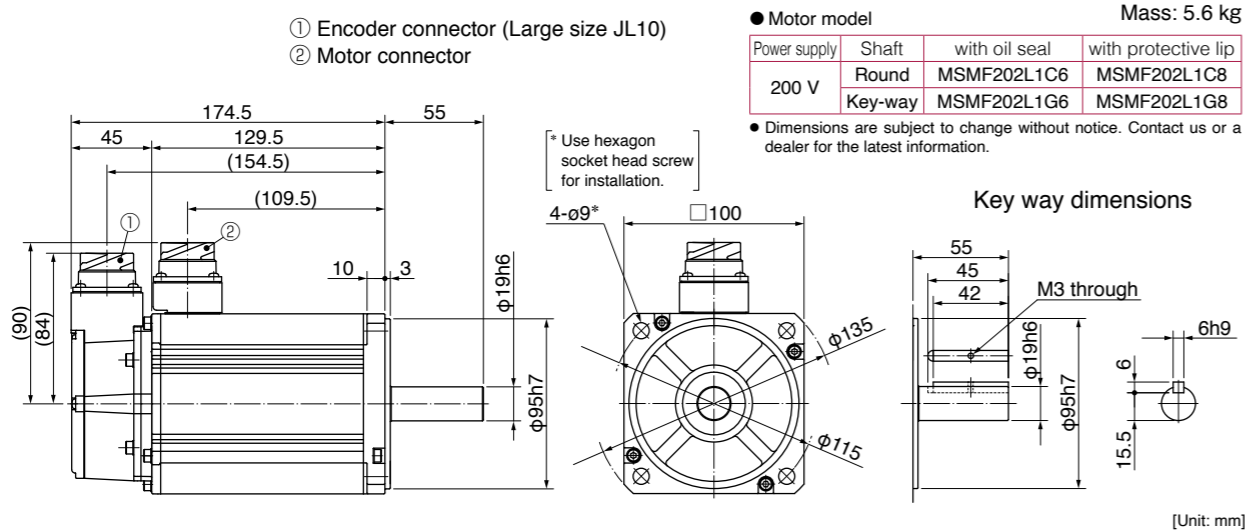


Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



**MSMF 2.0 kW**

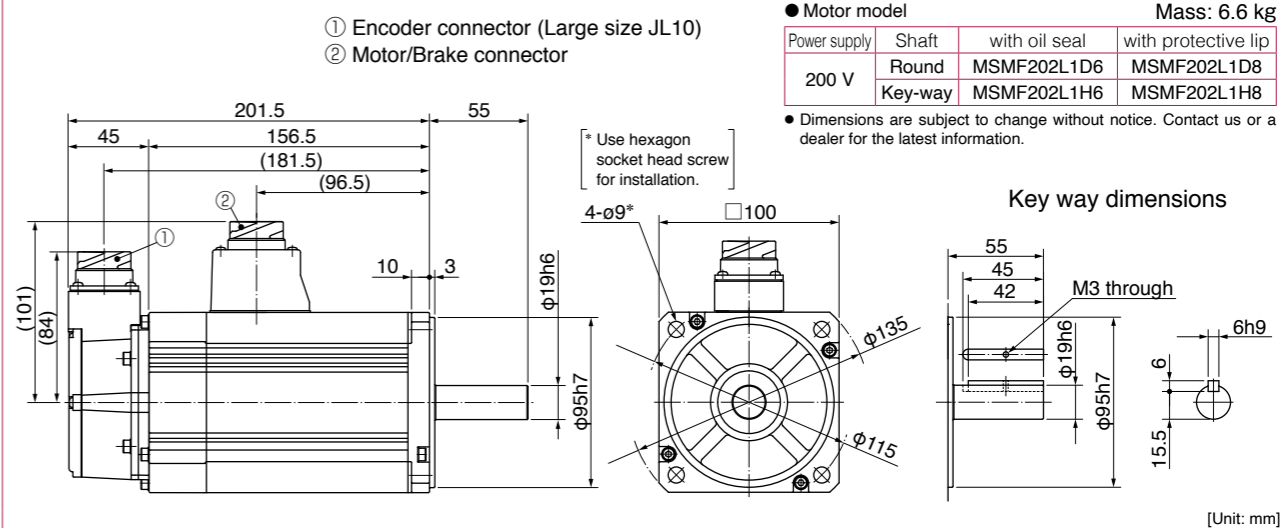
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



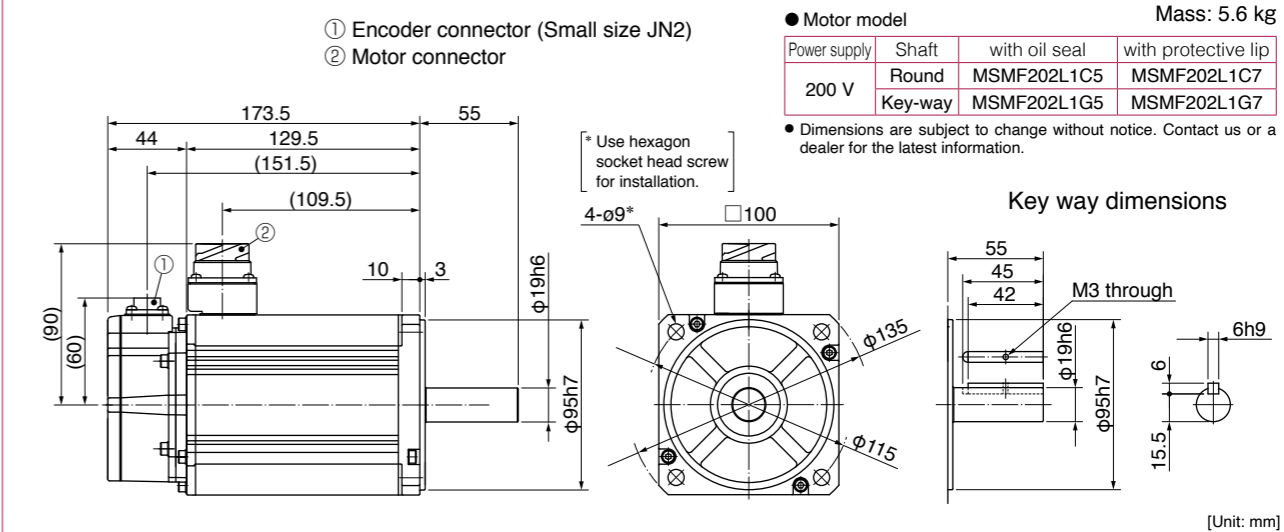
\* For motors specifications, refer to P.74, P.75.

**MSMF 2.0 kW**

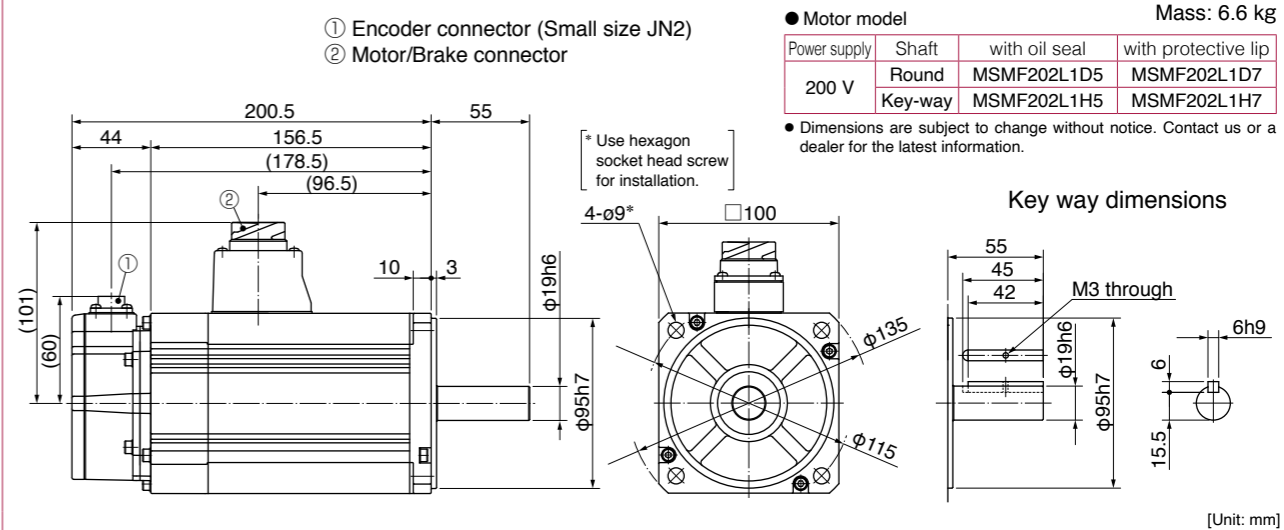
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



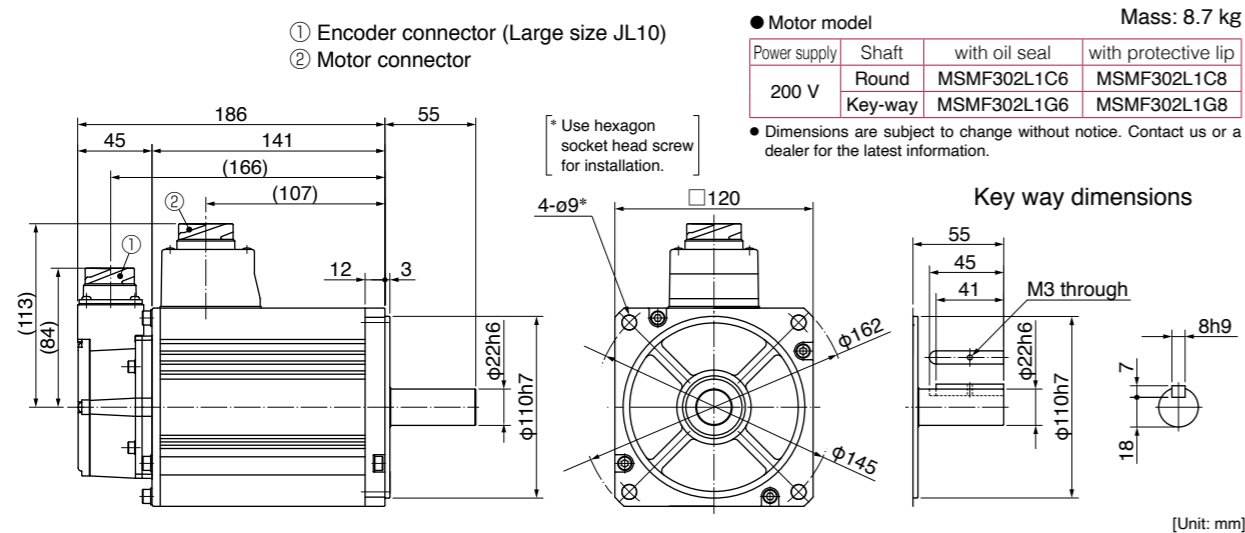
Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



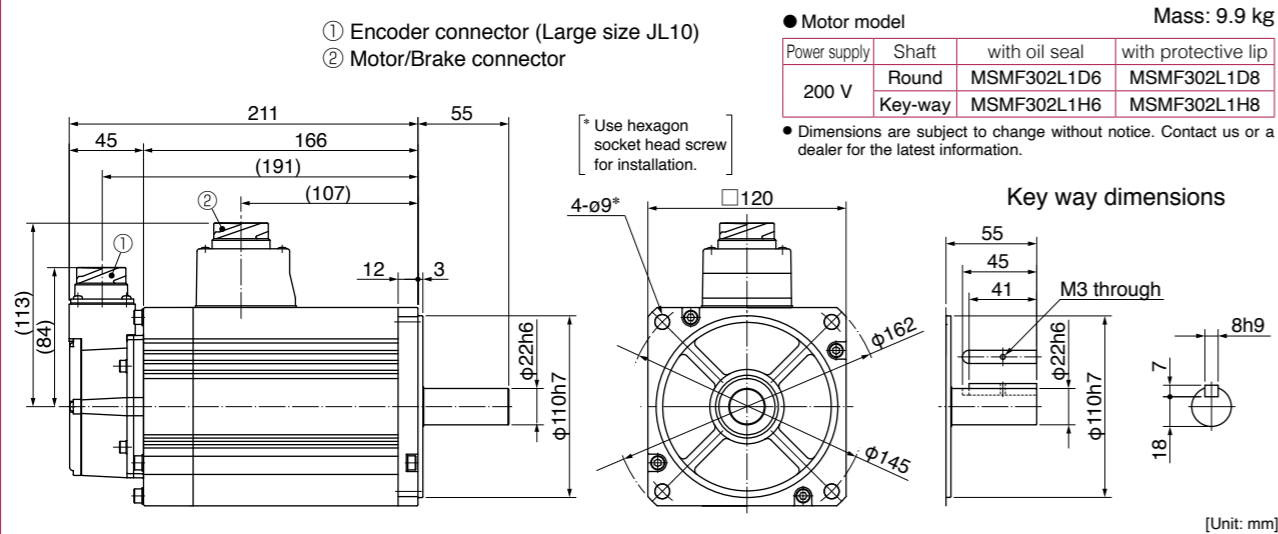
\* For motors specifications, refer to P.75.

MSMF 3.0 kW

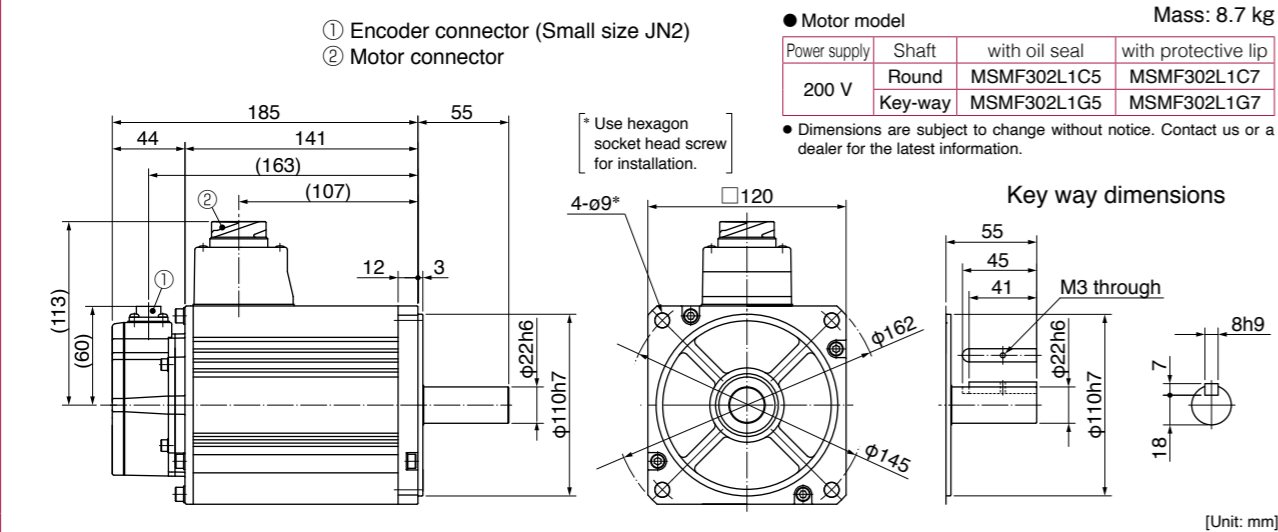
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



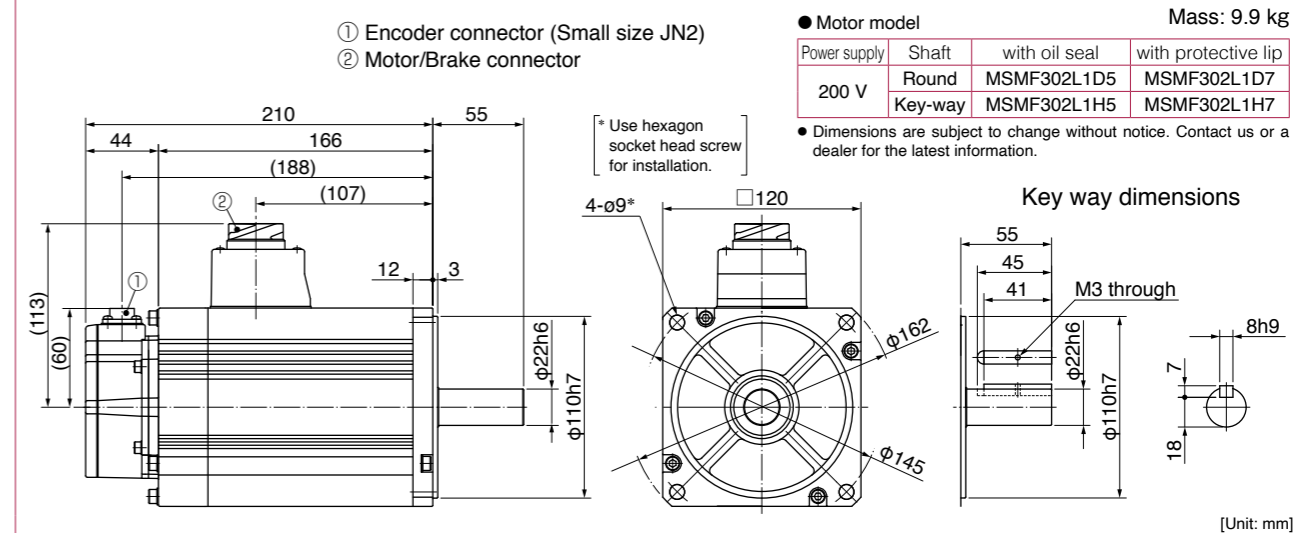
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.76.

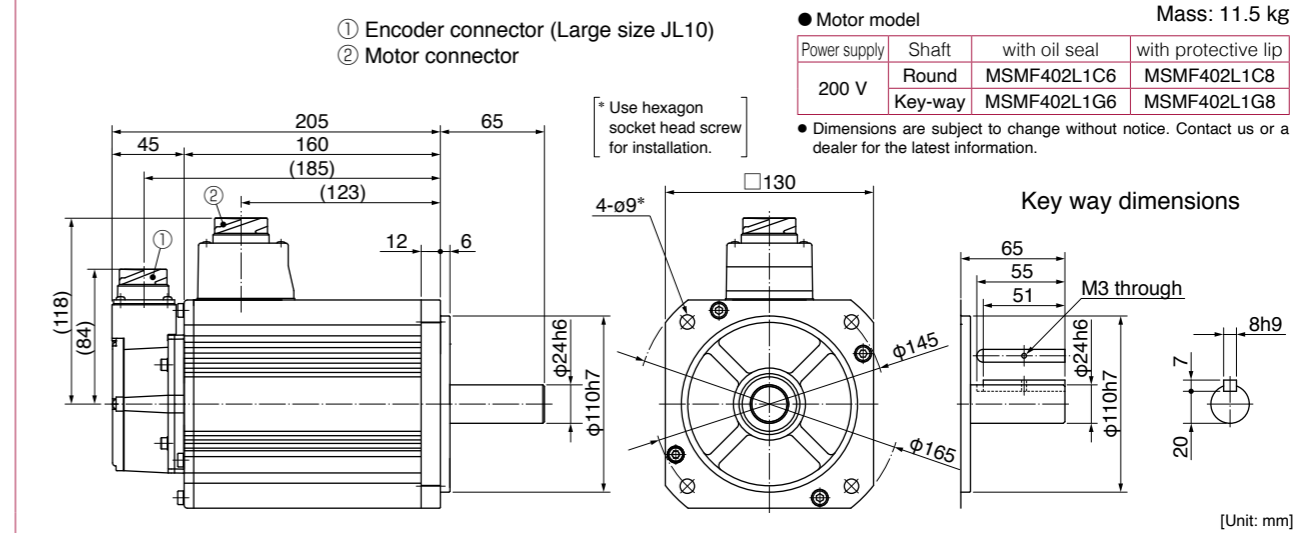
MSMF 3.0 kW

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

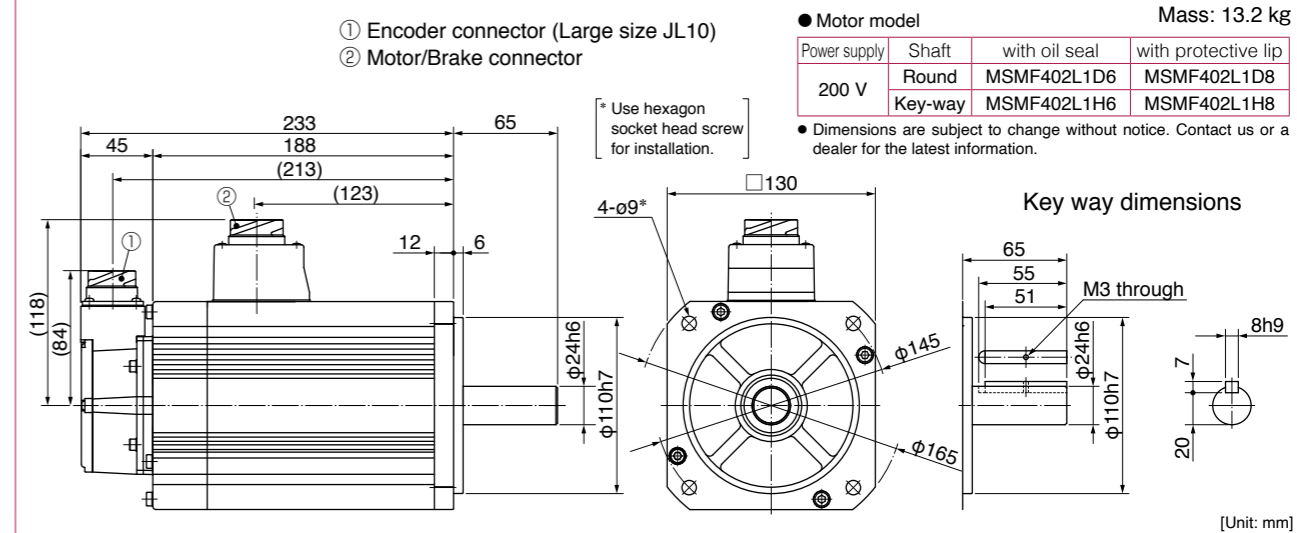


MSMF 4.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



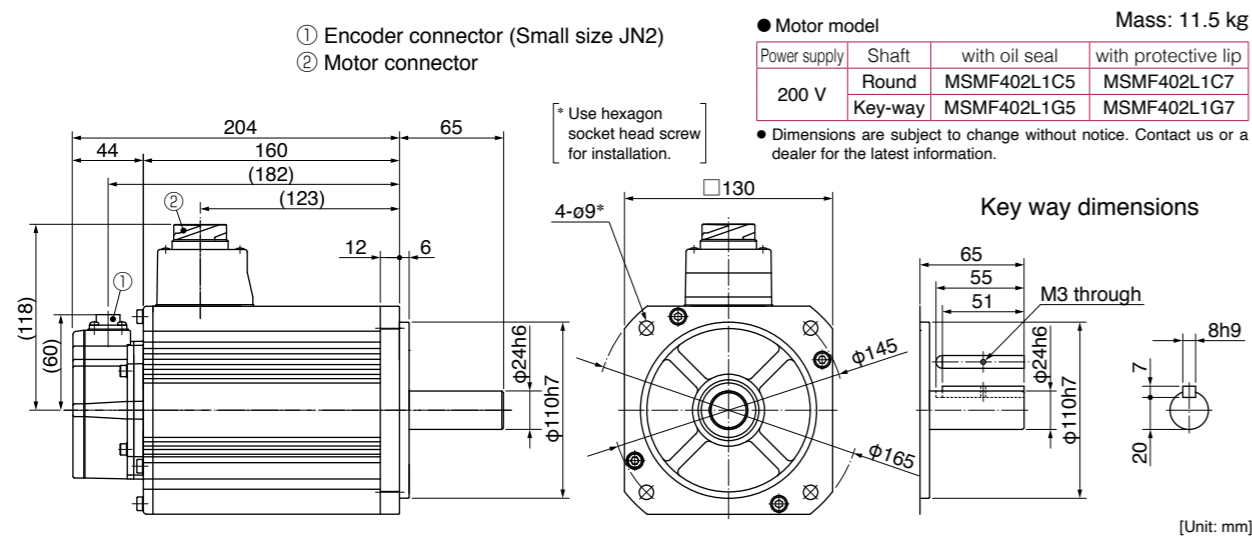
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



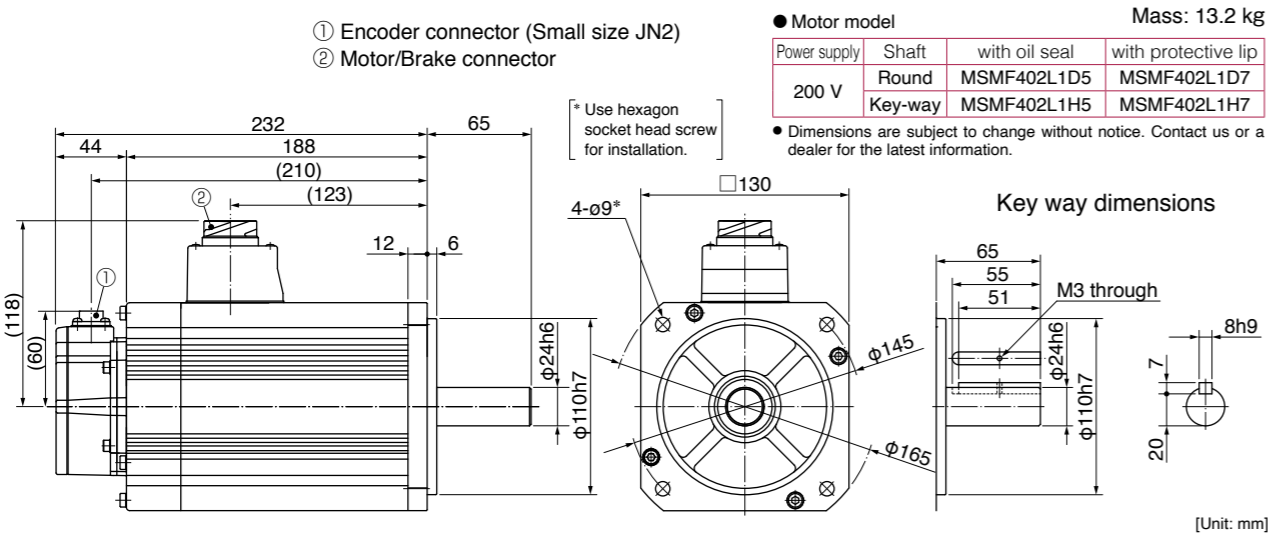
\* For motors specifications, refer to P.76, P.77.

MSMF 4.0 kW

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

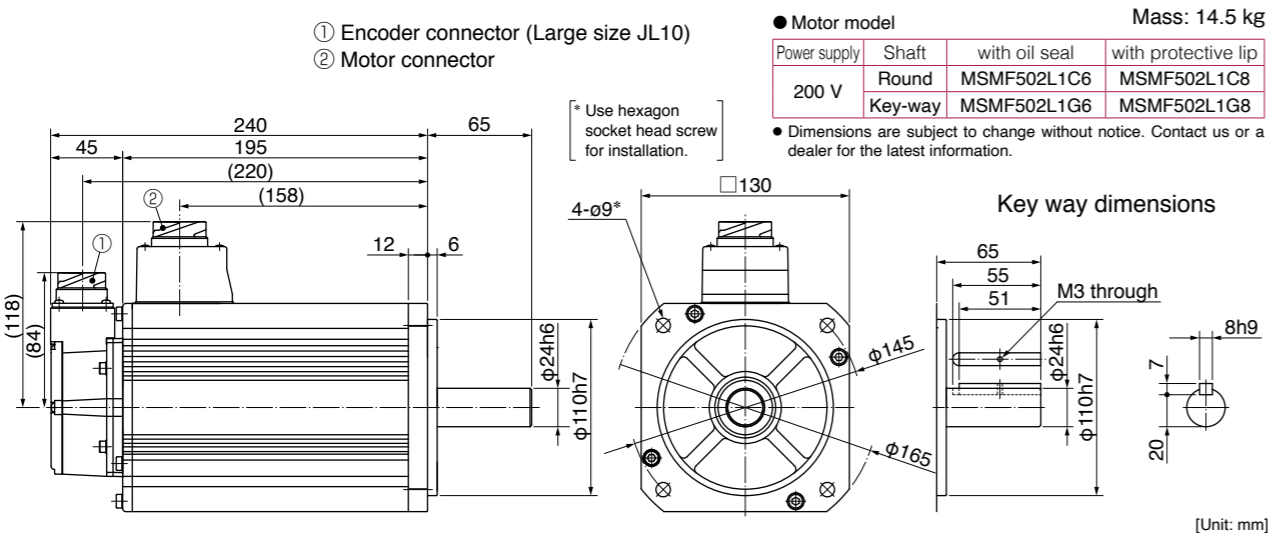


Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MSMF 5.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

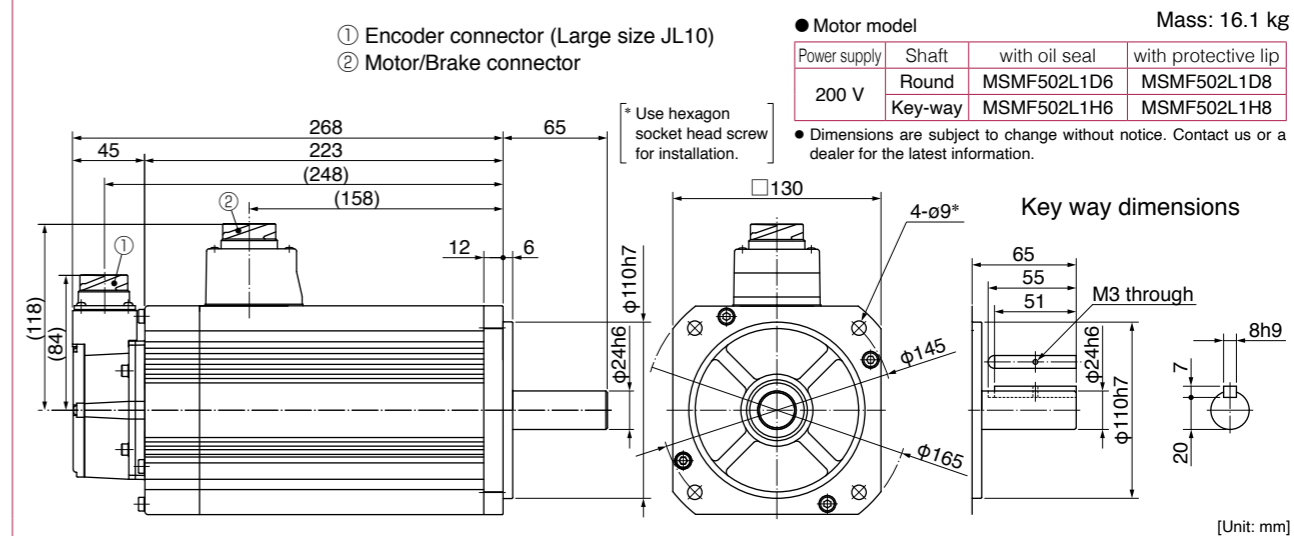


\* For motors specifications, refer to P.77, P.78.

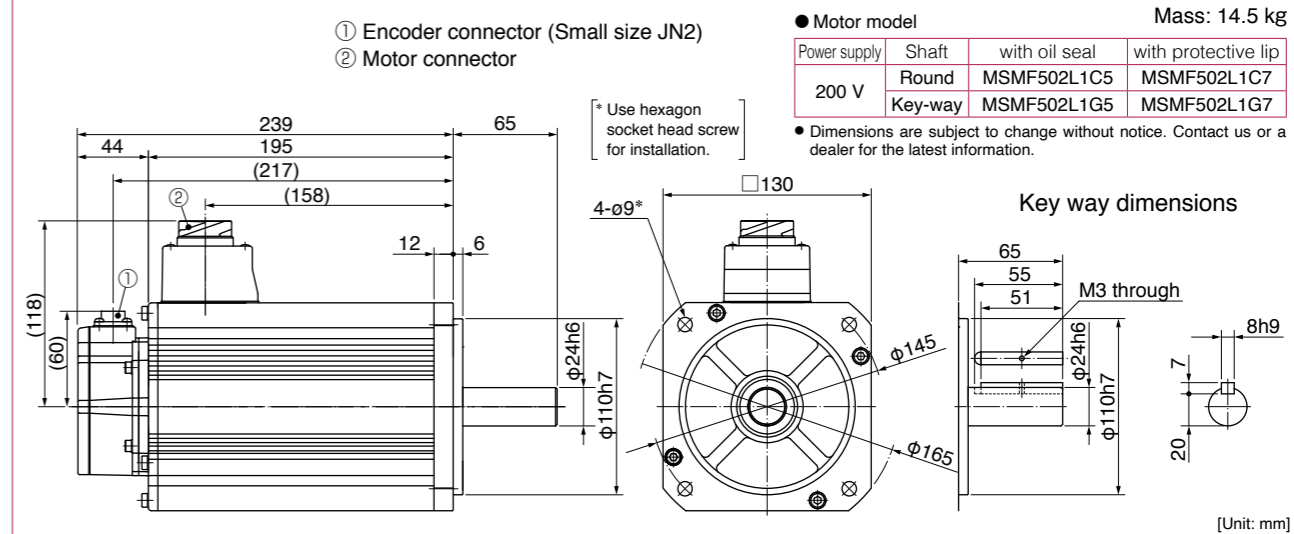
MSMF 5.0 kW

MSMF 5.0 kW

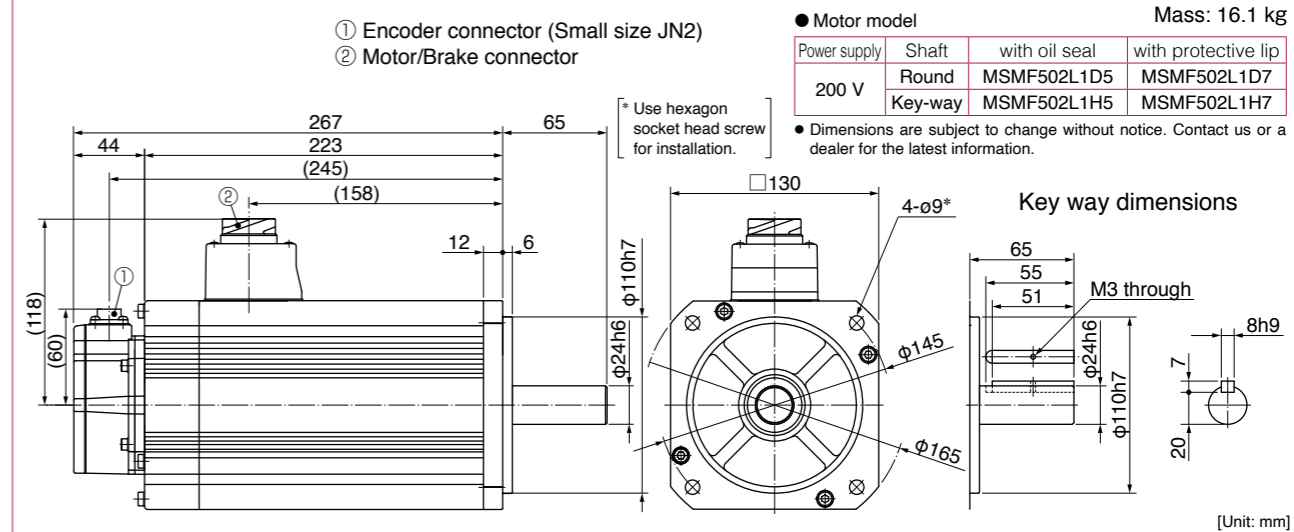
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



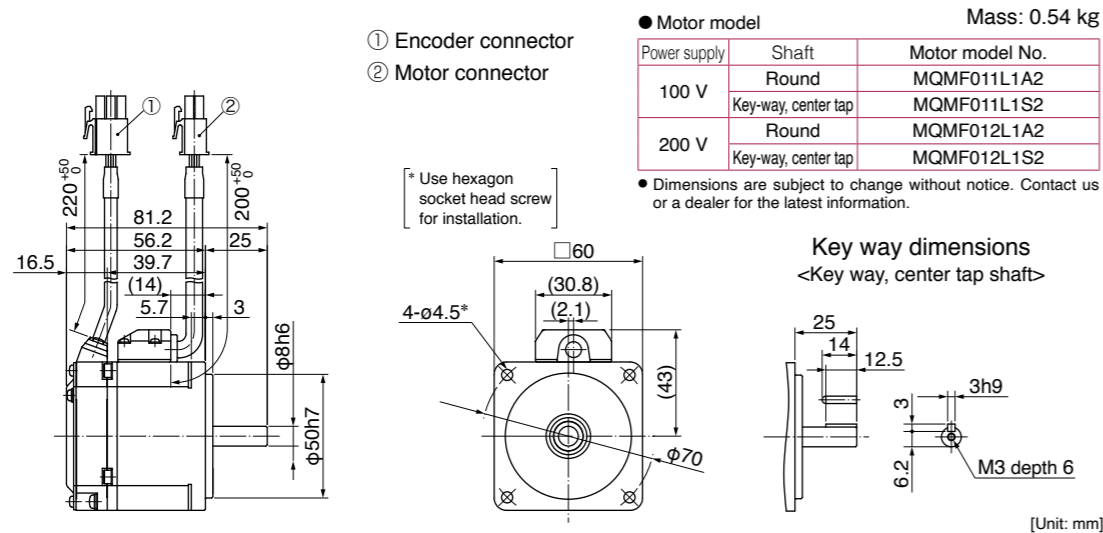
Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



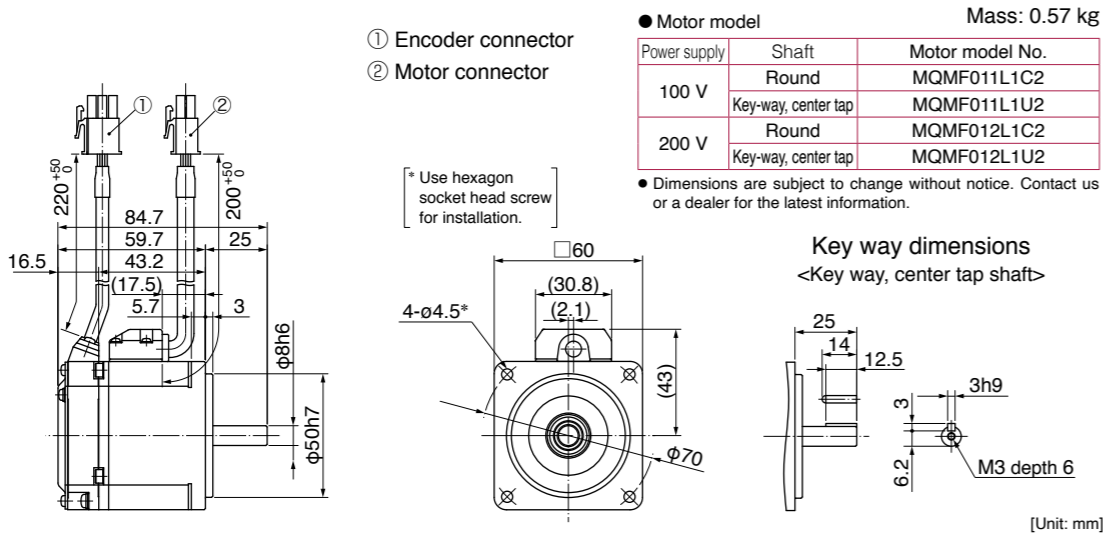
\* For motors specifications, refer to P.78.

MQMF 100 W

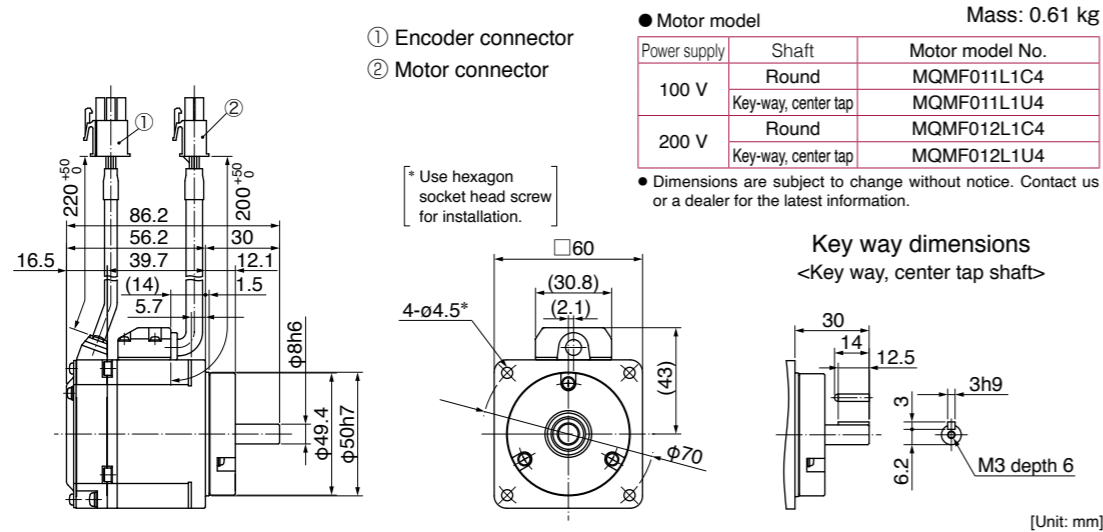
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



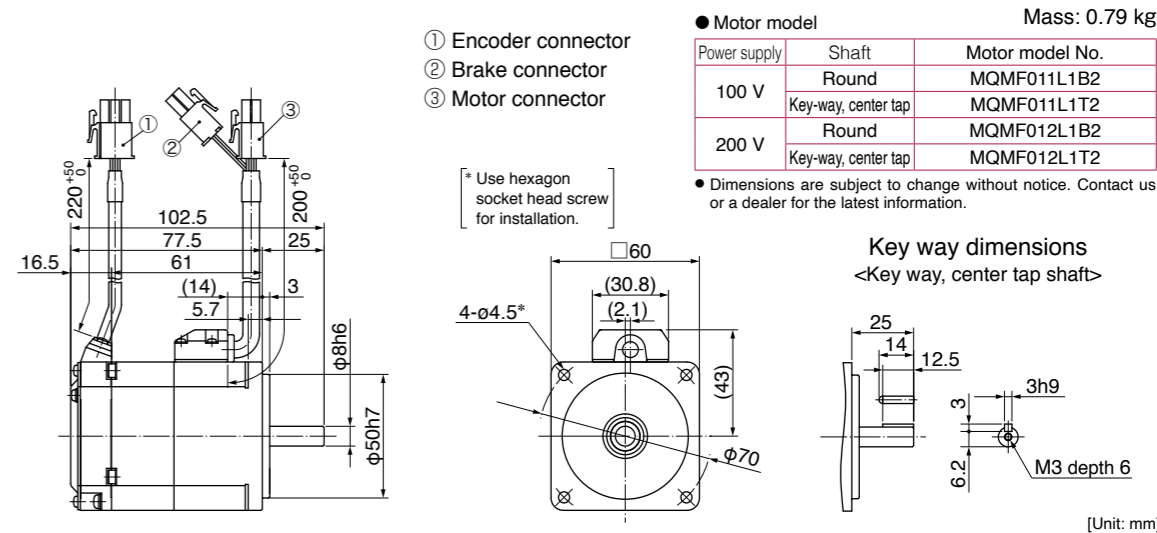
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



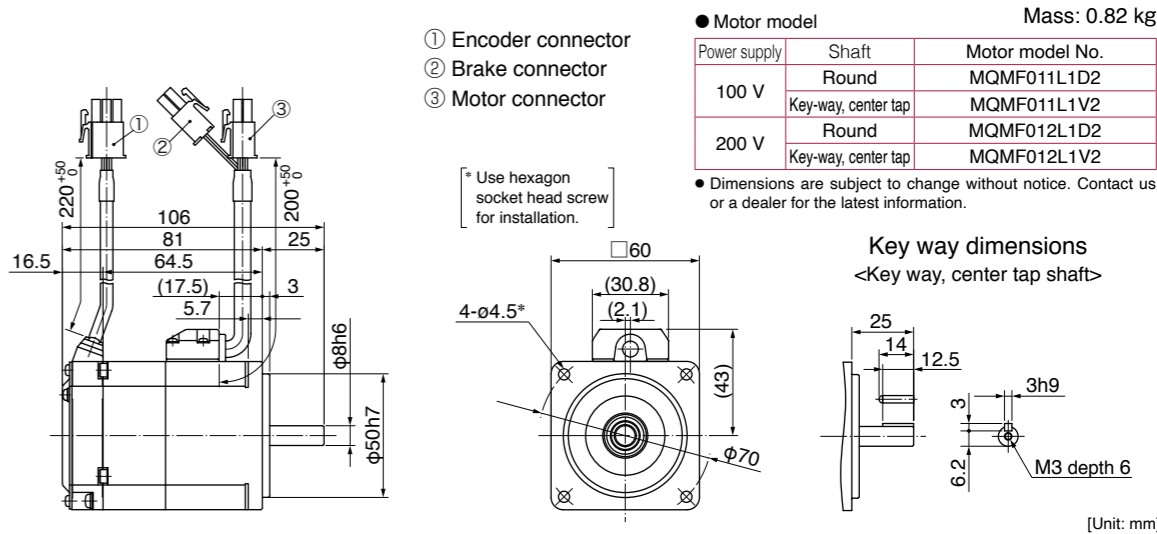
\* For motors specifications, refer to P.79, P.80.

MQMF 100 W

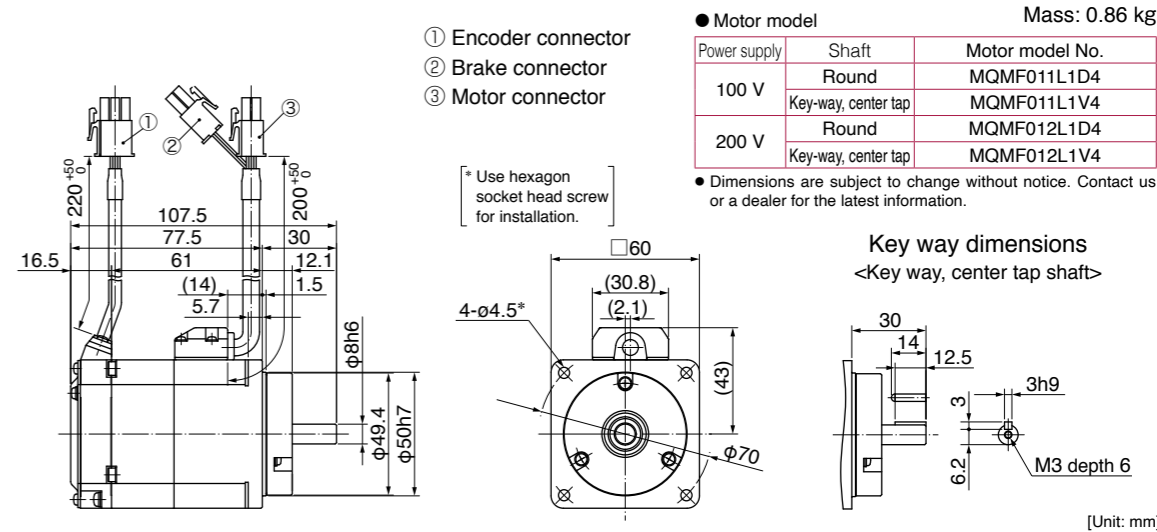
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



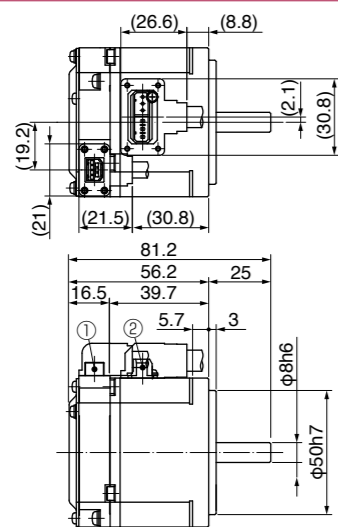
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



\* For motors specifications, refer to P.79, P.80.

MQMF 100 W

Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



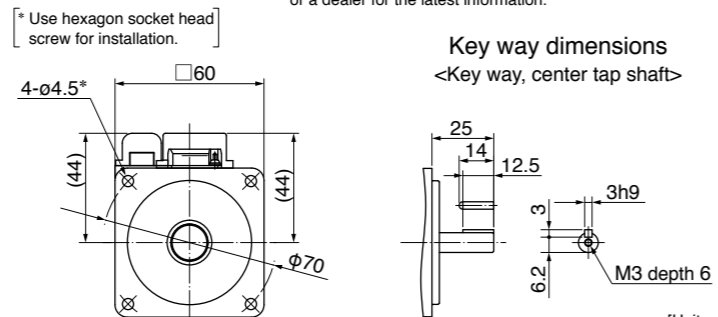
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 0.54 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF011L1A1
	Key-way, center tap	MQMF011L1S1
200 V	Round	MQMF012L1A1
	Key-way, center tap	MQMF012L1S1

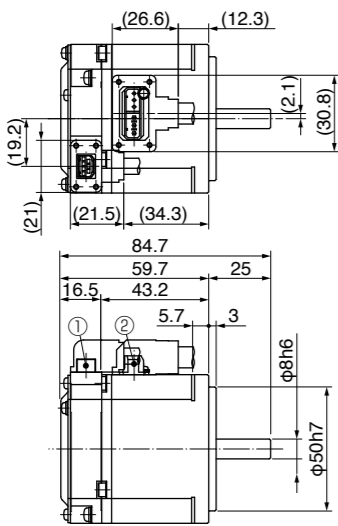
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



[Unit: mm]

Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



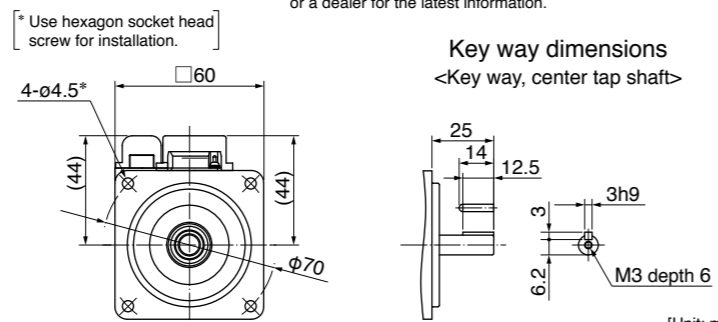
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 0.57 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF011L1C1
	Key-way, center tap	MQMF011L1U1
200 V	Round	MQMF012L1C1
	Key-way, center tap	MQMF012L1U1

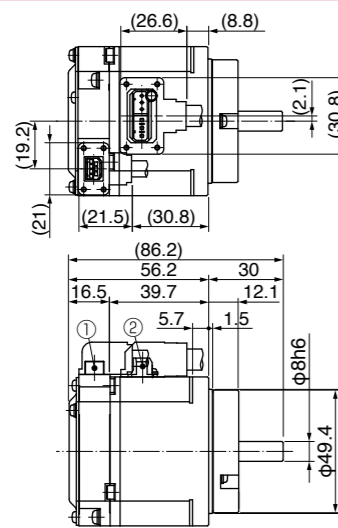
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



[Unit: mm]

Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



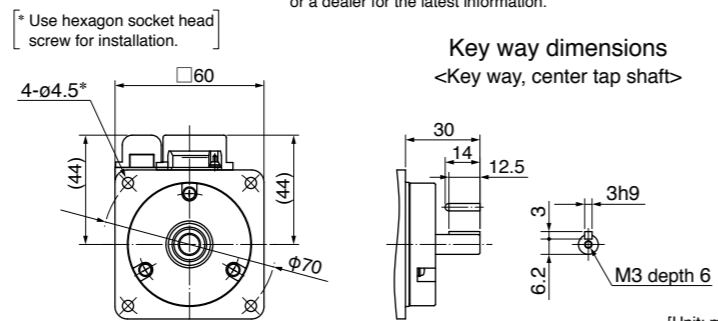
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 0.61 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF011L1C3
	Key-way, center tap	MQMF011L1U3
200 V	Round	MQMF012L1C3
	Key-way, center tap	MQMF012L1U3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

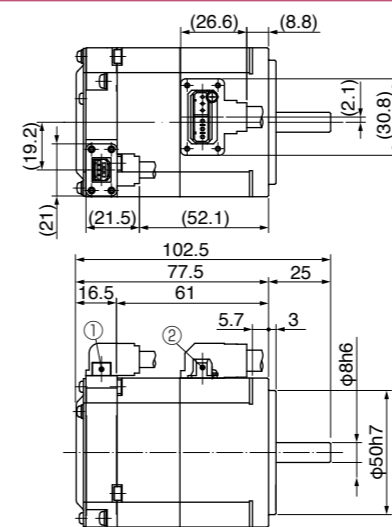


[Unit: mm]

\* For motors specifications, refer to P.79, P.80.

MQMF 100 W

Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



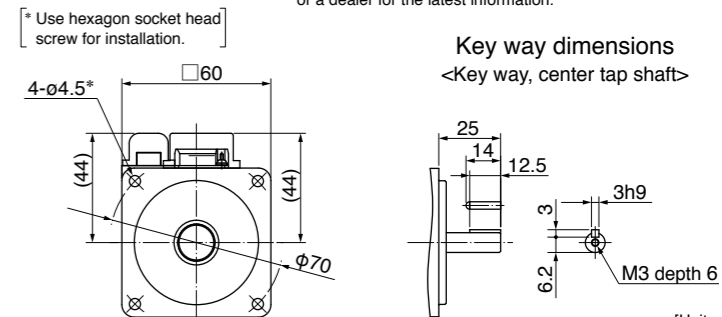
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 0.79 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF011L1B1
	Key-way, center tap	MQMF011L1T1
200 V	Round	MQMF012L1B1
	Key-way, center tap	MQMF012L1T1

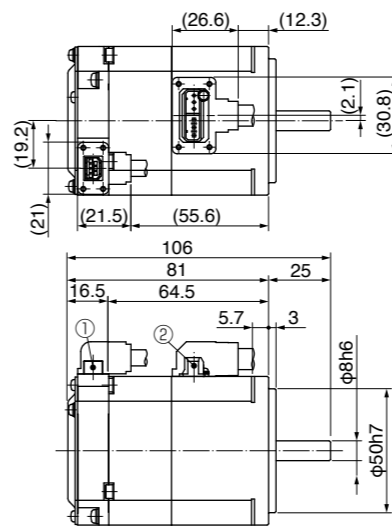
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



[Unit: mm]

Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



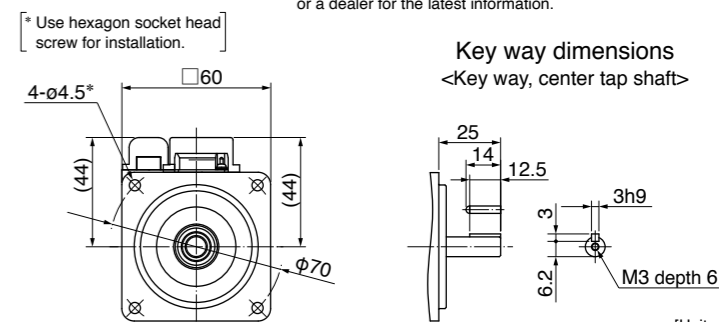
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 0.82 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF011L1D1
	Key-way, center tap	MQMF011L1V1
200 V	Round	MQMF012L1D1
	Key-way, center tap	MQMF012L1V1

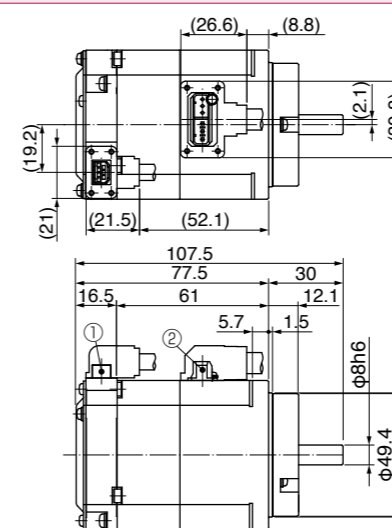
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



[Unit: mm]

Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



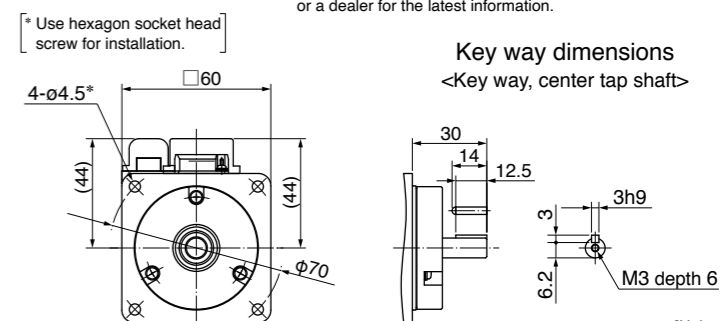
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 0.86 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF011L1D3
	Key-way, center tap	MQMF011L1V3
200 V	Round	MQMF012L1D3
	Key-way, center tap	MQMF012L1V3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

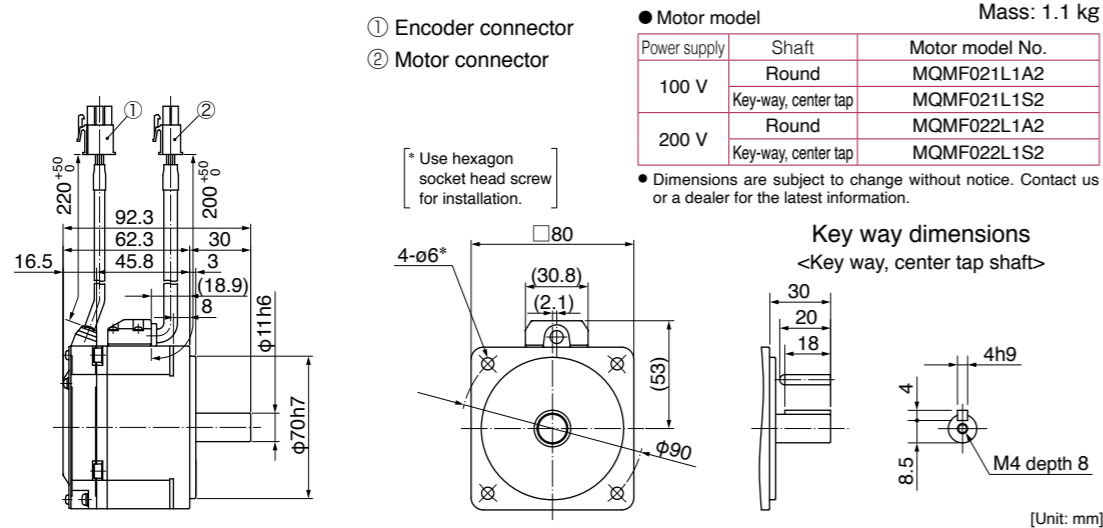


[Unit: mm]

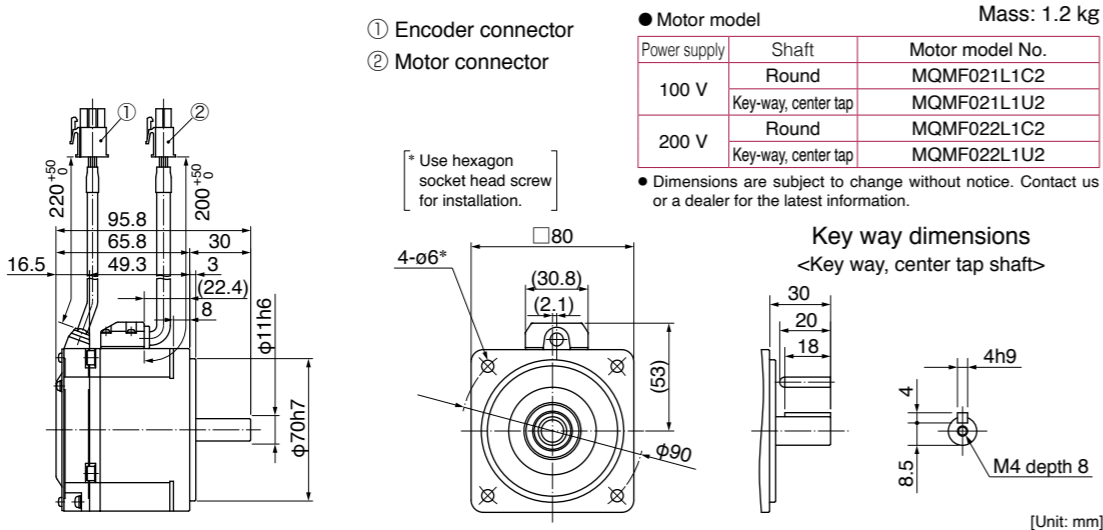
\* For motors specifications, refer to P.79, P.80.

MQMF 200 W

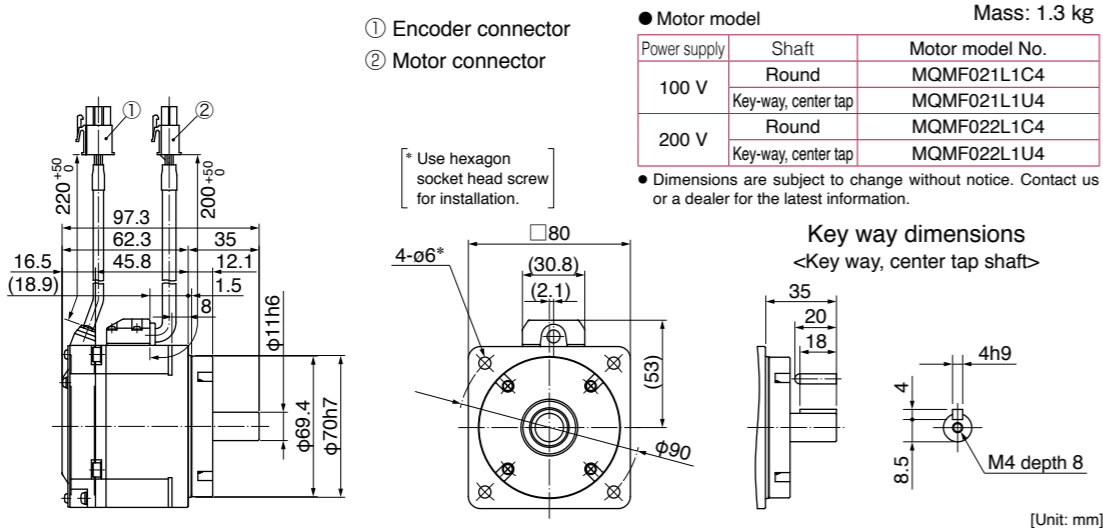
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



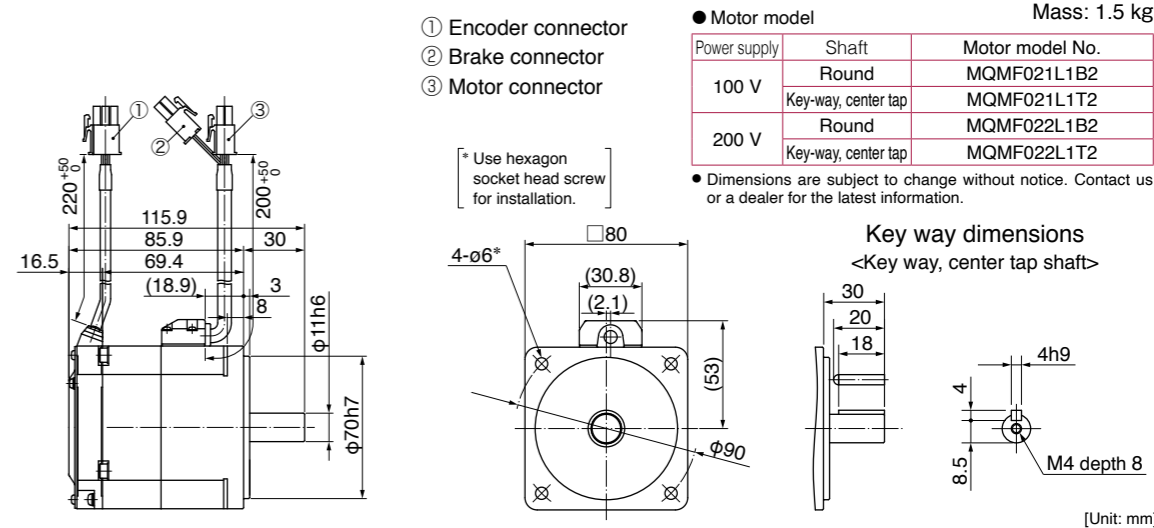
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



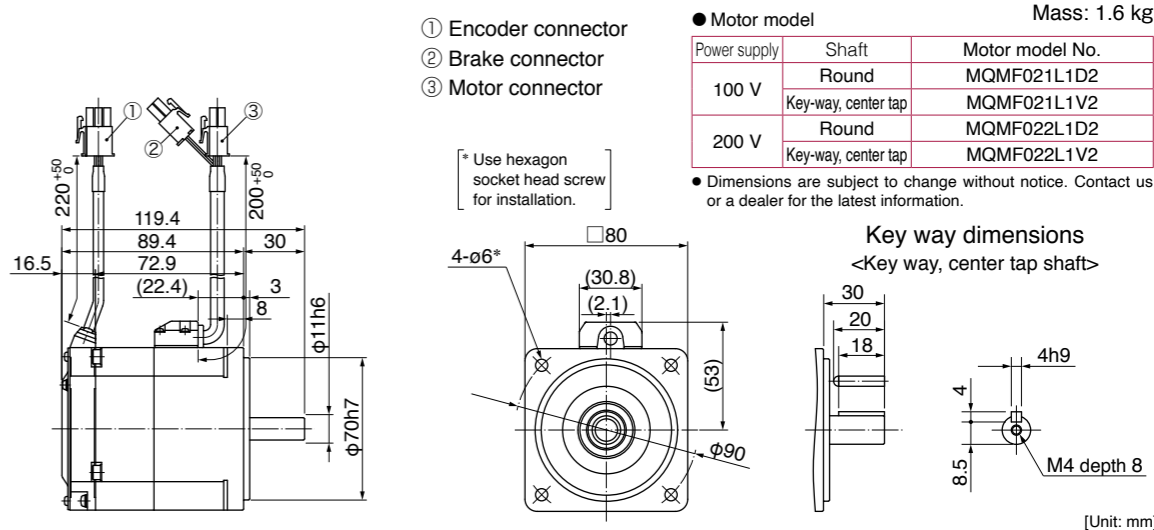
\* For motors specifications, refer to P.81, P.82.

MQMF 200 W

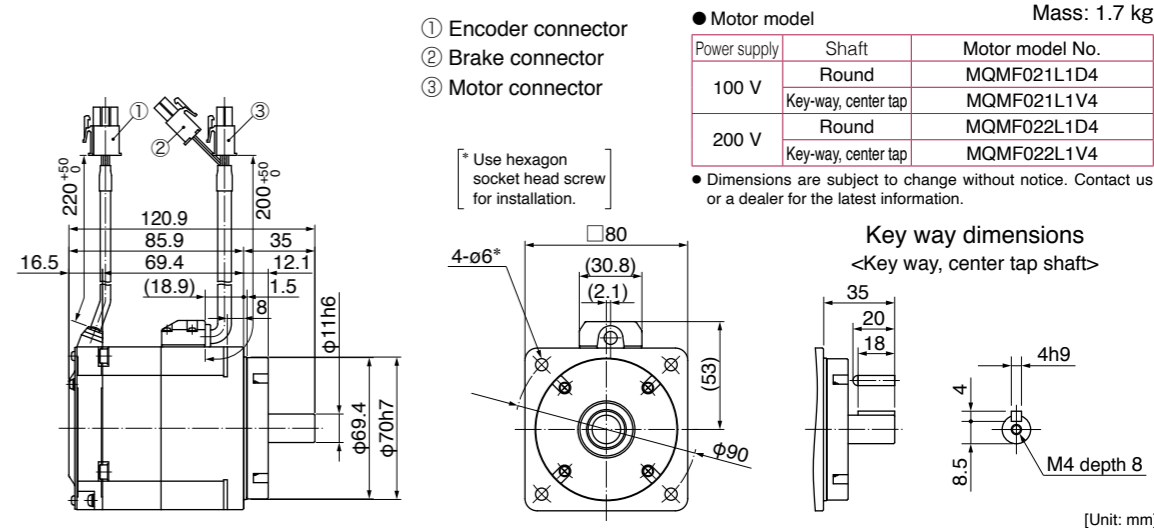
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



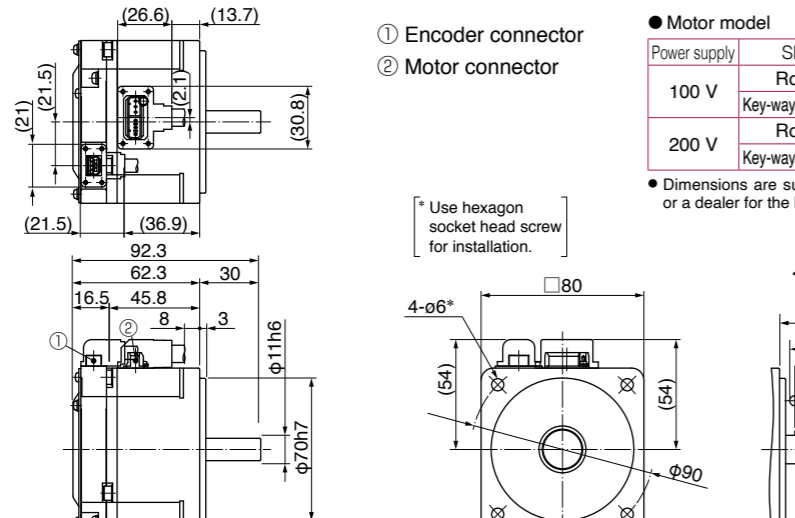
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



\* For motors specifications, refer to P.81, P.82.

MQMF 200 W

Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector  
② Motor connector

● Motor model Mass: 1.1 kg

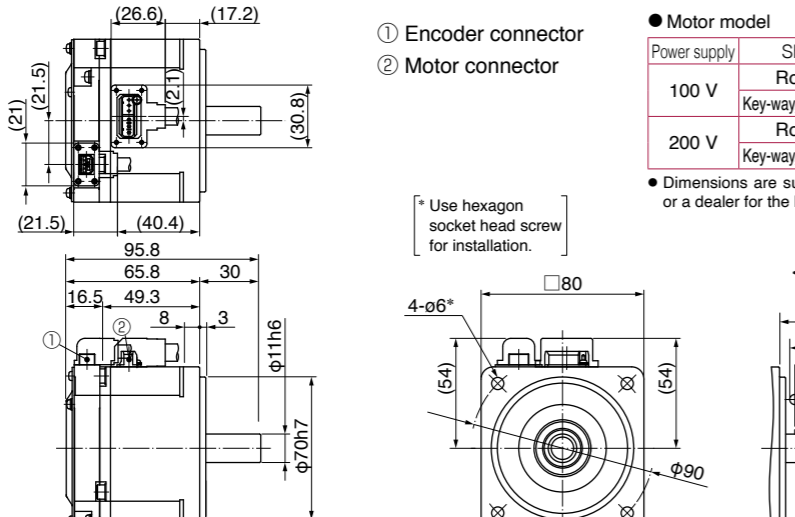
Power supply	Shaft	Motor model No.
100 V	Round	MQMF021L1A1
	Key-way, center tap	MQMF021L1S1
200 V	Round	MQMF022L1A1
	Key-way, center tap	MQMF022L1S1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
-Key way, center tap shaft-

[Unit: mm]

Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector  
② Motor connector

● Motor model Mass: 1.2 kg

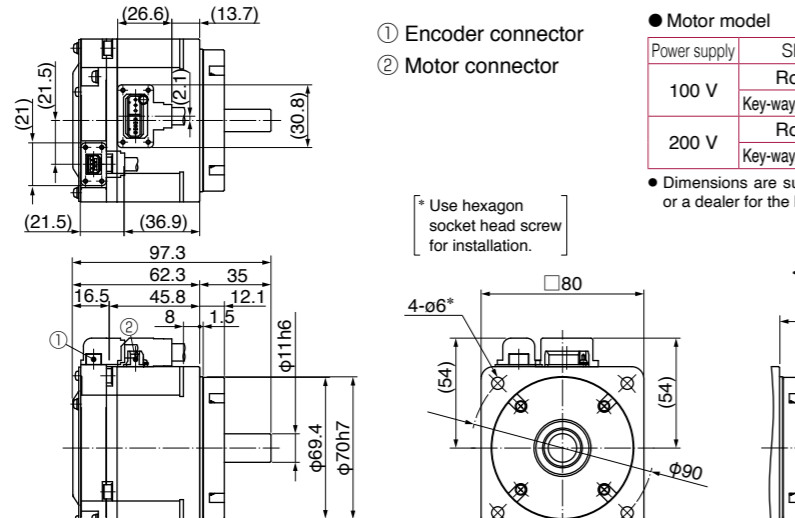
Power supply	Shaft	Motor model No.
100 V	Round	MQMF021L1C1
	Key-way, center tap	MQMF021L1U1
200 V	Round	MQMF022L1C1
	Key-way, center tap	MQMF022L1U1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
-Key way, center tap shaft-

[Unit: mm]

Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector  
② Motor connector

● Motor model Mass: 1.3 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF021L1C3
	Key-way, center tap	MQMF021L1U3
200 V	Round	MQMF022L1C3
	Key-way, center tap	MQMF022L1U3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

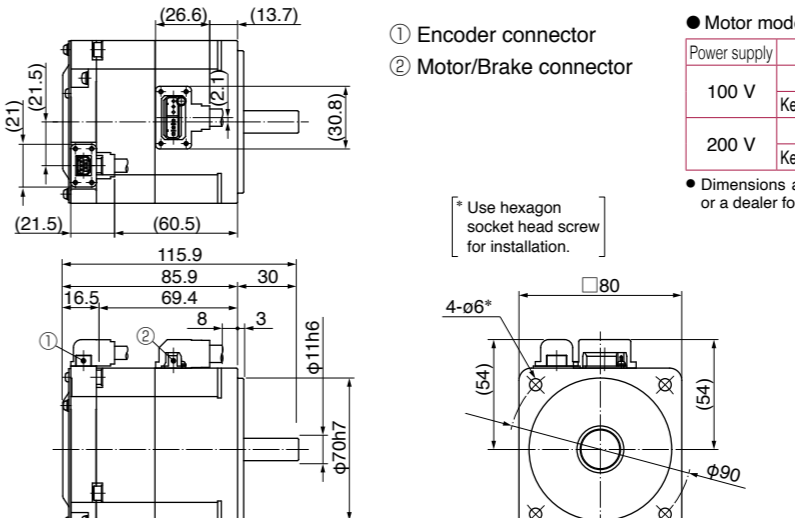
Key way dimensions  
-Key way, center tap shaft-

[Unit: mm]

\* For motors specifications, refer to P.81, P.82.

MQMF 200 W

Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector  
② Motor/Brake connector

● Motor model Mass: 1.5 kg

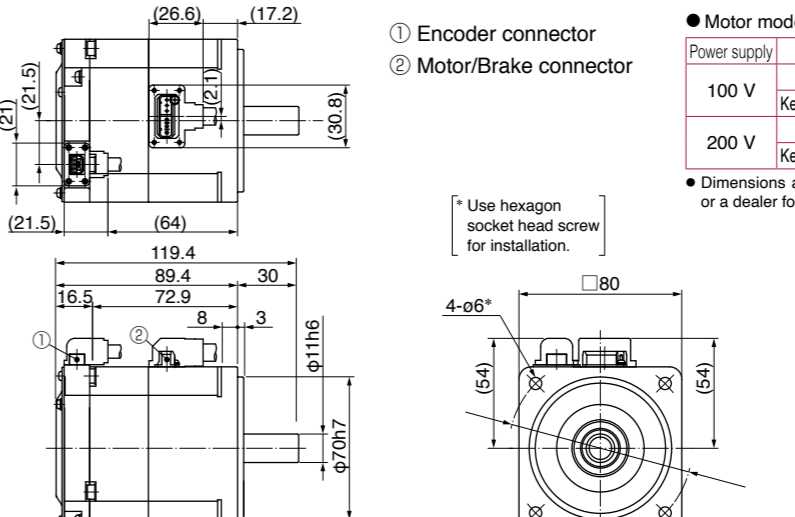
Power supply	Shaft	Motor model No.
100 V	Round	MQMF021L1B1
	Key-way, center tap	MQMF021L1T1
200 V	Round	MQMF022L1B1
	Key-way, center tap	MQMF022L1T1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
-Key way, center tap shaft-

[Unit: mm]

Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector  
② Motor/Brake connector

● Motor model Mass: 1.6 kg

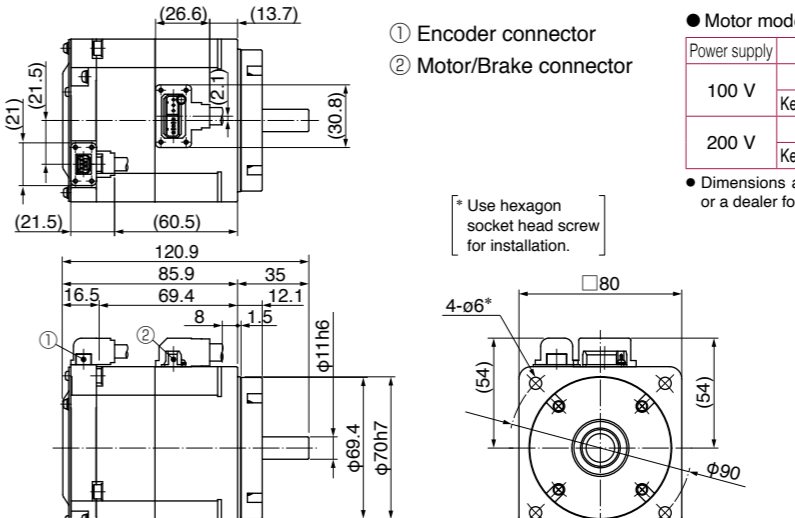
Power supply	Shaft	Motor model No.
100 V	Round	MQMF021L1D1
	Key-way, center tap	MQMF021L1V1
200 V	Round	MQMF022L1D1
	Key-way, center tap	MQMF022L1V1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
-Key way, center tap shaft-

[Unit: mm]

Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector  
② Motor/Brake connector

● Motor model Mass: 1.7 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF021L1D3
	Key-way, center tap	MQMF021L1V3
200 V	Round	MQMF022L1D3
	Key-way, center tap	MQMF022L1V3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions  
-Key way, center tap shaft-

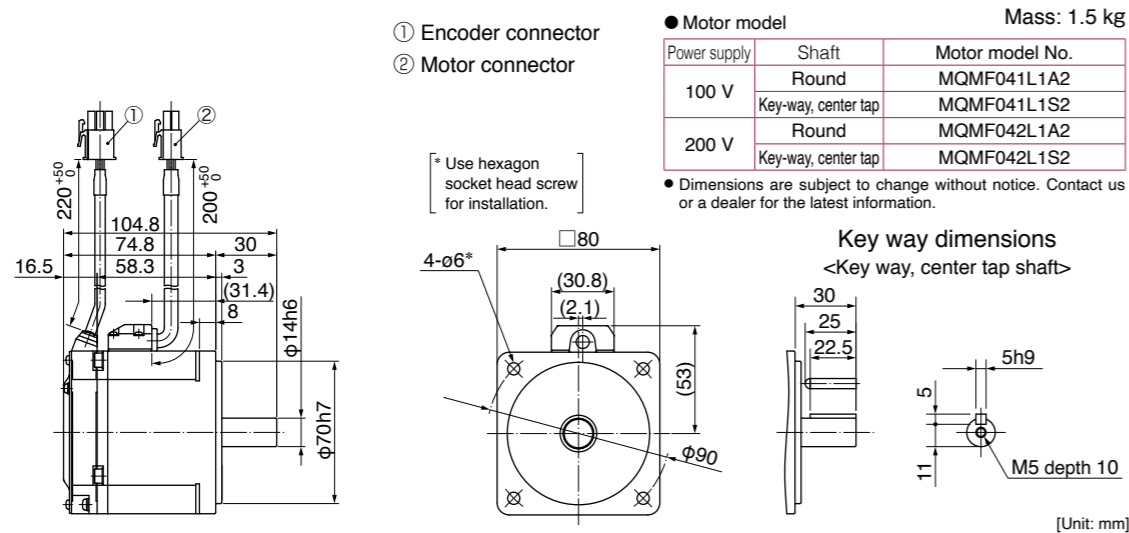
[Unit: mm]

\* For motors specifications, refer to P.81, P.82.

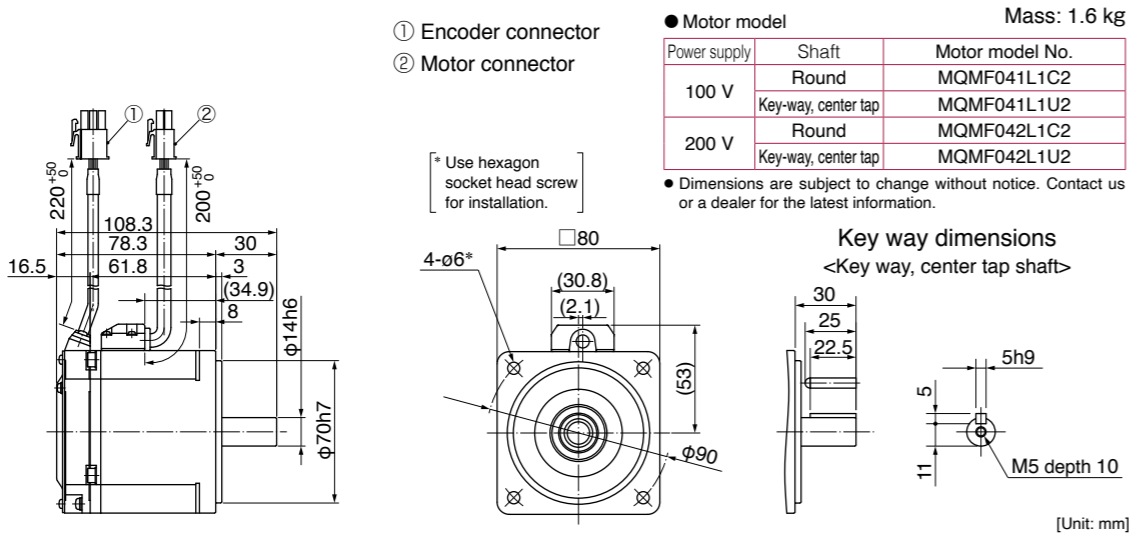


**MQMF 400 W**

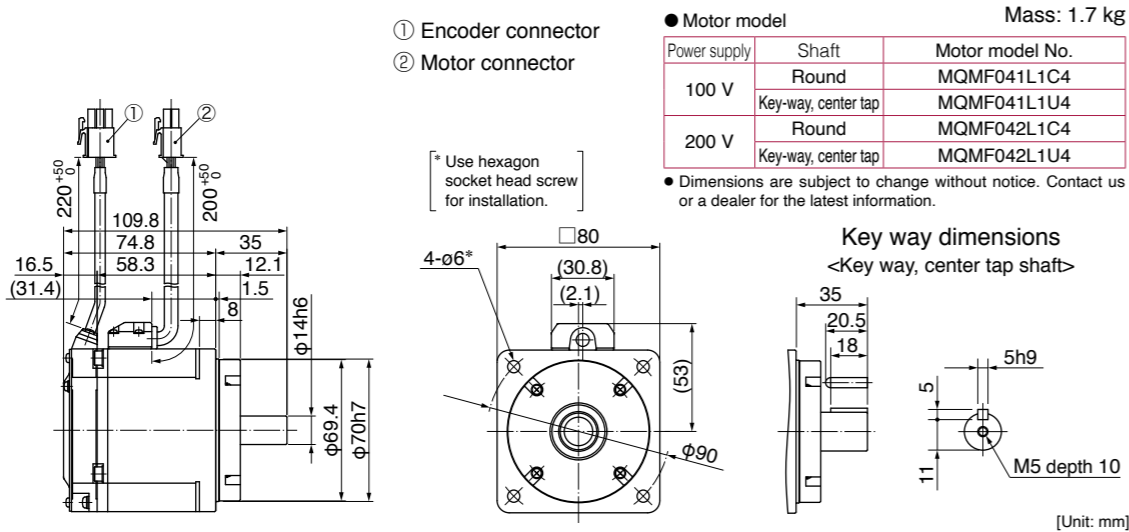
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



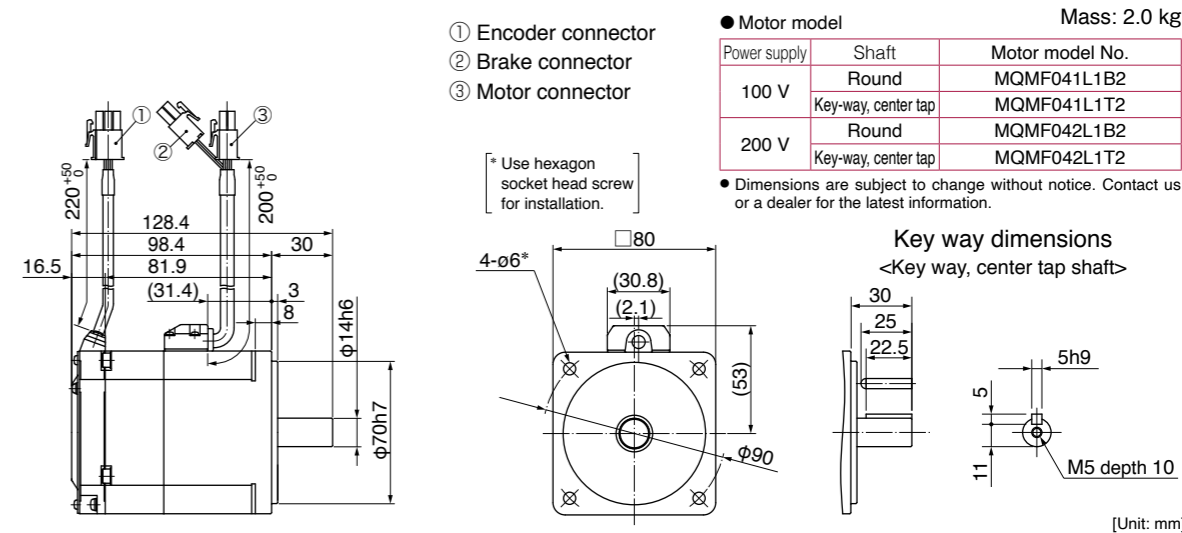
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



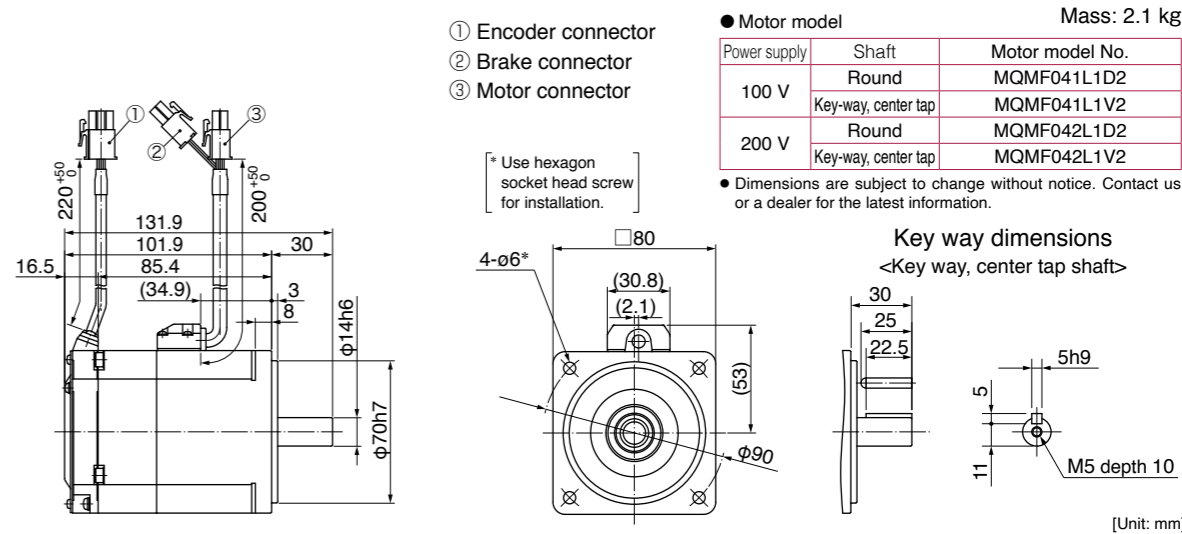
\* For motors specifications, refer to P.83, P.84.

**MQMF 400 W**

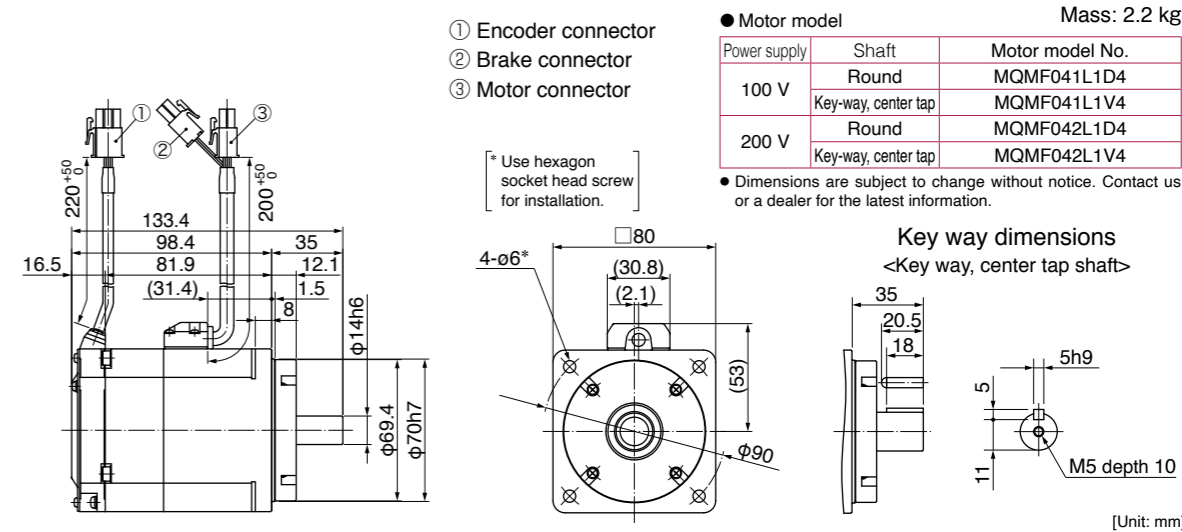
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



\* For motors specifications, refer to P.83, P.84.

MQMF 400 W

Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor connector

● Motor model Mass: 1.5 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF041L1A1
	Key-way, center tap	MQMF041L1S1
200 V	Round	MQMF042L1A1
	Key-way, center tap	MQMF042L1S1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor connector

● Motor model Mass: 1.6 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF041L1C1
	Key-way, center tap	MQMF041L1U1
200 V	Round	MQMF042L1C1
	Key-way, center tap	MQMF042L1U1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor connector

● Motor model Mass: 1.7 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF041L1C3
	Key-way, center tap	MQMF041L1U3
200 V	Round	MQMF042L1C3
	Key-way, center tap	MQMF042L1U3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

\* For motors specifications, refer to P.83, P.84.

MQMF 400 W

Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor/Brake connector

● Motor model Mass: 2.0 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF041L1B1
	Key-way, center tap	MQMF041L1T1
200 V	Round	MQMF042L1B1
	Key-way, center tap	MQMF042L1T1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor/Brake connector

● Motor model Mass: 2.1 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF041L1D1
	Key-way, center tap	MQMF041L1V1
200 V	Round	MQMF042L1D1
	Key-way, center tap	MQMF042L1V1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft

① Encoder connector  
② Motor/Brake connector

● Motor model Mass: 2.2 kg

Power supply	Shaft	Motor model No.
100 V	Round	MQMF041L1D3
	Key-way, center tap	MQMF041L1V3
200 V	Round	MQMF042L1D3
	Key-way, center tap	MQMF042L1V3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

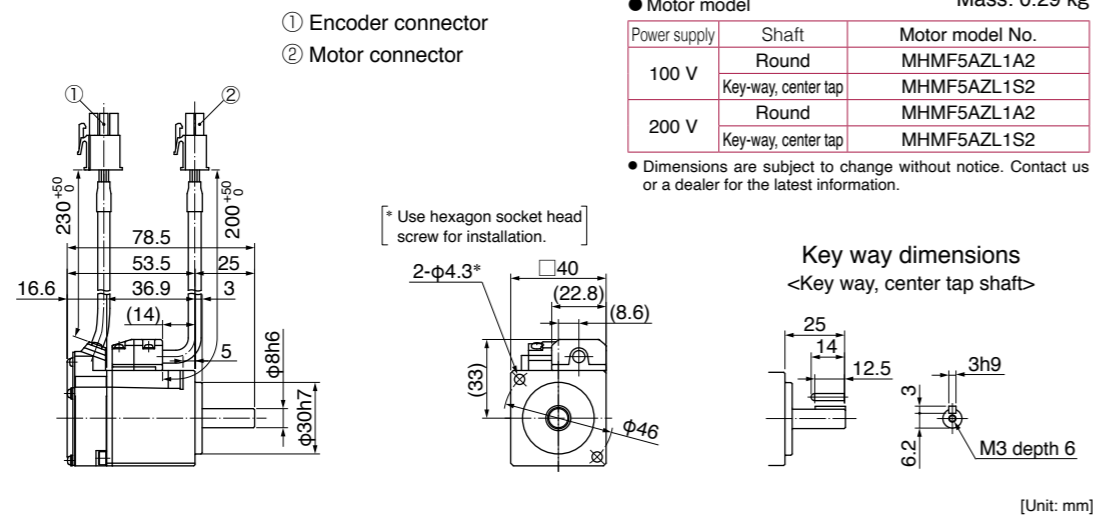
Key way dimensions  
<Key way, center tap shaft>

[Unit: mm]

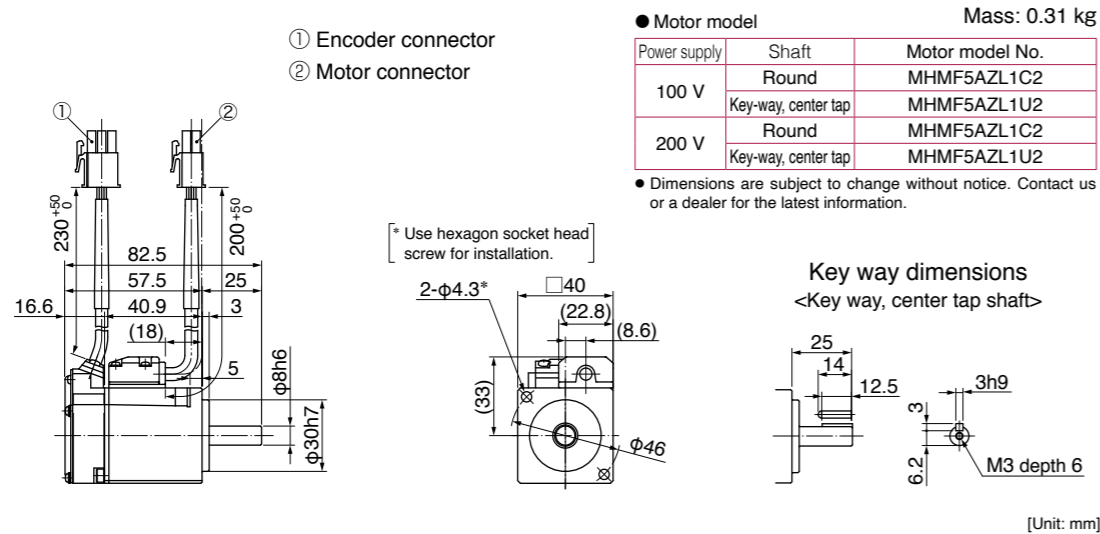
\* For motors specifications, refer to P.83, P.84.

MHMF 50 W

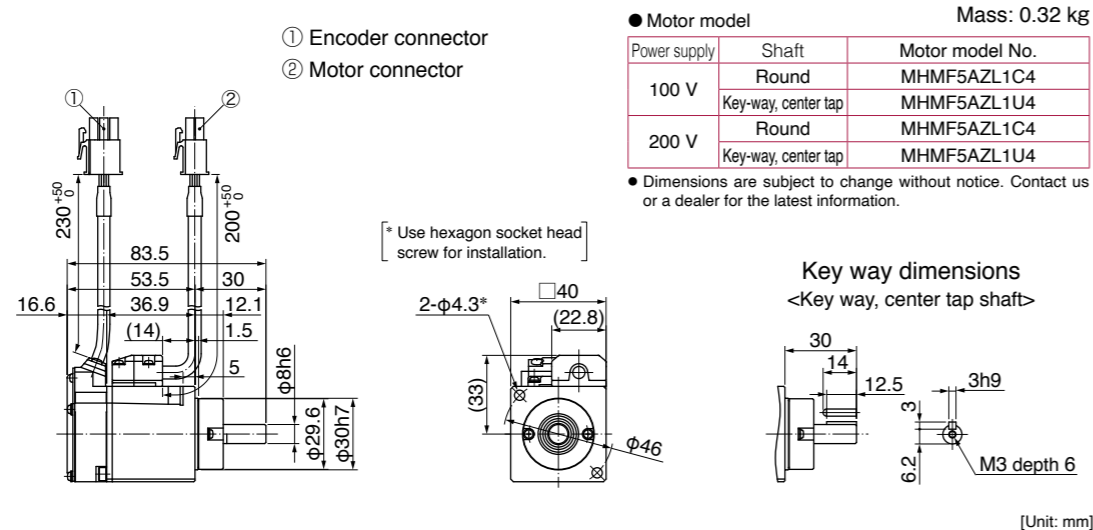
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



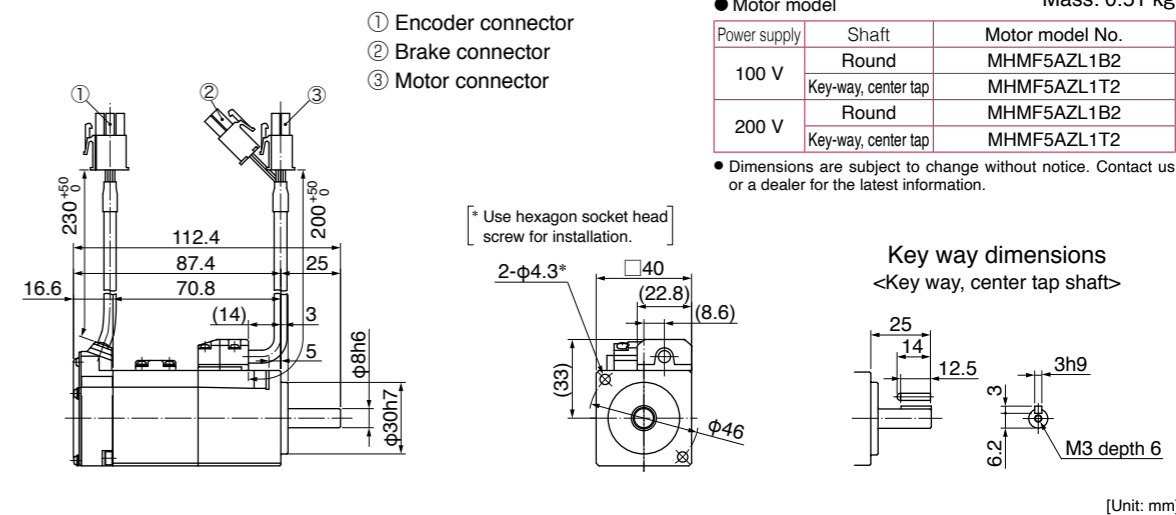
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



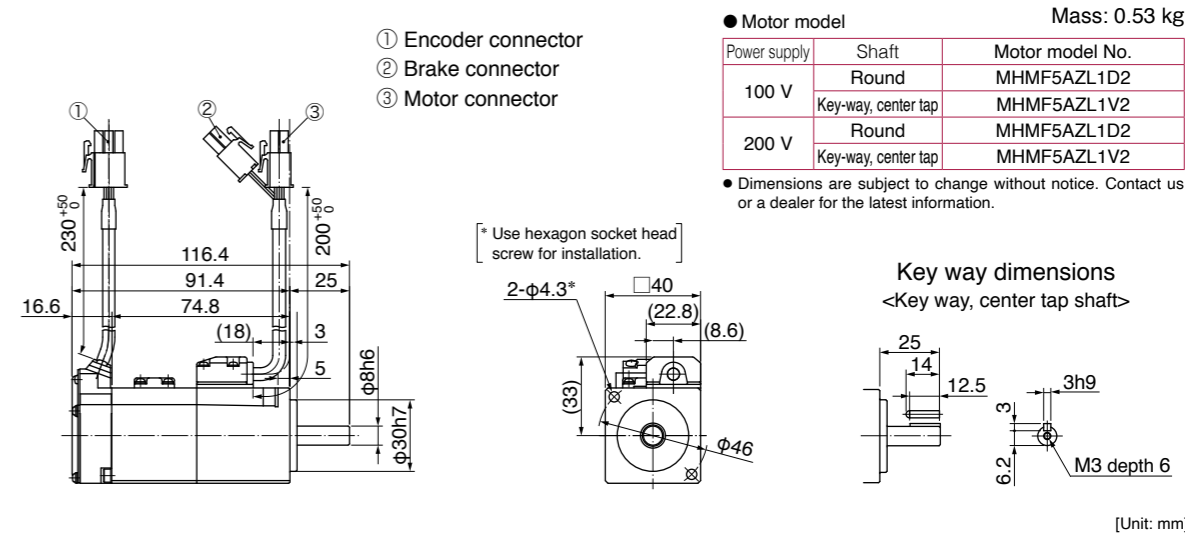
\* For motors specifications, refer to P.85, P.86.

MHMF 50 W

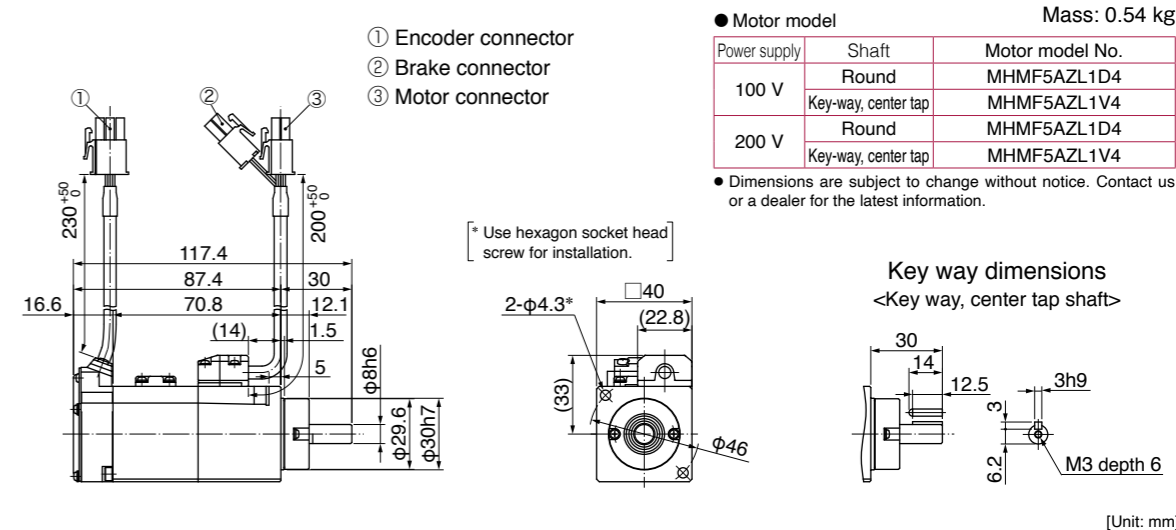
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



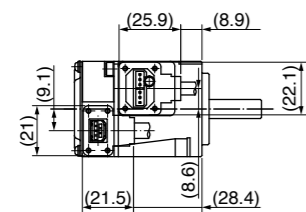
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



\* For motors specifications, refer to P.85, P.86.

MHMF 50 W

Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft

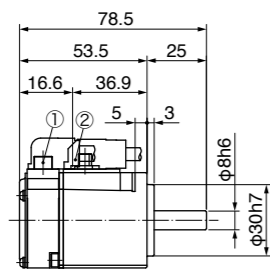


- ① Encoder connector
- ② Motor connector

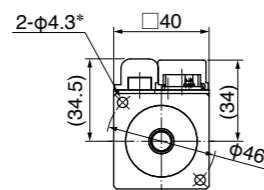
● Motor model Mass: 0.29 kg

Power supply	Shaft	Motor model No.
100 V	Round	MHMF5AZL1A1
	Key-way, center tap	MHMF5AZL1S1
200 V	Round	MHMF5AZL1A1
	Key-way, center tap	MHMF5AZL1S1

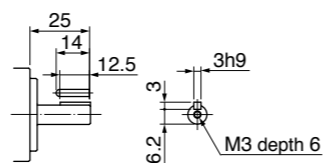
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



\* Use hexagon socket head screw for installation.

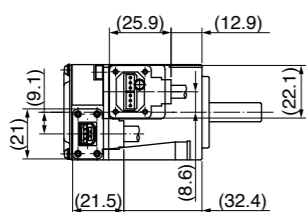


Key way dimensions  
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft

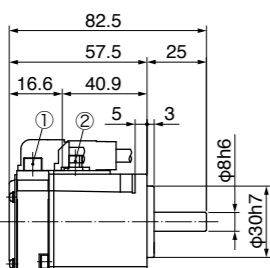


- ① Encoder connector
- ② Motor connector

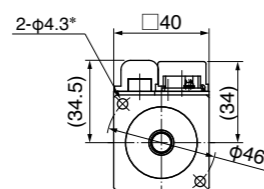
● Motor model Mass: 0.31 kg

Power supply	Shaft	Motor model No.
100 V	Round	MHMF5AZL1C1
	Key-way, center tap	MHMF5AZL1U1
200 V	Round	MHMF5AZL1C1
	Key-way, center tap	MHMF5AZL1U1

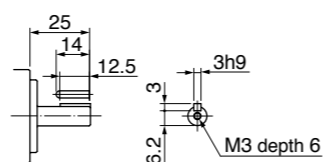
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



\* Use hexagon socket head screw for installation.

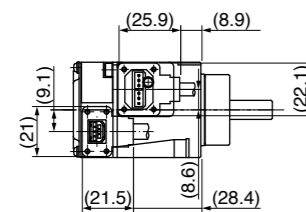


Key way dimensions  
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft

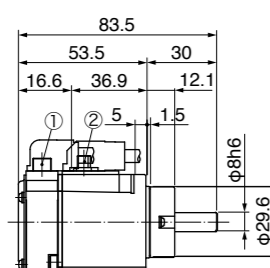


- ① Encoder connector
- ② Motor connector

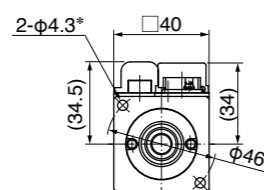
● Motor model Mass: 0.32 kg

Power supply	Shaft	Motor model No.
100 V	Round	MHMF5AZL1C3
	Key-way, center tap	MHMF5AZL1U3
200 V	Round	MHMF5AZL1C3
	Key-way, center tap	MHMF5AZL1U3

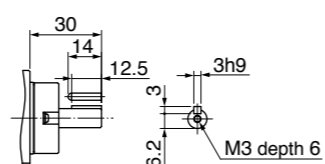
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



\* Use hexagon socket head screw for installation.



Key way dimensions  
<Key way, center tap shaft>

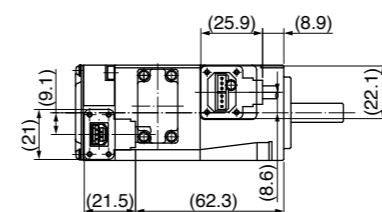


[Unit: mm]

\* For motors specifications, refer to P.85, P.86.

MHMF 50 W

Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft

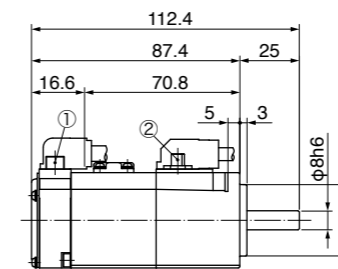


- ① Encoder connector
- ② Motor/Brake connector

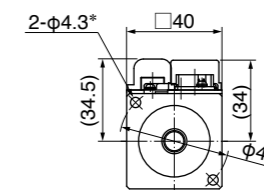
● Motor model Mass: 0.51 kg

Power supply	Shaft	Motor model No.
100 V	Round	MHMF5AZL1B1
	Key-way, center tap	MHMF5AZL1T1
200 V	Round	MHMF5AZL1B1
	Key-way, center tap	MHMF5AZL1T1

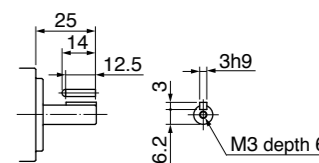
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



\* Use hexagon socket head screw for installation.

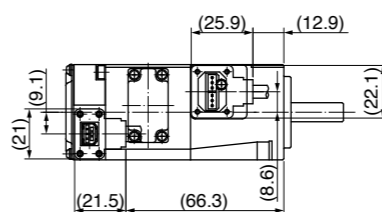


Key way dimensions  
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft

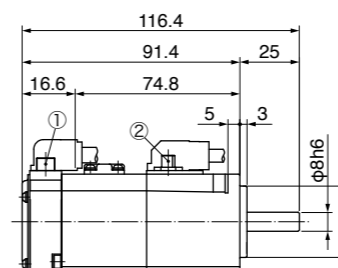


- ① Encoder connector
- ② Motor/Brake connector

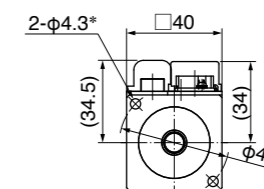
● Motor model Mass: 0.53 kg

Power supply	Shaft	Motor model No.
100 V	Round	MHMF5AZL1D1
	Key-way, center tap	MHMF5AZL1V1
200 V	Round	MHMF5AZL1D1
	Key-way, center tap	MHMF5AZL1V1

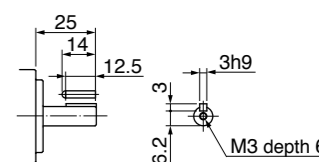
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



\* Use hexagon socket head screw for installation.

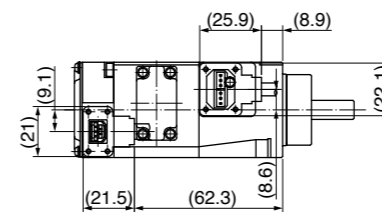


Key way dimensions  
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft

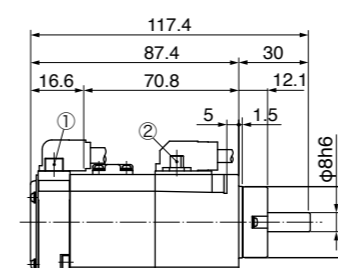


- ① Encoder connector
- ② Motor/Brake connector

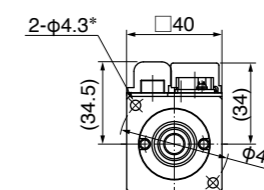
● Motor model Mass: 0.54 kg

Power supply	Shaft	Motor model No.
100 V	Round	MHMF5AZL1D3
	Key-way, center tap	MHMF5AZL1V3
200 V	Round	MHMF5AZL1D3
	Key-way, center tap	MHMF5AZL1V3

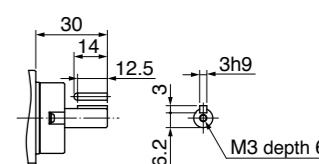
● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.



\* Use hexagon socket head screw for installation.



Key way dimensions  
<Key way, center tap shaft>

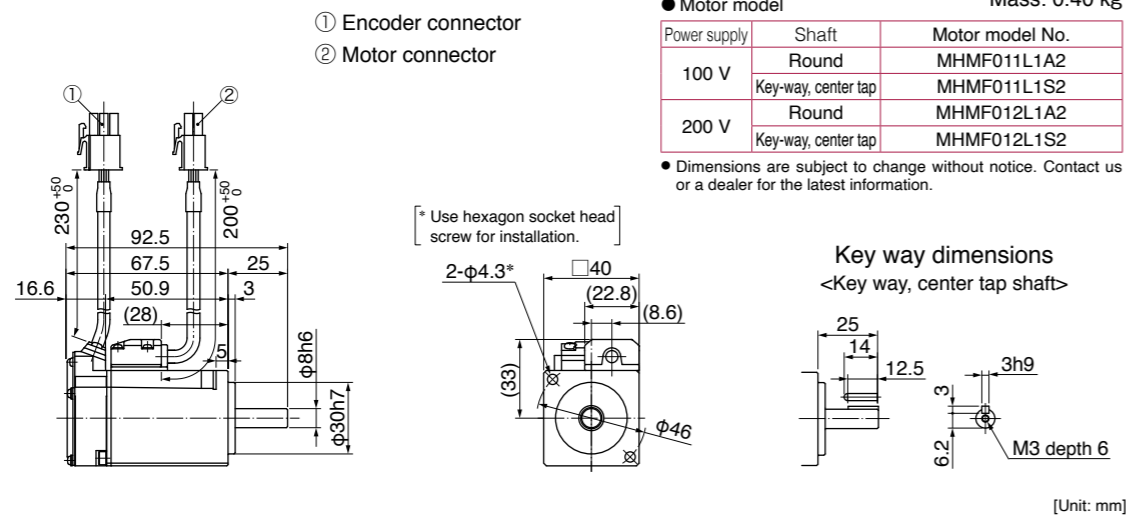


[Unit: mm]

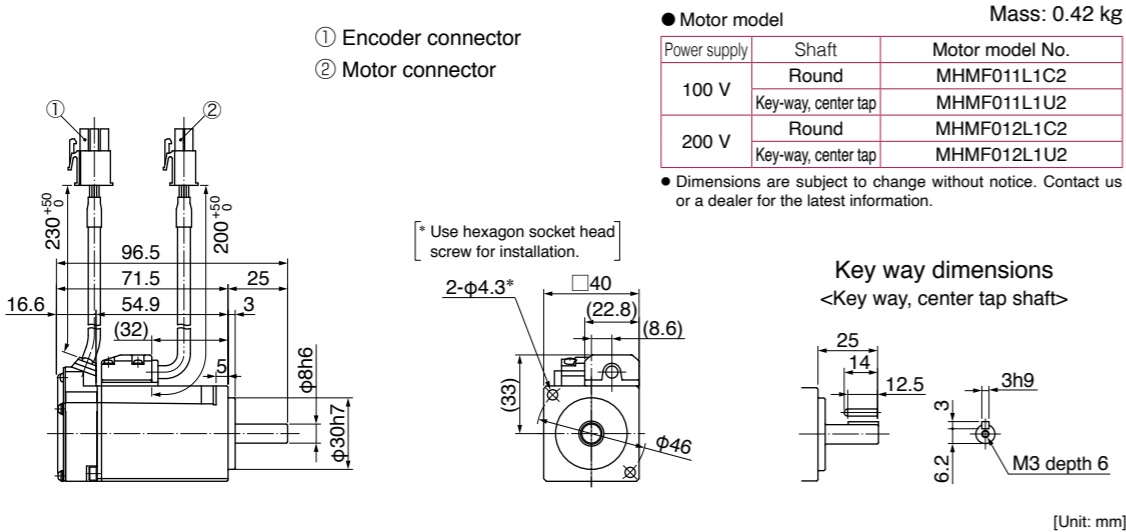
\* For motors specifications, refer to P.85, P.86.

MHMF 100 W

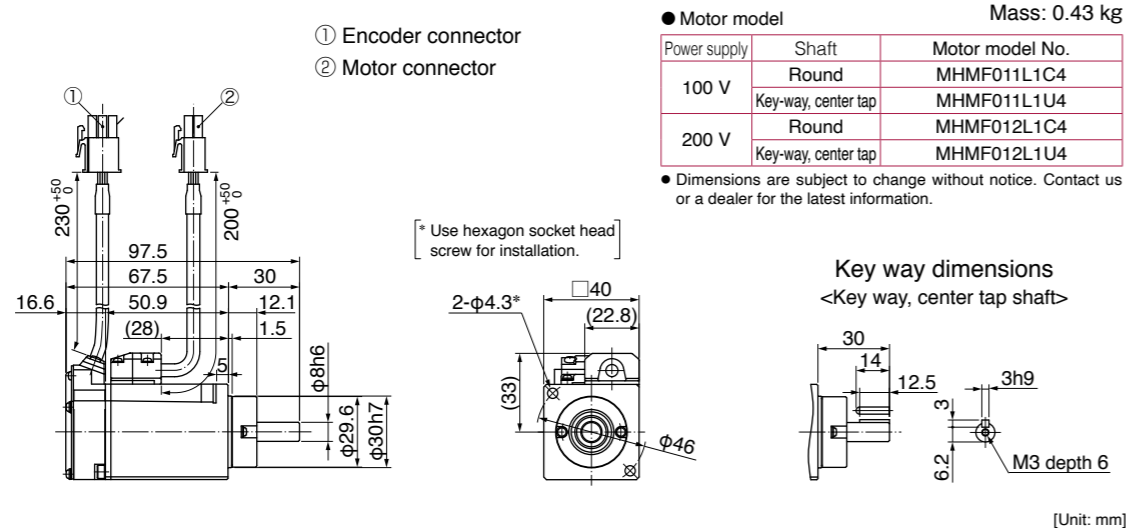
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



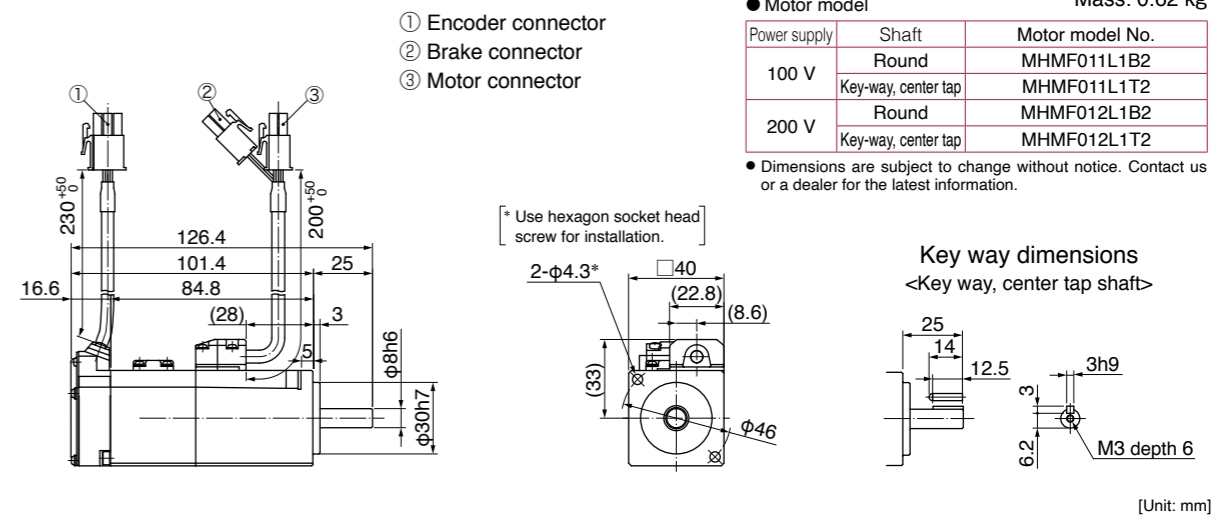
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



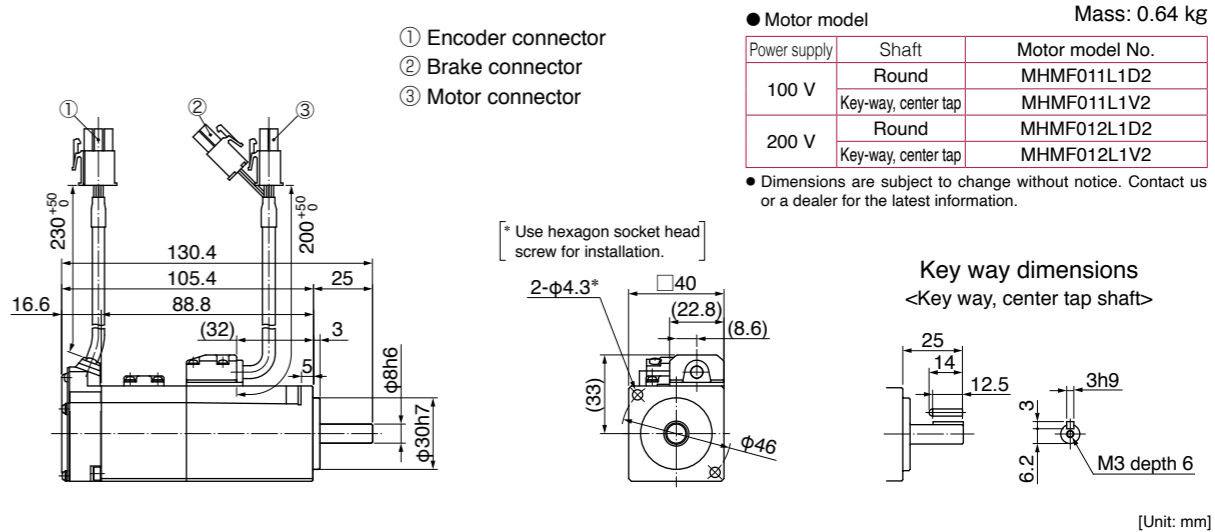
\* For motors specifications, refer to P.87, P.88.

MHMF 100 W

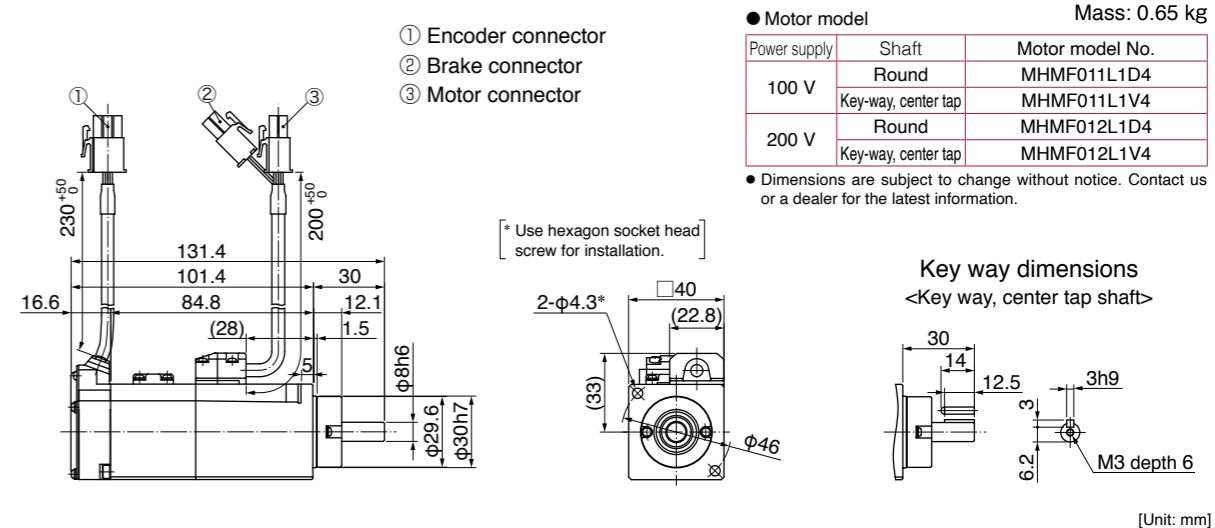
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



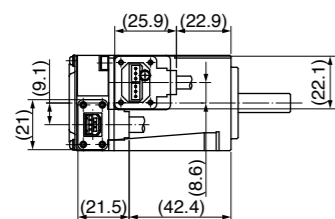
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



\* For motors specifications, refer to P.87, P.88.

MHMF 100 W

Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



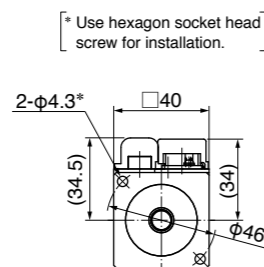
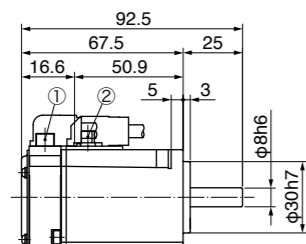
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 0.40 kg

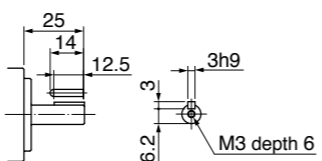
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1A1
	Key-way, center tap	MHMF011L1S1
200 V	Round	MHMF012L1A1
	Key-way, center tap	MHMF012L1S1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

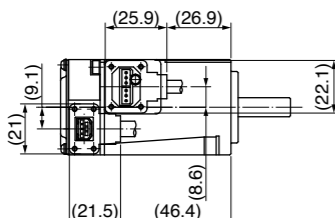


Key way dimensions  
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



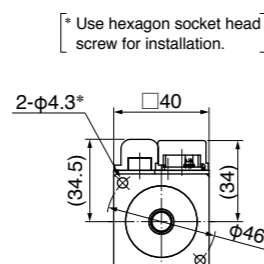
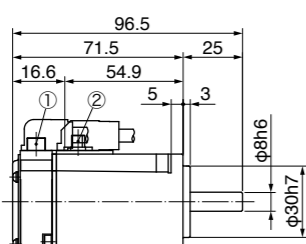
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 0.42 kg

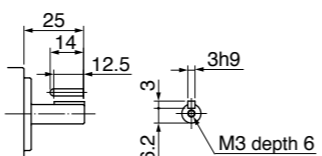
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1C1
	Key-way, center tap	MHMF011L1U1
200 V	Round	MHMF012L1C1
	Key-way, center tap	MHMF012L1U1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

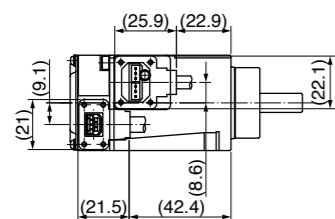


Key way dimensions  
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



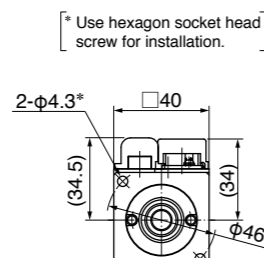
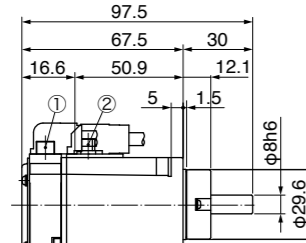
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 0.43 kg

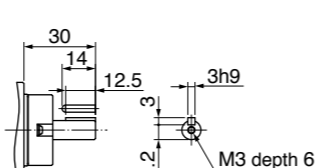
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1C3
	Key-way, center tap	MHMF011L1U3
200 V	Round	MHMF012L1C3
	Key-way, center tap	MHMF012L1U3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



Key way dimensions  
<Key way, center tap shaft>

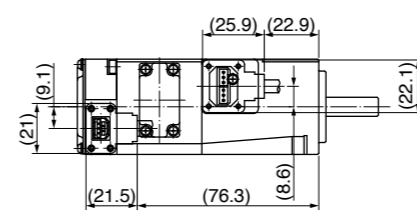


[Unit: mm]

\* For motors specifications, refer to P.87, P.88.

MHMF 100 W

Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



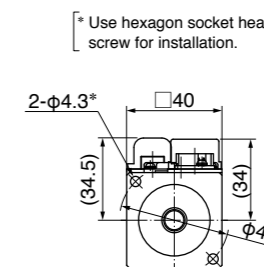
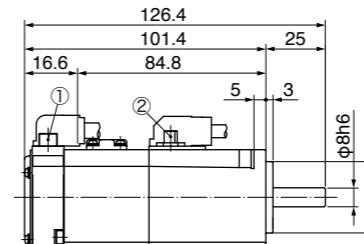
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 0.62 kg

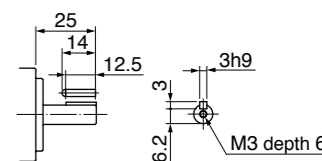
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1B1
	Key-way, center tap	MHMF011L1T1
200 V	Round	MHMF012L1B1
	Key-way, center tap	MHMF012L1T1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

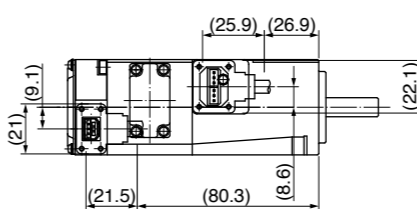


Key way dimensions  
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



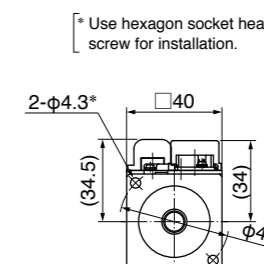
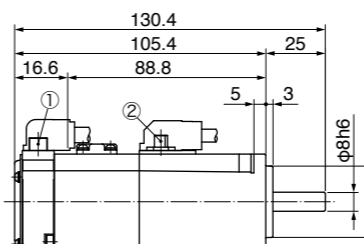
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 0.64 kg

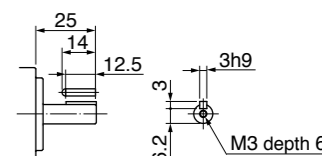
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1D1
	Key-way, center tap	MHMF011L1V1
200 V	Round	MHMF012L1D1
	Key-way, center tap	MHMF012L1V1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

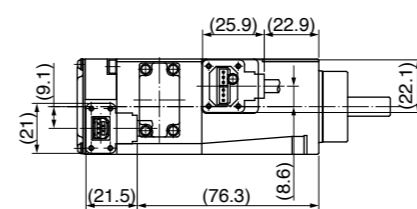


Key way dimensions  
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



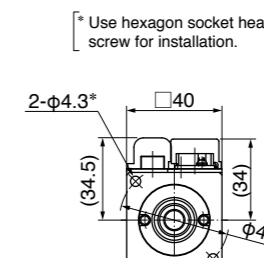
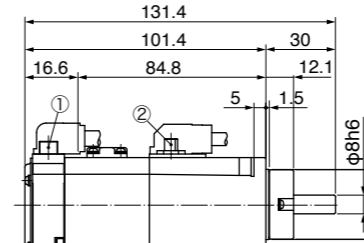
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 0.65 kg

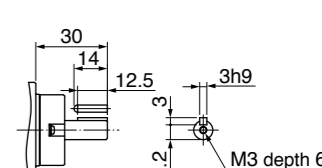
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1D3
	Key-way, center tap	MHMF011L1V3
200 V	Round	MHMF012L1D3
	Key-way, center tap	MHMF012L1V3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



Key way dimensions  
<Key way, center tap shaft>

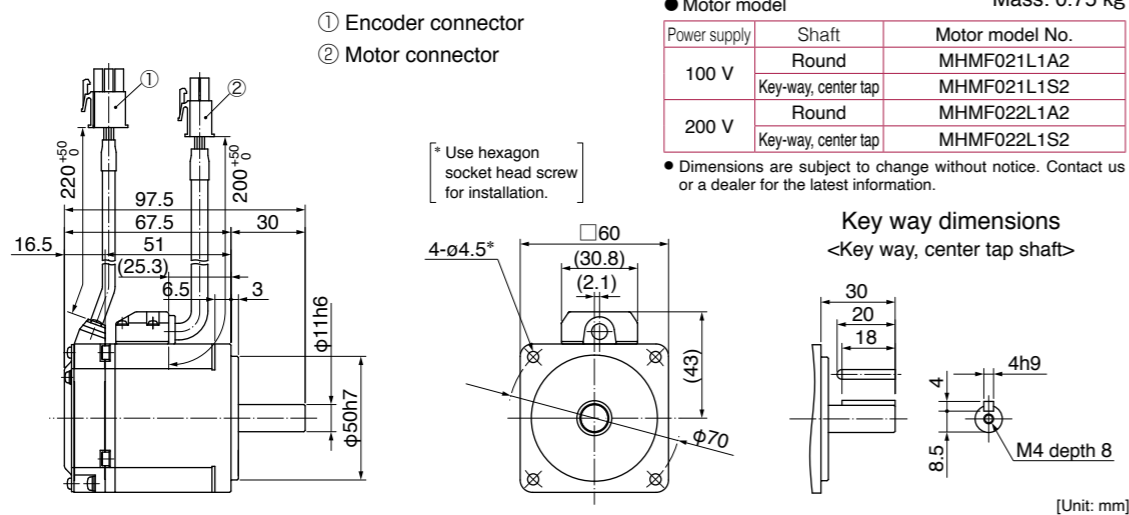


[Unit: mm]

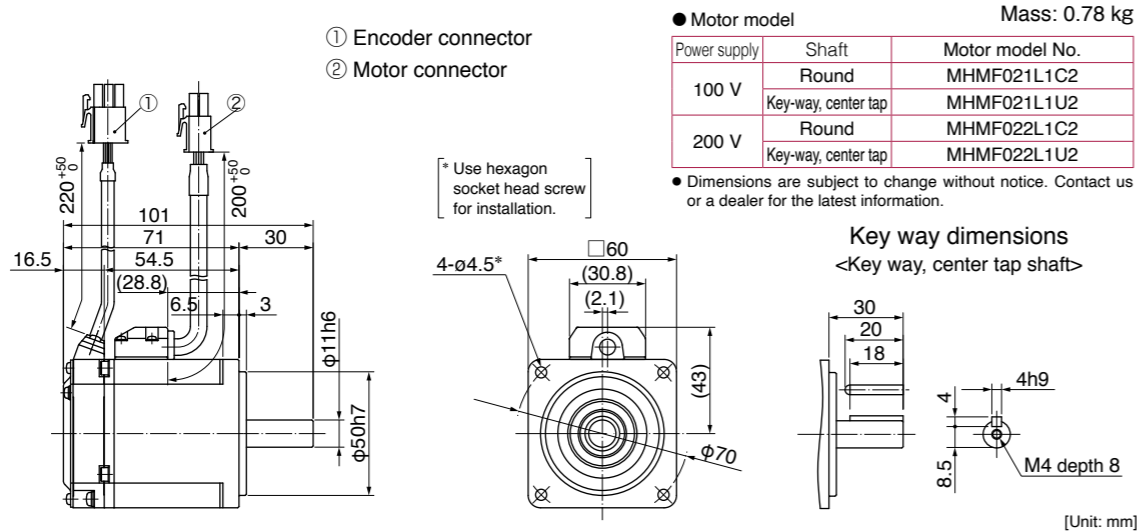
\* For motors specifications, refer to P.87, P.88.

MHMF 200 W

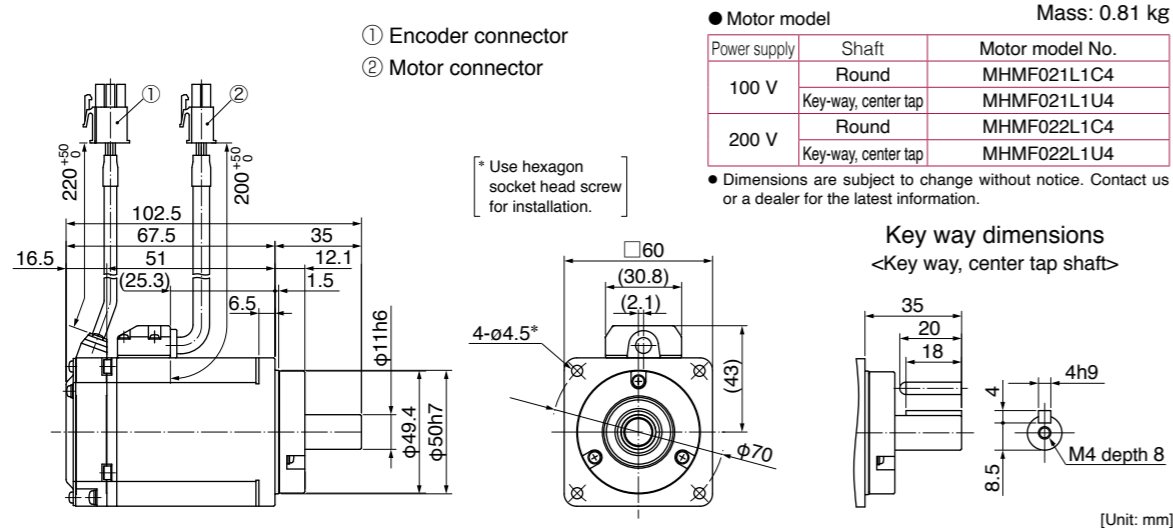
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



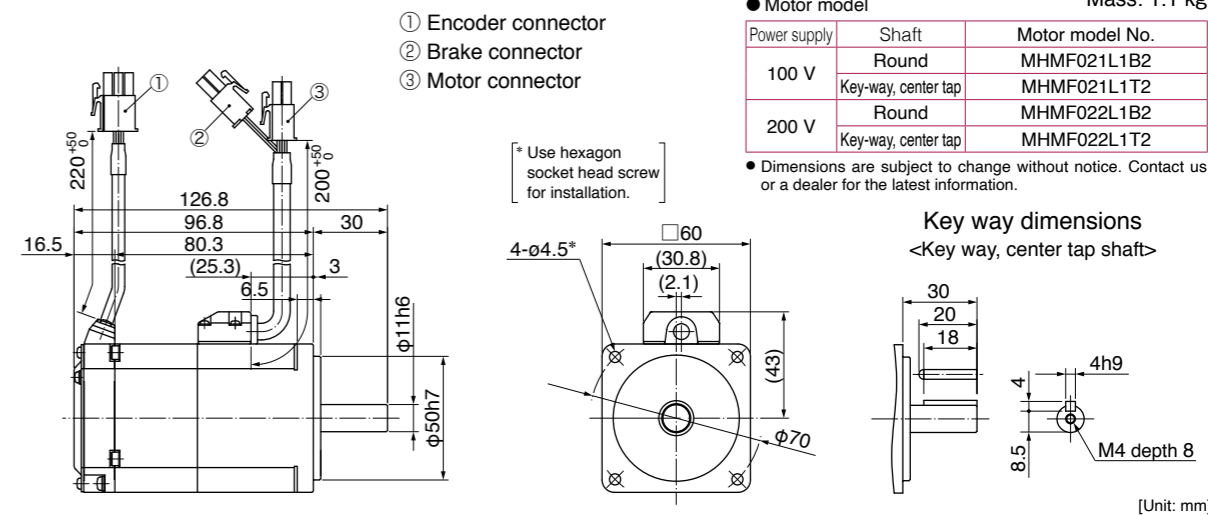
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



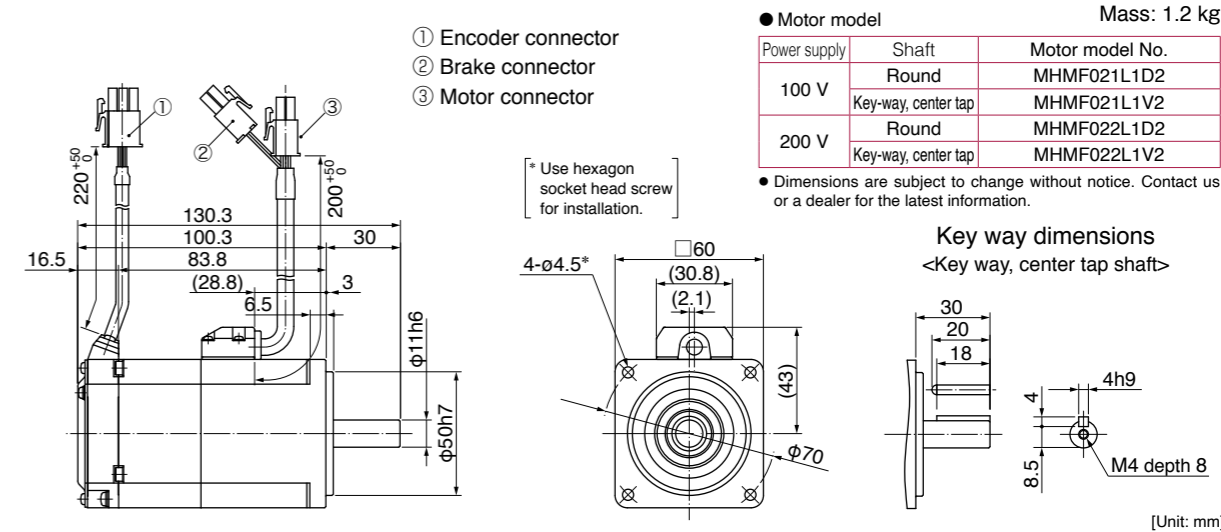
\* For motors specifications, refer to P.89, P.90.

MHMF 200 W

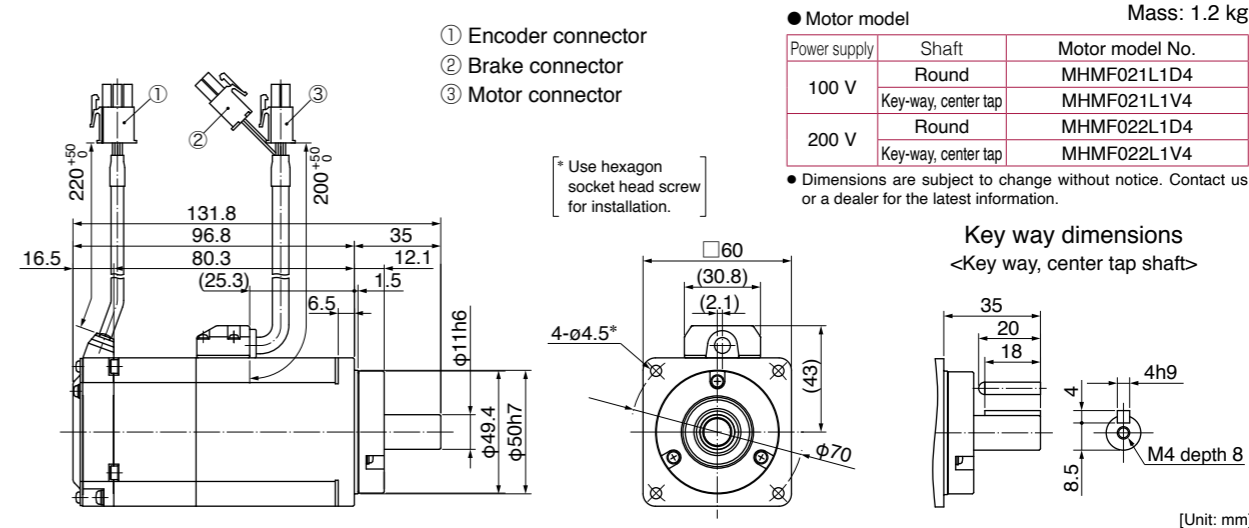
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



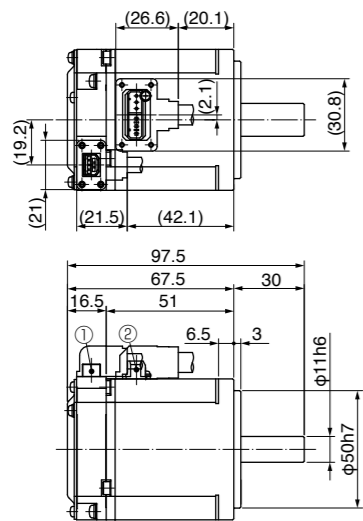
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



\* For motors specifications, refer to P.89, P.90.

MHMF 200 W

Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



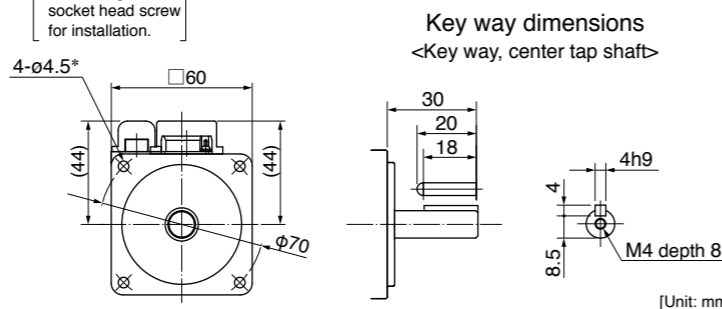
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 0.75 kg

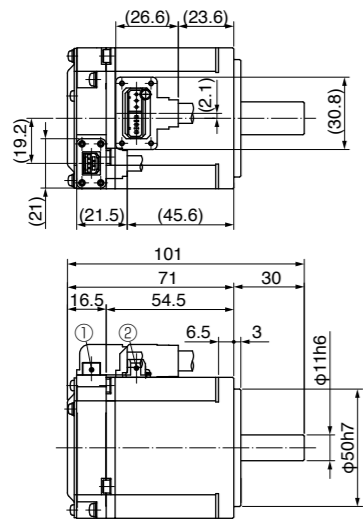
Power supply	Shaft	Motor model No.
100 V	Round	MHMF021L1A1
	Key-way, center tap	MHMF021L1S1
200 V	Round	MHMF022L1A1
	Key-way, center tap	MHMF022L1S1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



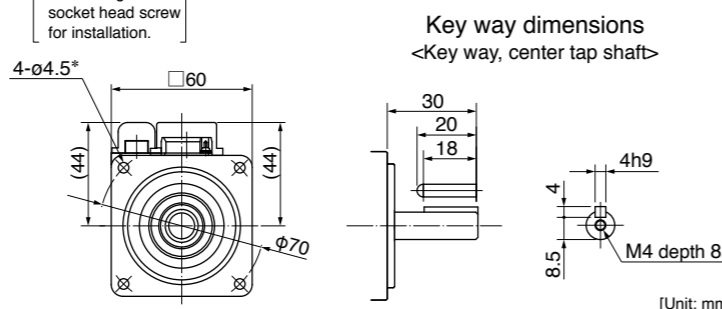
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 0.78 kg

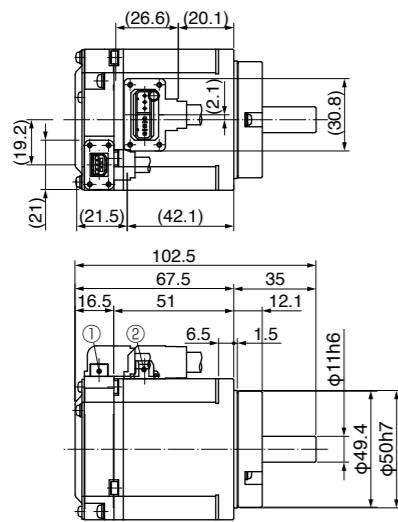
Power supply	Shaft	Motor model No.
100 V	Round	MHMF021L1C1
	Key-way, center tap	MHMF021L1U1
200 V	Round	MHMF022L1C1
	Key-way, center tap	MHMF022L1U1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



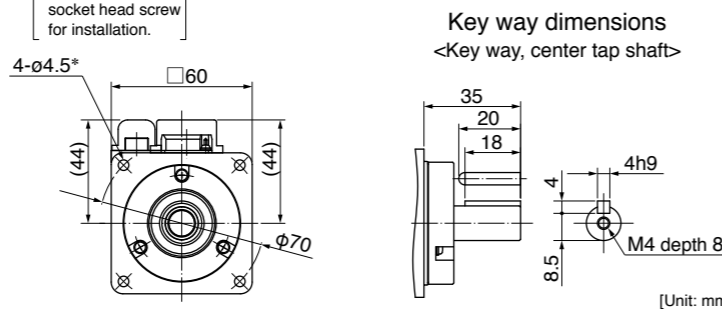
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 0.81 kg

Power supply	Shaft	Motor model No.
100 V	Round	MHMF021L1C3
	Key-way, center tap	MHMF021L1U3
200 V	Round	MHMF022L1C3
	Key-way, center tap	MHMF022L1U3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

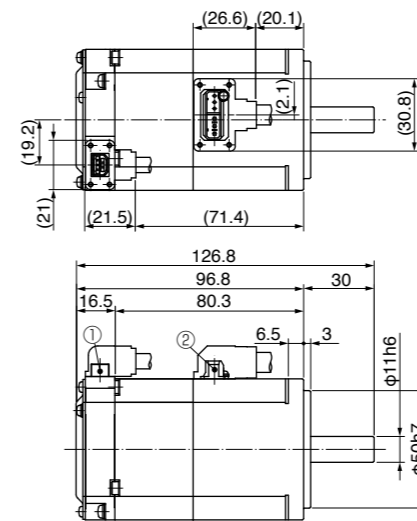
\* Use hexagon socket head screw for installation.



\* For motors specifications, refer to P.89, P.90.

MHMF 200 W

Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



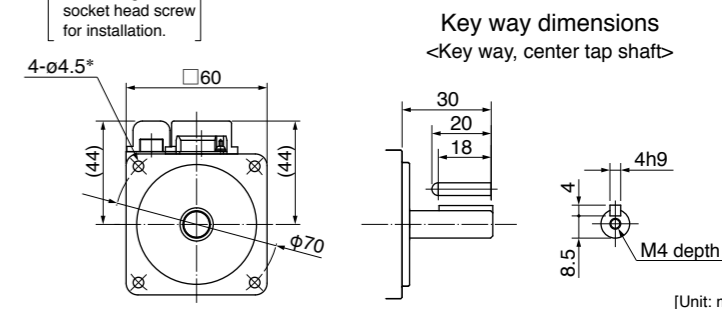
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 1.1 kg

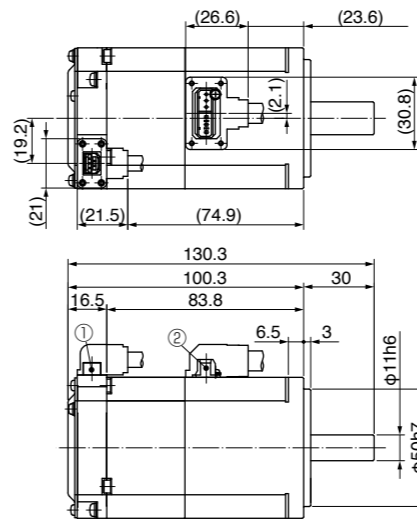
Power supply	Shaft	Motor model No.
100 V	Round	MHMF021L1B1
	Key-way, center tap	MHMF021L1T1
200 V	Round	MHMF022L1B1
	Key-way, center tap	MHMF022L1T1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



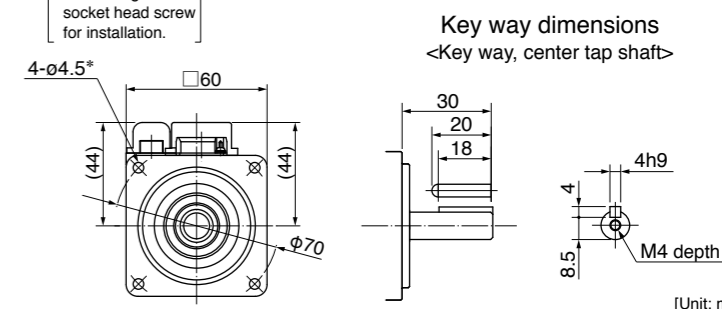
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 1.2 kg

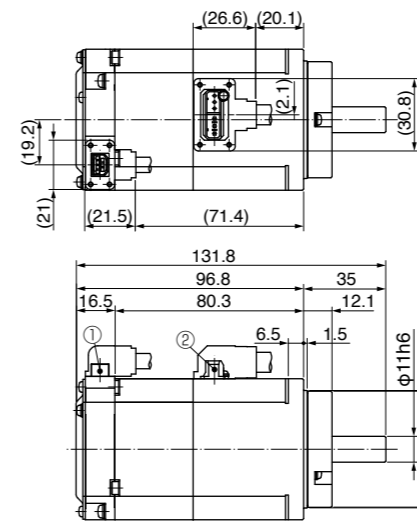
Power supply	Shaft	Motor model No.
100 V	Round	MHMF021L1D1
	Key-way, center tap	MHMF021L1V1
200 V	Round	MHMF022L1D1
	Key-way, center tap	MHMF022L1V1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



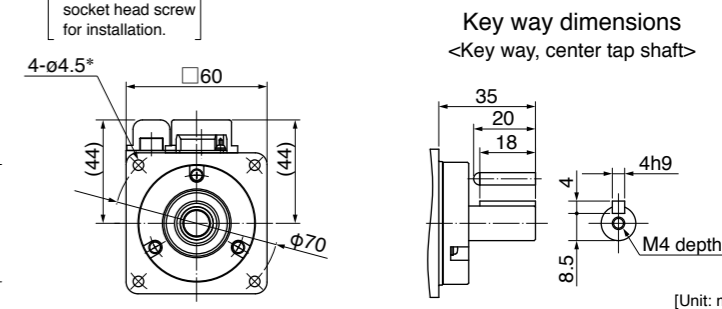
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 1.2 kg

Power supply	Shaft	Motor model No.
100 V	Round	MHMF021L1D3
	Key-way, center tap	MHMF021L1V3
200 V	Round	MHMF022L1D3
	Key-way, center tap	MHMF022L1V3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

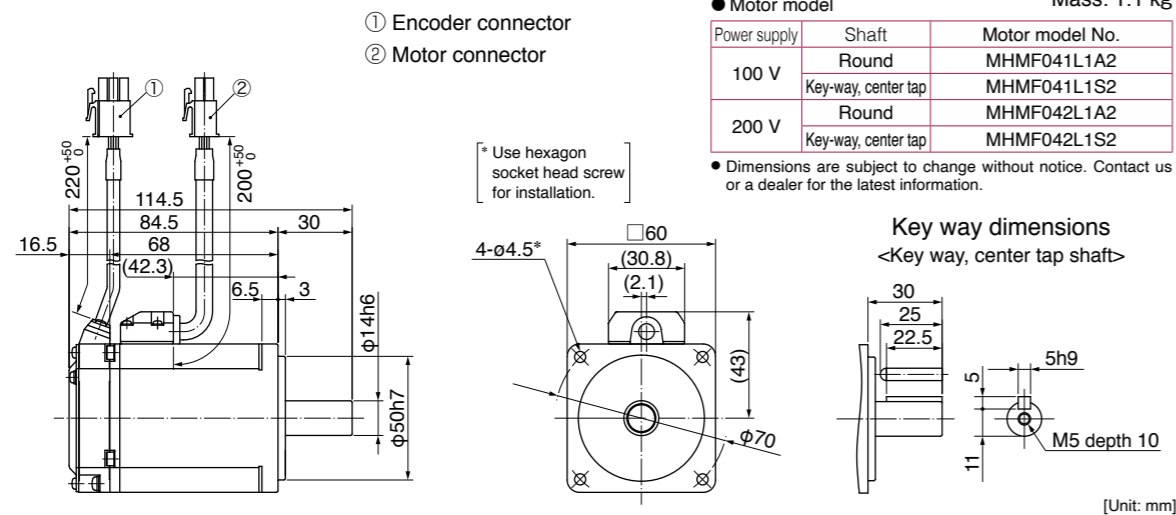


\* For motors specifications, refer to P.89, P.90.

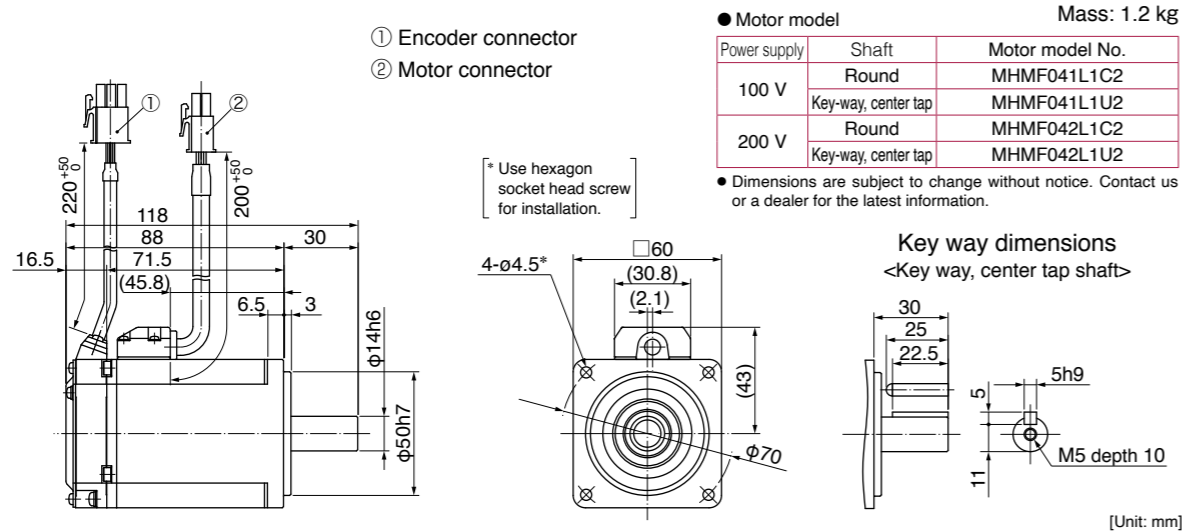


MHMF 400 W

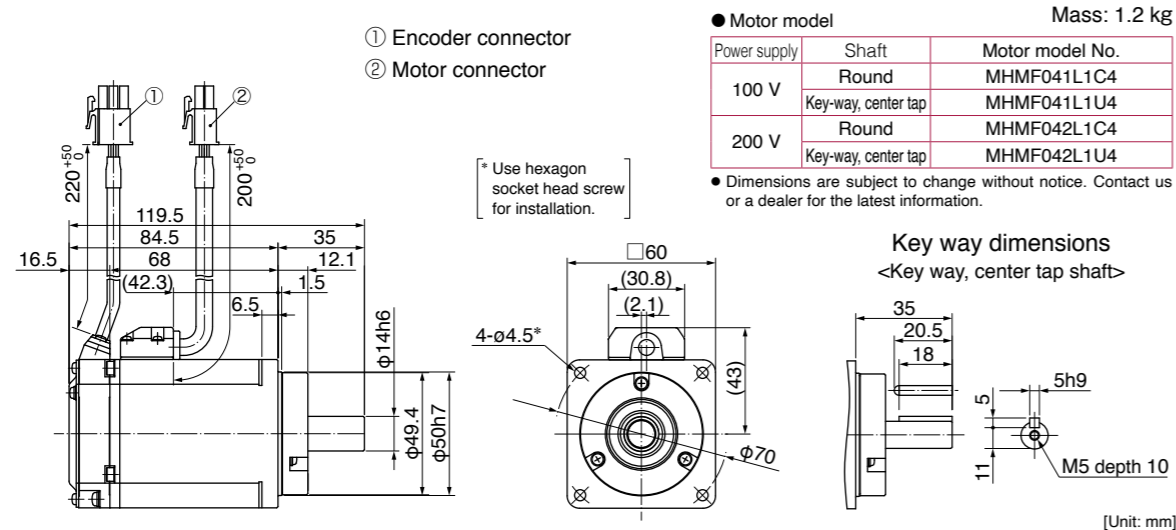
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



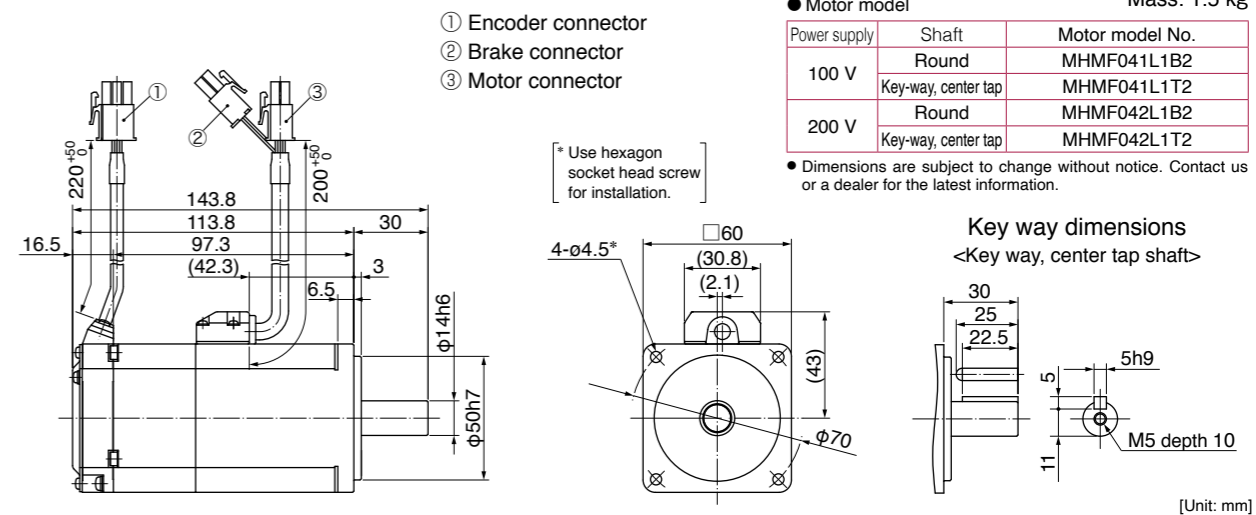
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



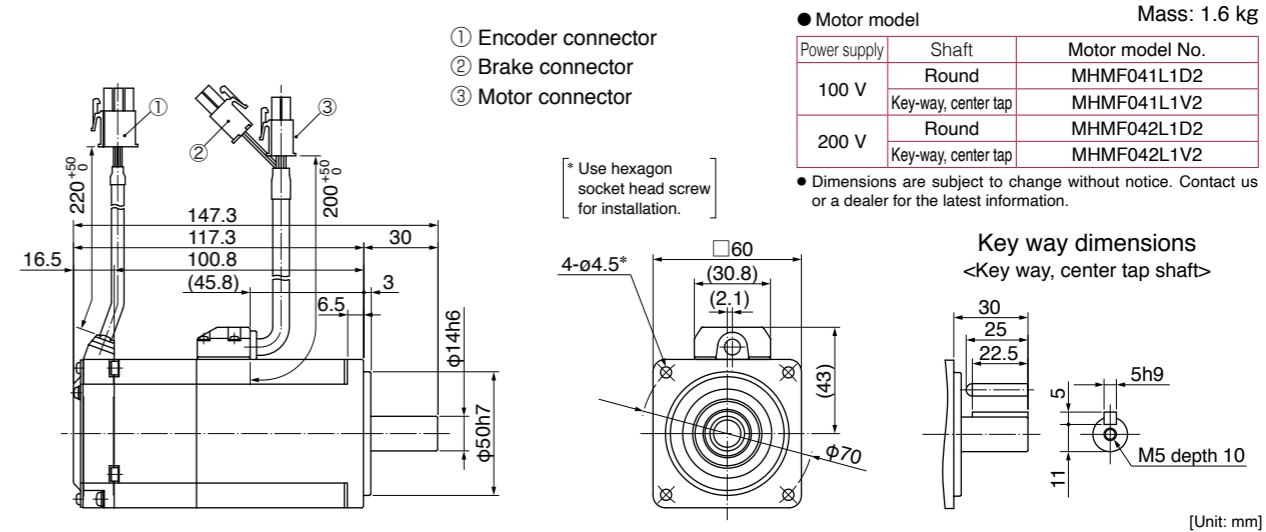
\* For motors specifications, refer to P.91, P.92.

MHMF 400 W

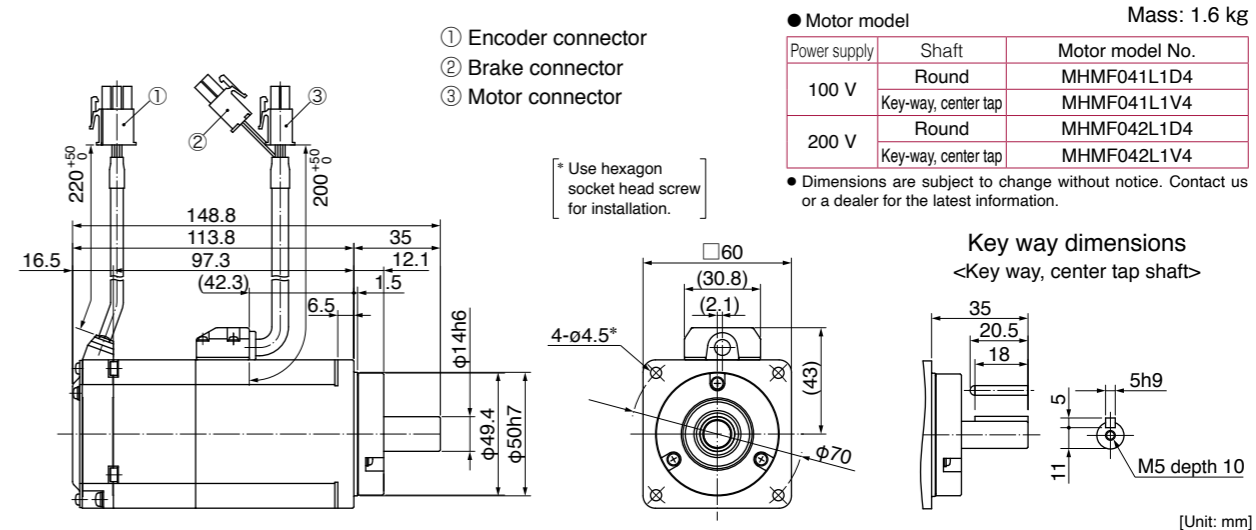
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



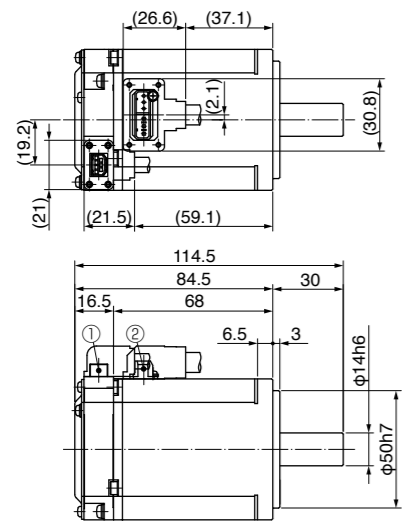
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



\* For motors specifications, refer to P.91, P.92.

MHMF 400 W

Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



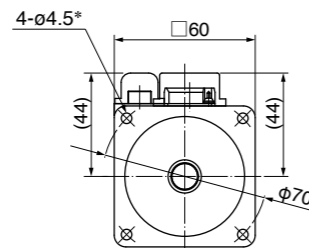
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 1.1 kg

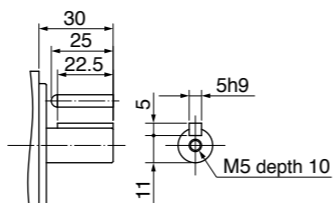
Power supply	Shaft	Motor model No.
100 V	Round	MHMF041L1A1
	Key-way, center tap	MHMF041L1S1
200 V	Round	MHMF042L1A1
	Key-way, center tap	MHMF042L1S1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

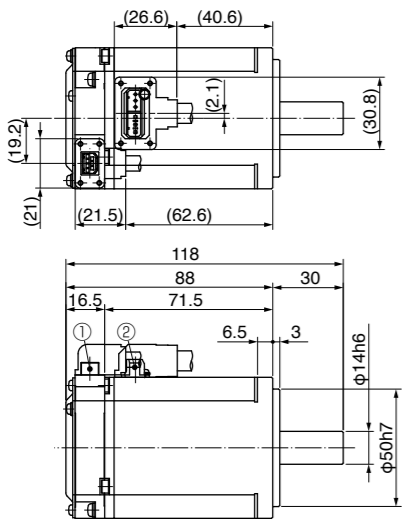


Key way dimensions <Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



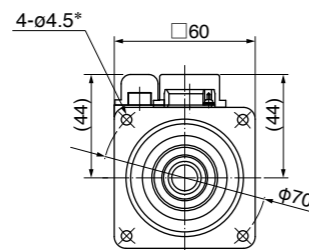
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 1.2 kg

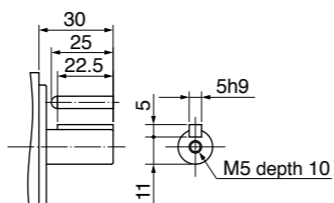
Power supply	Shaft	Motor model No.
100 V	Round	MHMF041L1C1
	Key-way, center tap	MHMF041L1U1
200 V	Round	MHMF042L1C1
	Key-way, center tap	MHMF042L1U1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

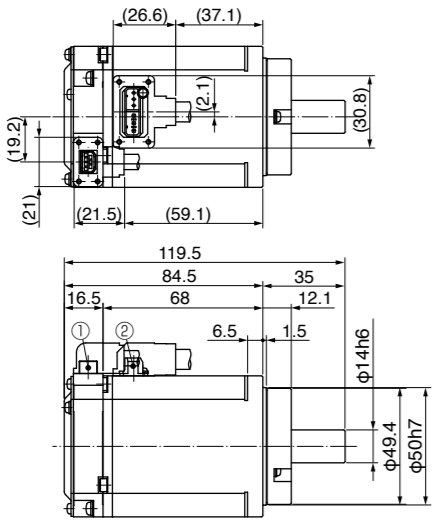


Key way dimensions <Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



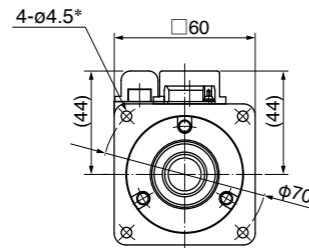
- ① Encoder connector
- ② Motor connector

● Motor model Mass: 1.2 kg

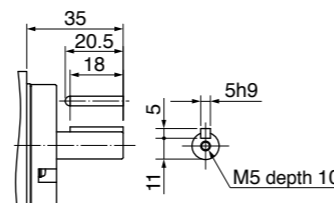
Power supply	Shaft	Motor model No.
100 V	Round	MHMF041L1C3
	Key-way, center tap	MHMF041L1U3
200 V	Round	MHMF042L1C3
	Key-way, center tap	MHMF042L1U3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



Key way dimensions <Key way, center tap shaft>

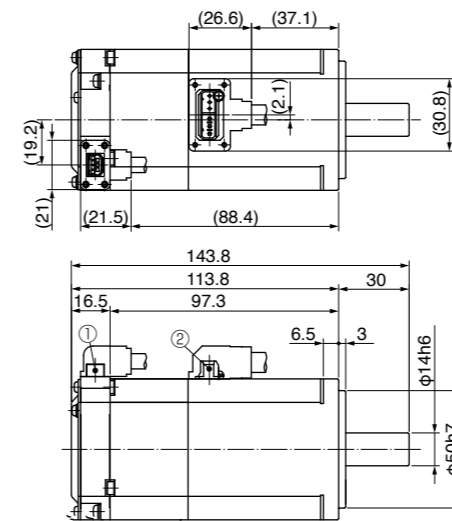


[Unit: mm]

\* For motors specifications, refer to P.91, P.92.

MHMF 400 W

Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



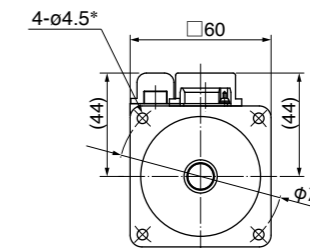
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 1.5 kg

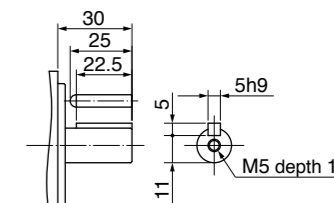
Power supply	Shaft	Motor model No.
100 V	Round	MHMF041L1B1
	Key-way, center tap	MHMF041L1T1
200 V	Round	MHMF042L1B1
	Key-way, center tap	MHMF042L1T1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

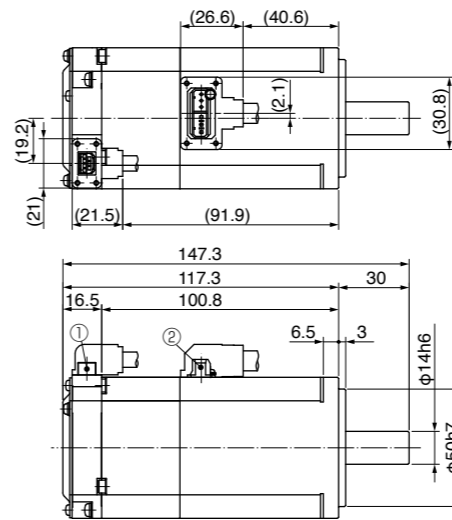


Key way dimensions <Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



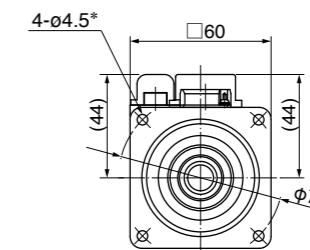
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 1.6 kg

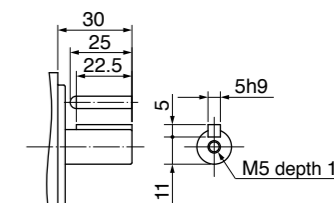
Power supply	Shaft	Motor model No.
100 V	Round	MHMF041L1D1
	Key-way, center tap	MHMF041L1V1
200 V	Round	MHMF042L1D1
	Key-way, center tap	MHMF042L1V1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

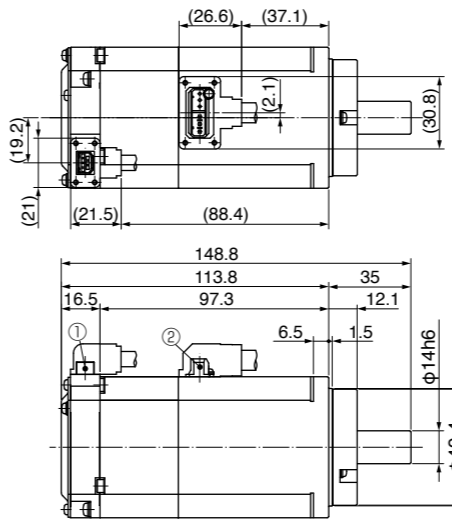


Key way dimensions <Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



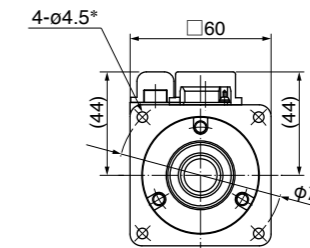
- ① Encoder connector
- ② Motor/Brake connector

● Motor model Mass: 1.6 kg

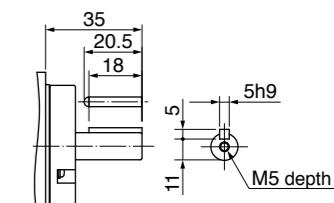
Power supply	Shaft	Motor model No.
100 V	Round	MHMF041L1D3
	Key-way, center tap	MHMF041L1V3
200 V	Round	MHMF042L1D3
	Key-way, center tap	MHMF042L1V3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.



Key way dimensions <Key way, center tap shaft>

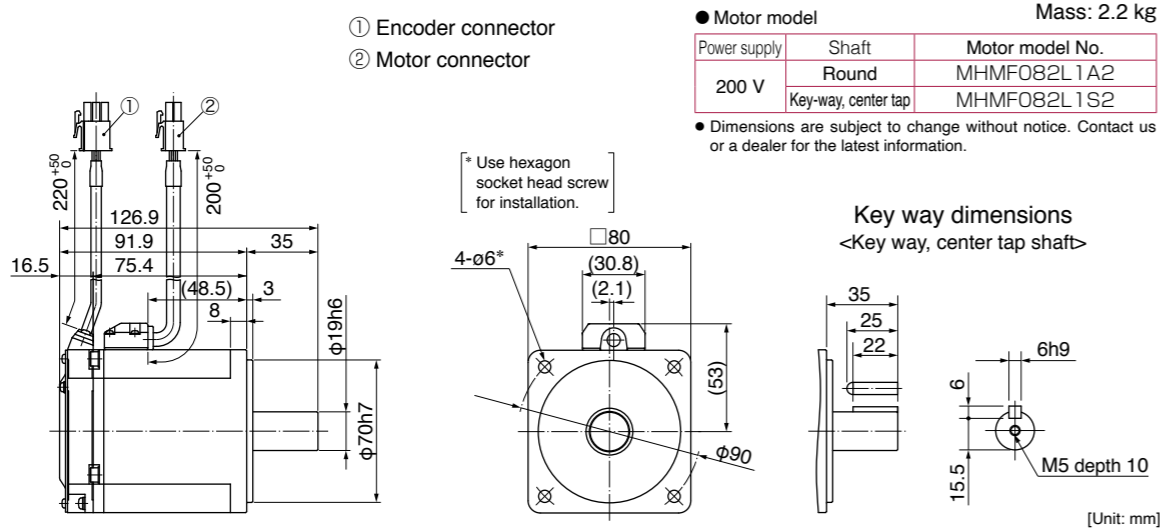


[Unit: mm]

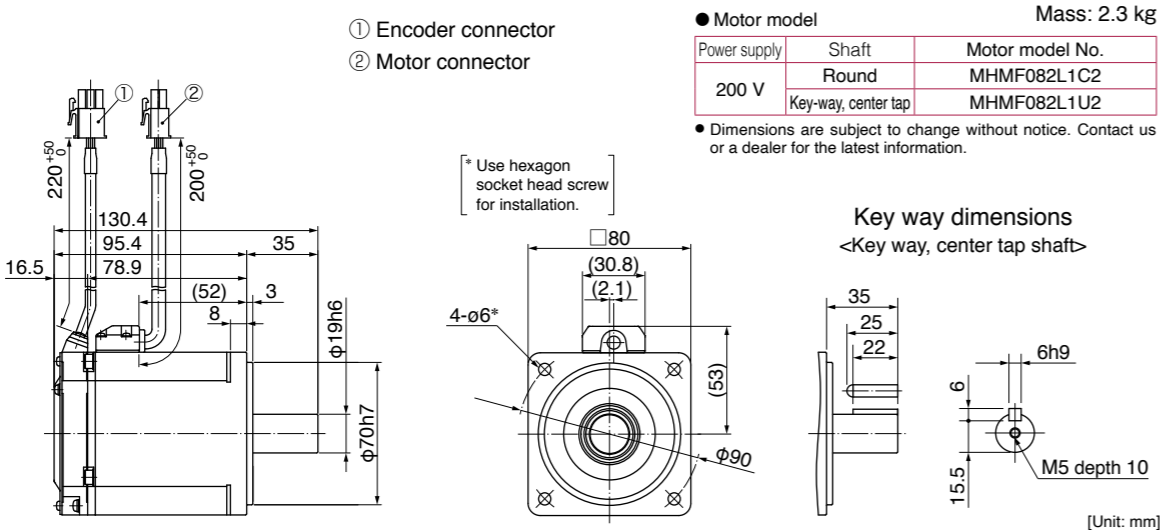
\* For motors specifications, refer to P.91, P.92.

**MHMF 750 W**

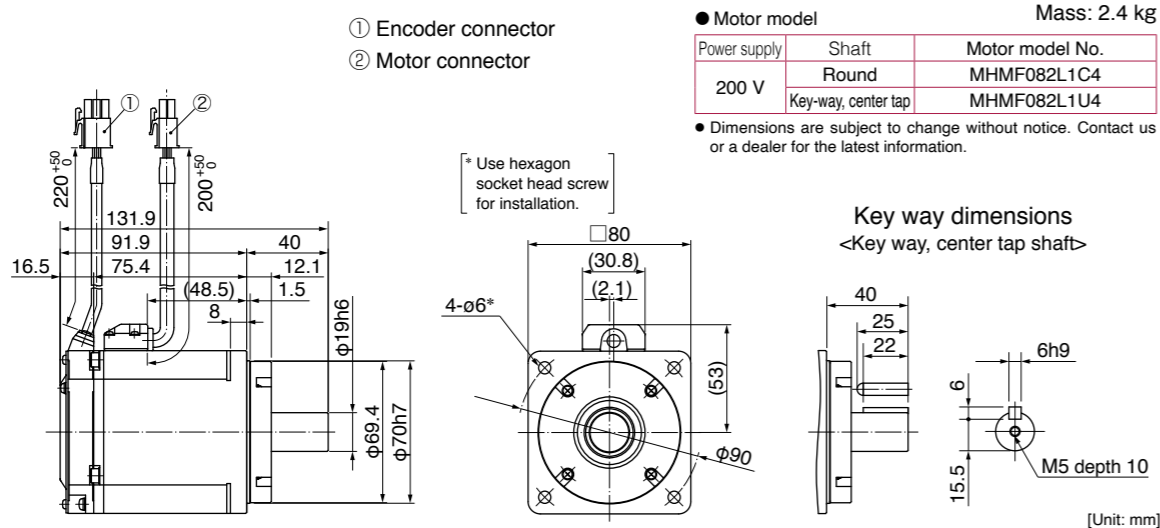
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



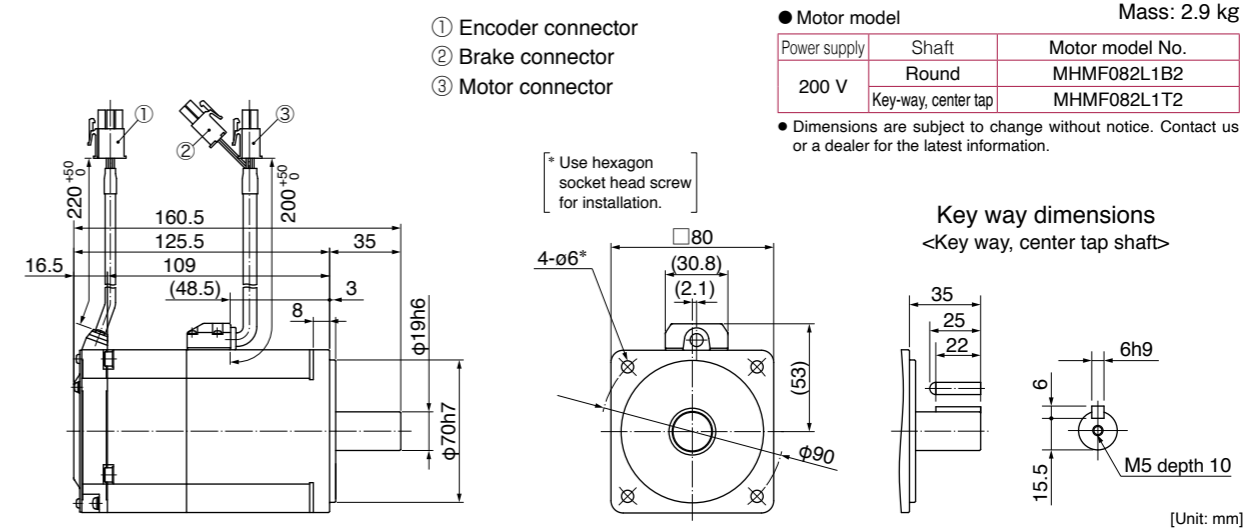
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



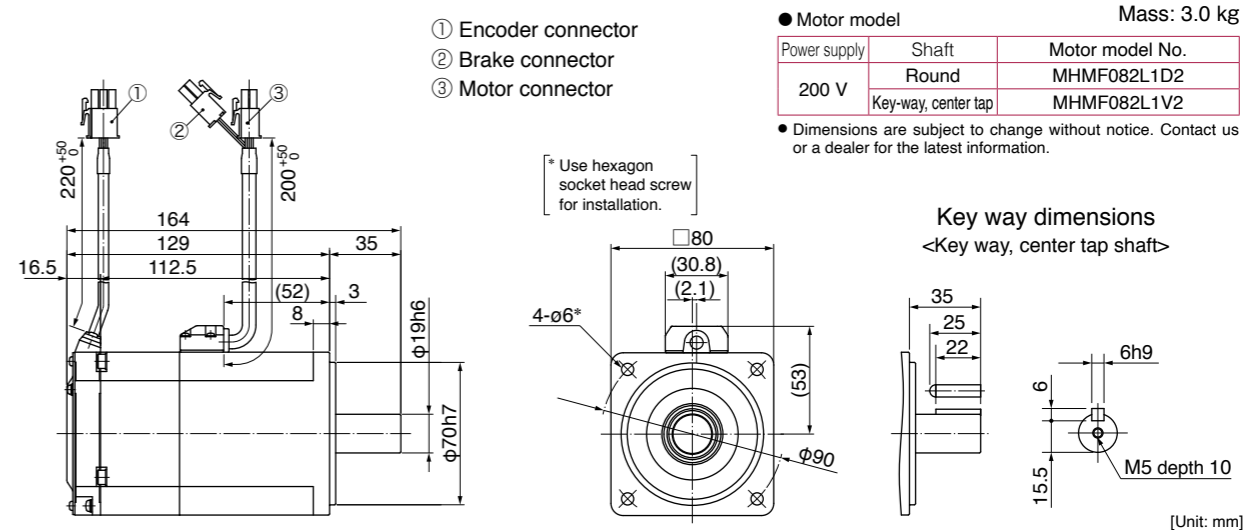
\* For motors specifications, refer to P.93.

**MHMF 750 W**

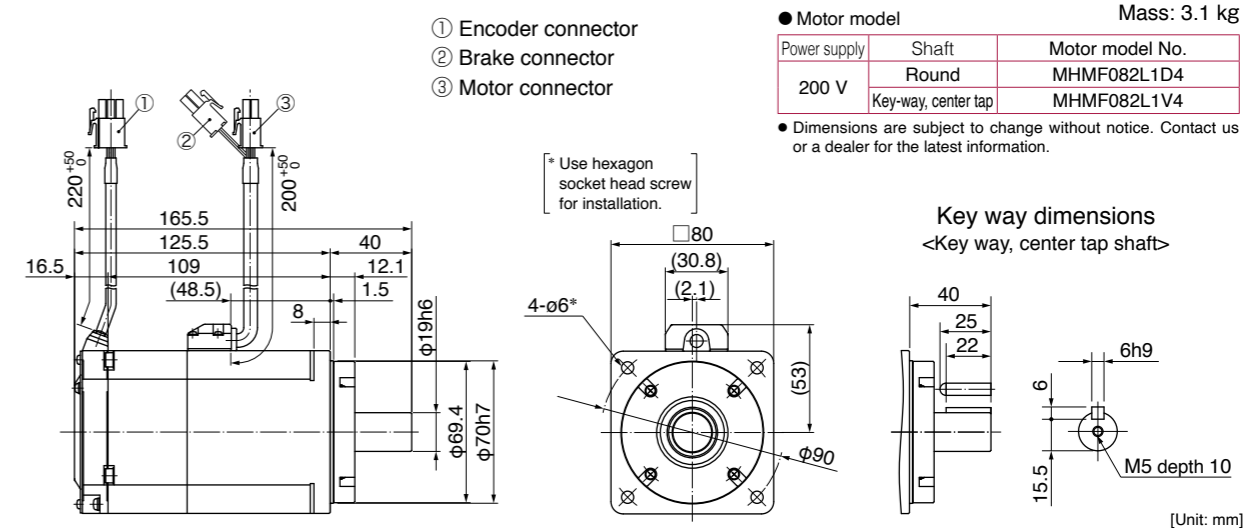
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



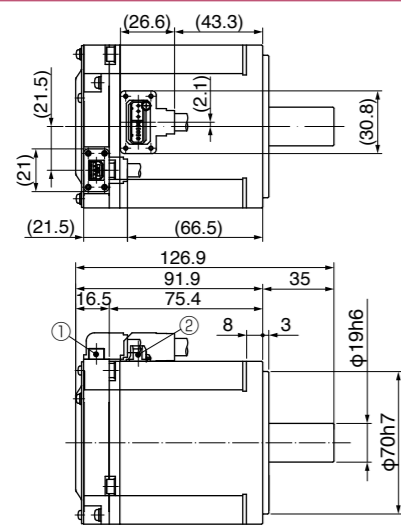
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



\* For motors specifications, refer to P.93.

MHMF 750 W

Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



- ① Encoder connector
- ② Motor connector

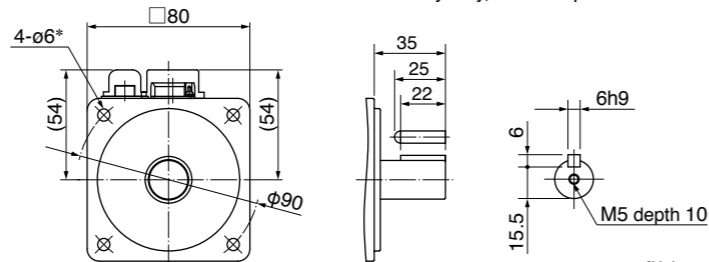
● Motor model Mass: 2.2 kg

Power supply	Shaft	Motor model No.
200 V	Round	MHMF082L1A1
	Key-way, center tap	MHMF082L1S1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

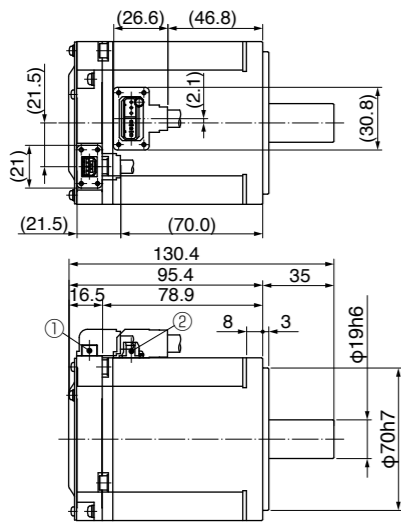
\* Use hexagon socket head screw for installation.

Key way dimensions  
 <Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



- ① Encoder connector
- ② Motor connector

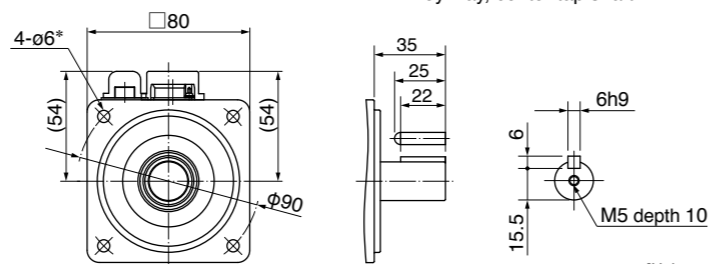
● Motor model Mass: 2.3 kg

Power supply	Shaft	Motor model No.
200 V	Round	MHMF082L1C1
	Key-way, center tap	MHMF082L1U1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

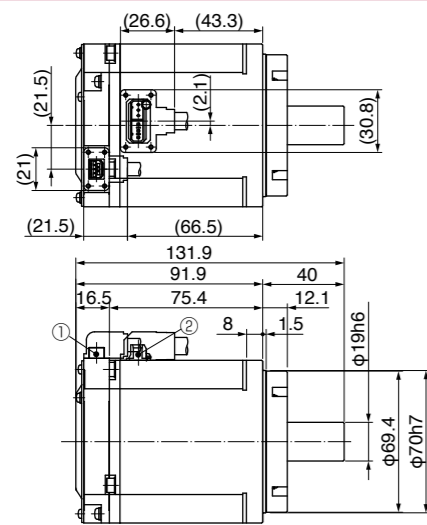
\* Use hexagon socket head screw for installation.

Key way dimensions  
 <Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



- ① Encoder connector
- ② Motor connector

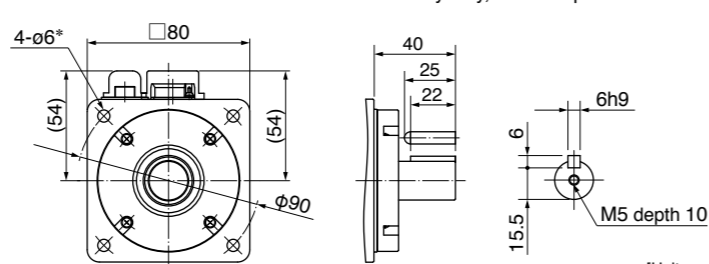
● Motor model Mass: 2.4 kg

Power supply	Shaft	Motor model No.
200 V	Round	MHMF082L1C3
	Key-way, center tap	MHMF082L1U3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
 <Key way, center tap shaft>

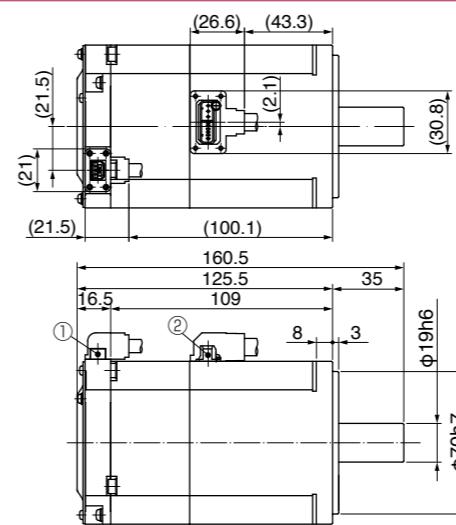


[Unit: mm]

\* For motors specifications, refer to P.93.

MHMF 750 W

Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



- ① Encoder connector
- ② Motor/Brake connector

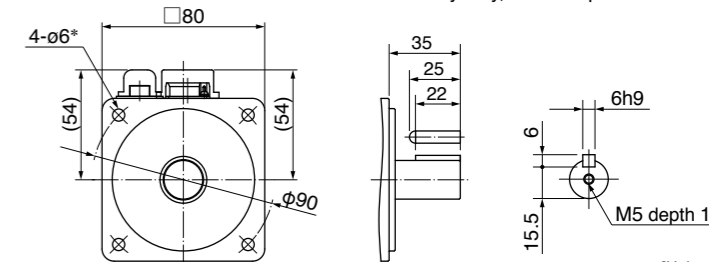
● Motor model Mass: 2.9 kg

Power supply	Shaft	Motor model No.
200 V	Round	MHMF082L1B1
	Key-way, center tap	MHMF082L1T1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

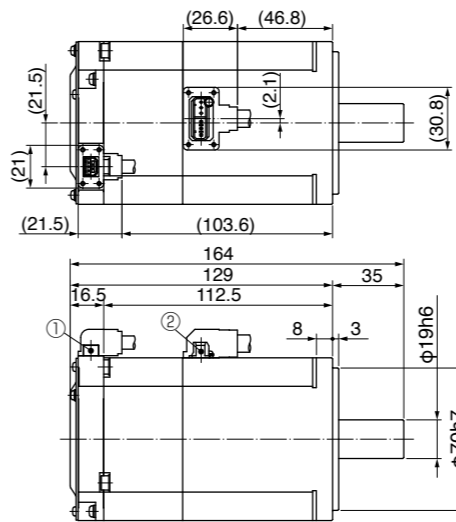
\* Use hexagon socket head screw for installation.

Key way dimensions  
 <Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



- ① Encoder connector
- ② Motor/Brake connector

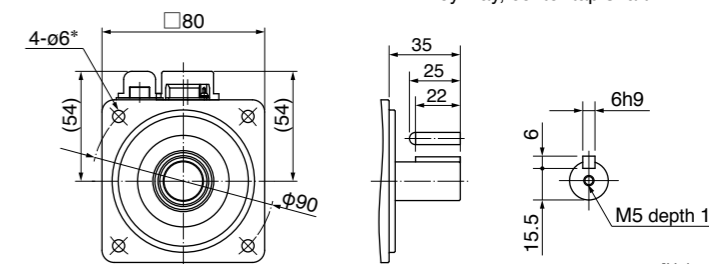
● Motor model Mass: 3.0 kg

Power supply	Shaft	Motor model No.
200 V	Round	MHMF082L1D1
	Key-way, center tap	MHMF082L1V1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

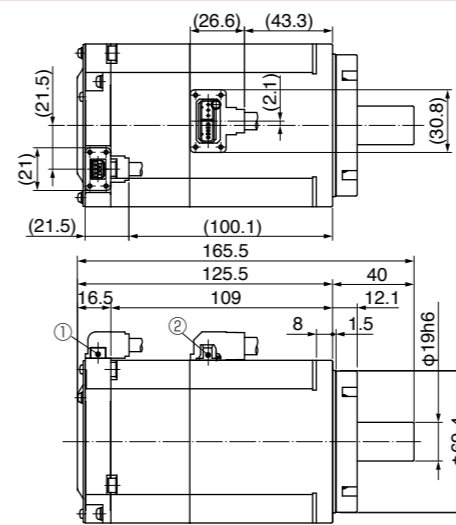
\* Use hexagon socket head screw for installation.

Key way dimensions  
 <Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



- ① Encoder connector
- ② Motor/Brake connector

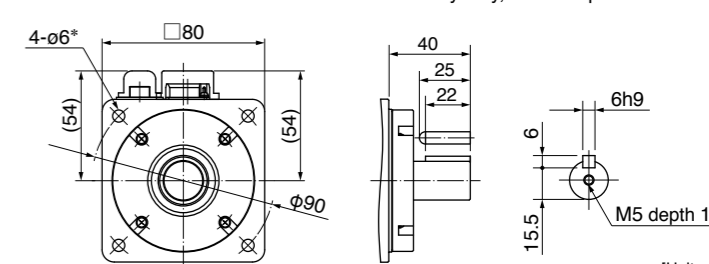
● Motor model Mass: 3.1 kg

Power supply	Shaft	Motor model No.
200 V	Round	MHMF082L1D3
	Key-way, center tap	MHMF082L1V3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

\* Use hexagon socket head screw for installation.

Key way dimensions  
 <Key way, center tap shaft>

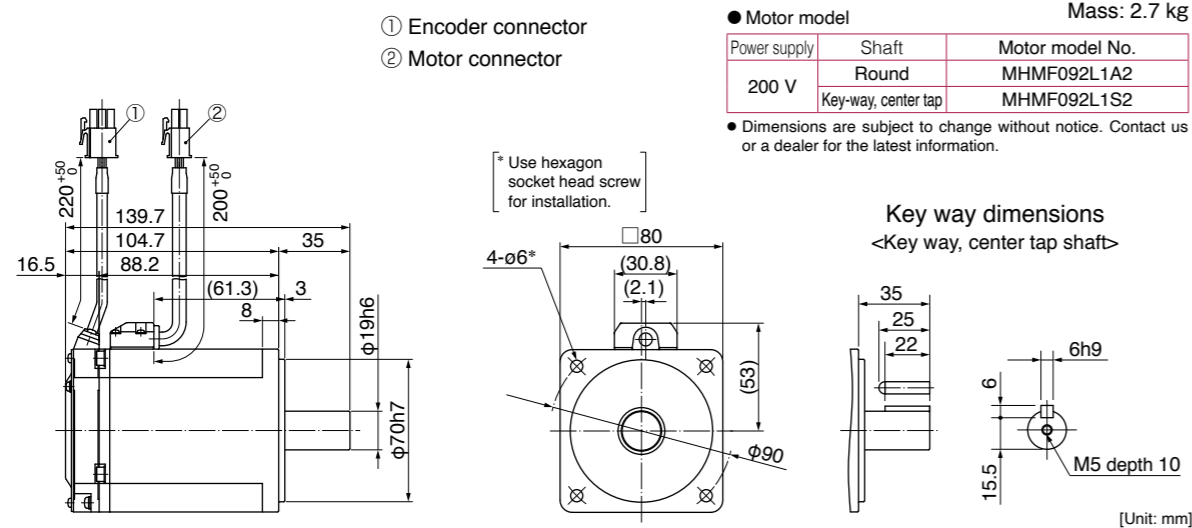


[Unit: mm]

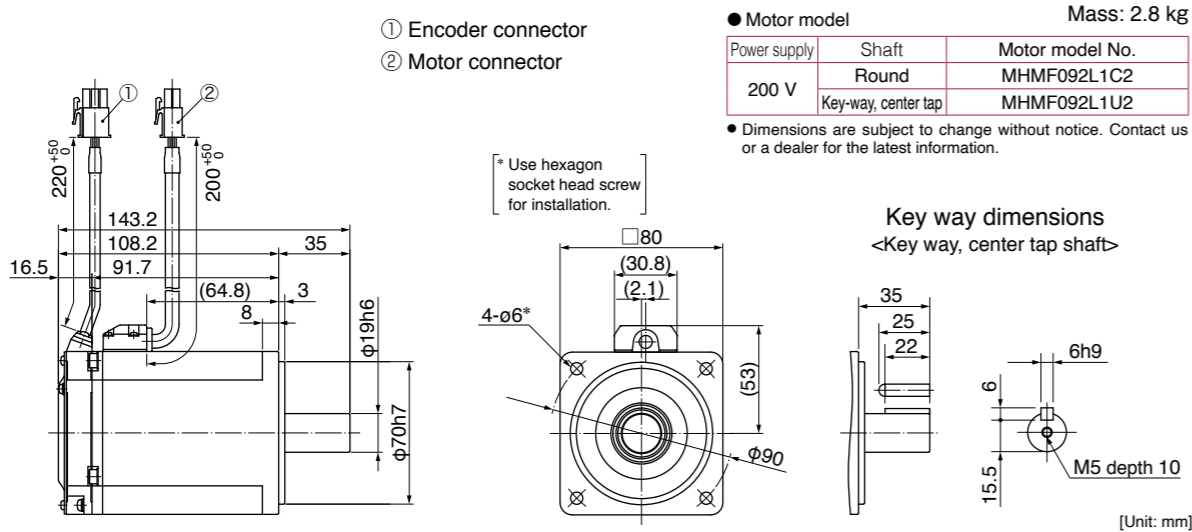
\* For motors specifications, refer to P.93.

MHMF 1000 W

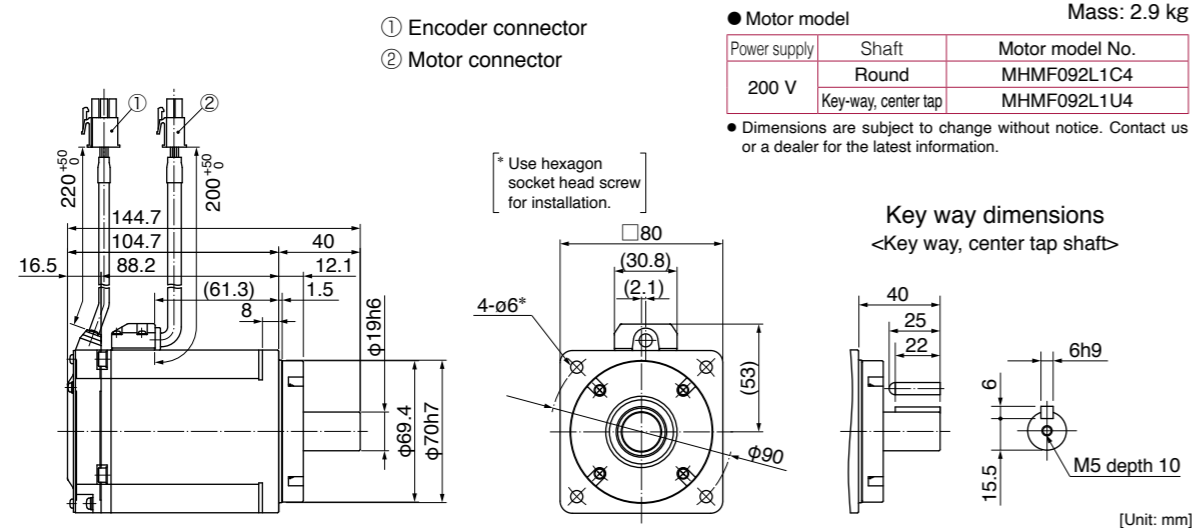
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



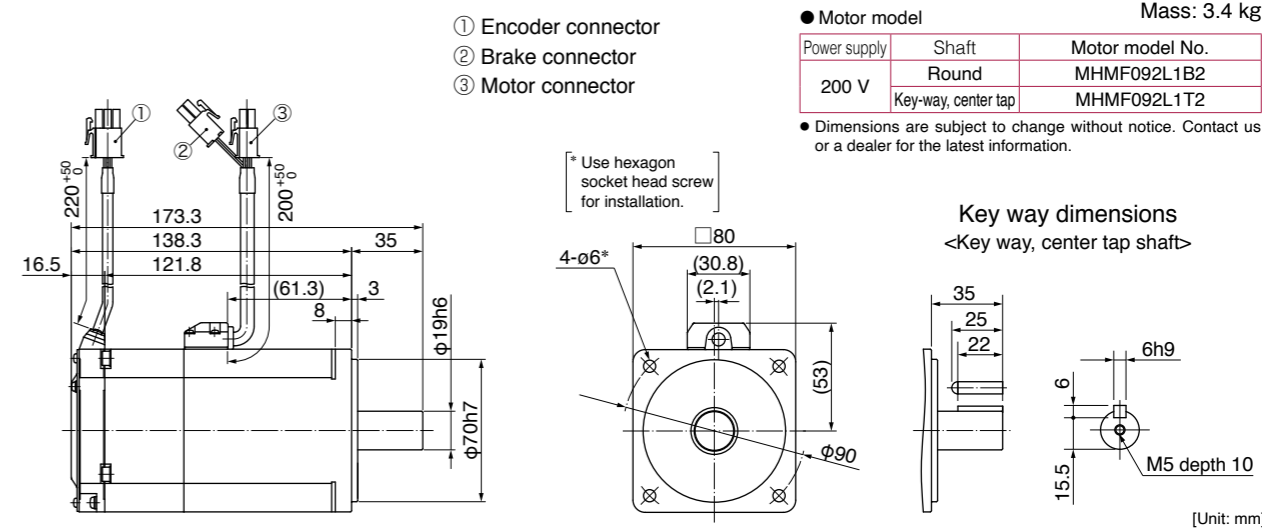
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



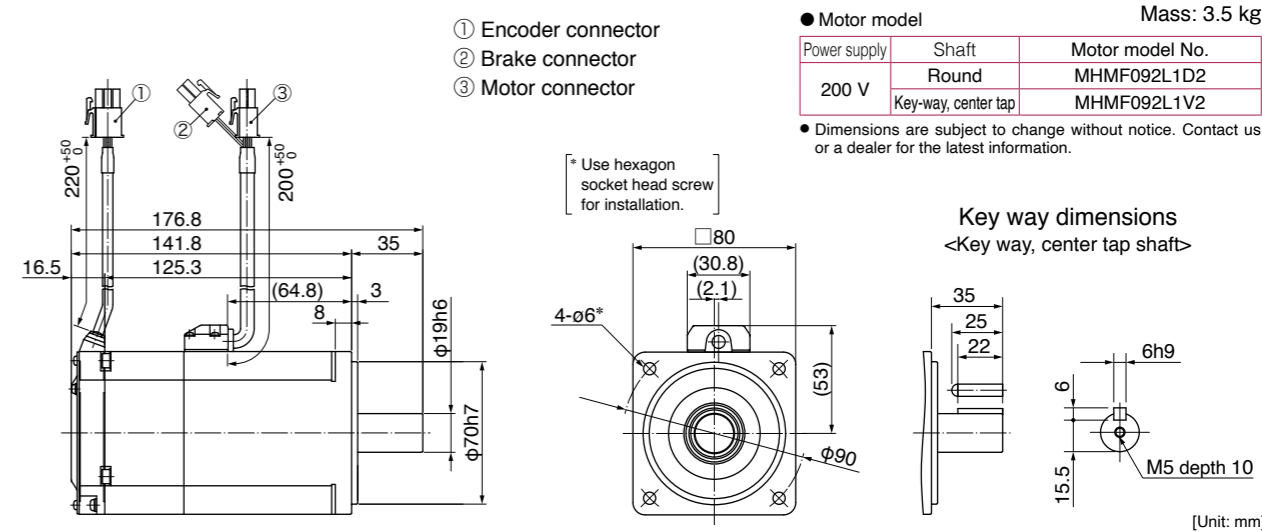
\* For motors specifications, refer to P.94.

MHMF 1000 W

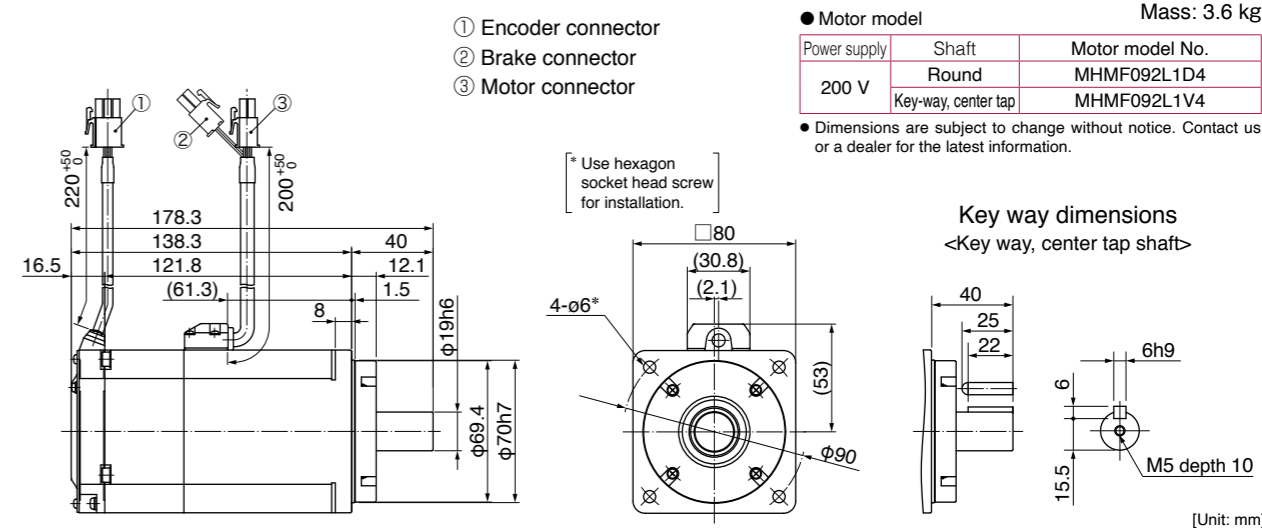
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



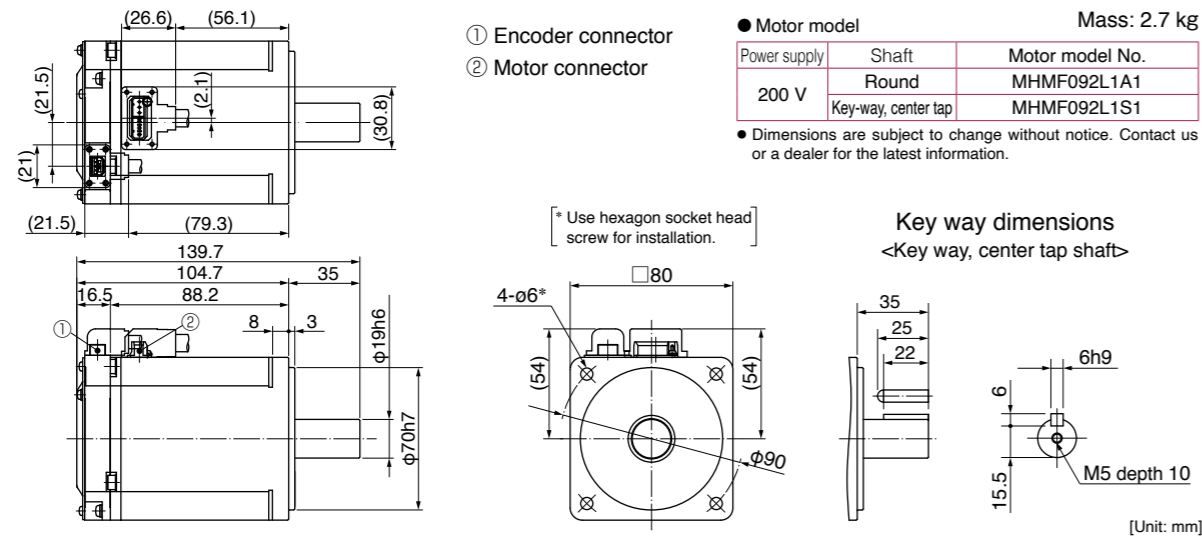
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



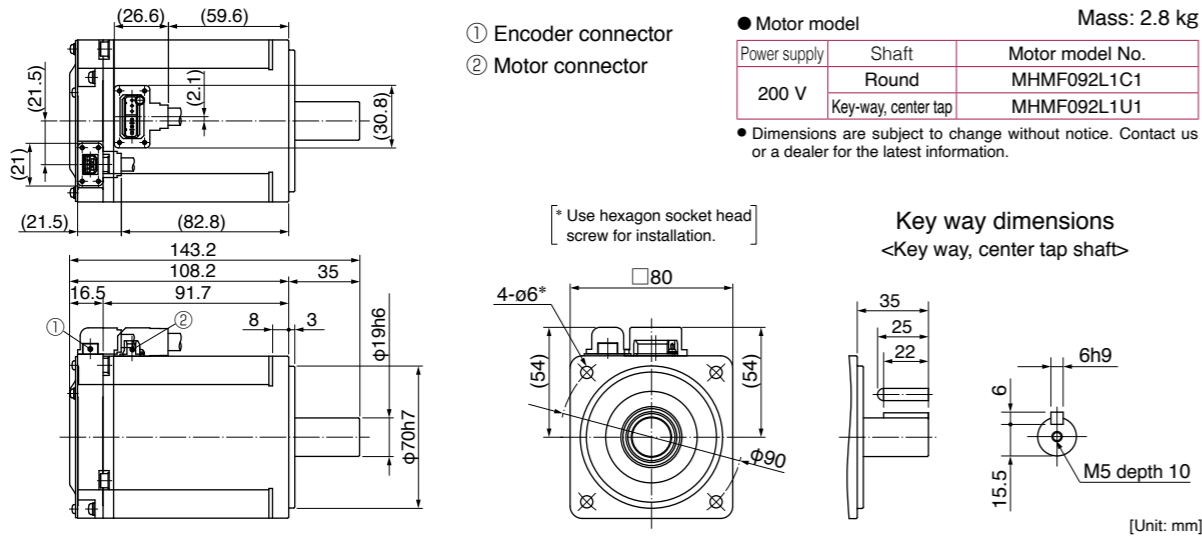
\* For motors specifications, refer to P.94.

MHMF 1000 W

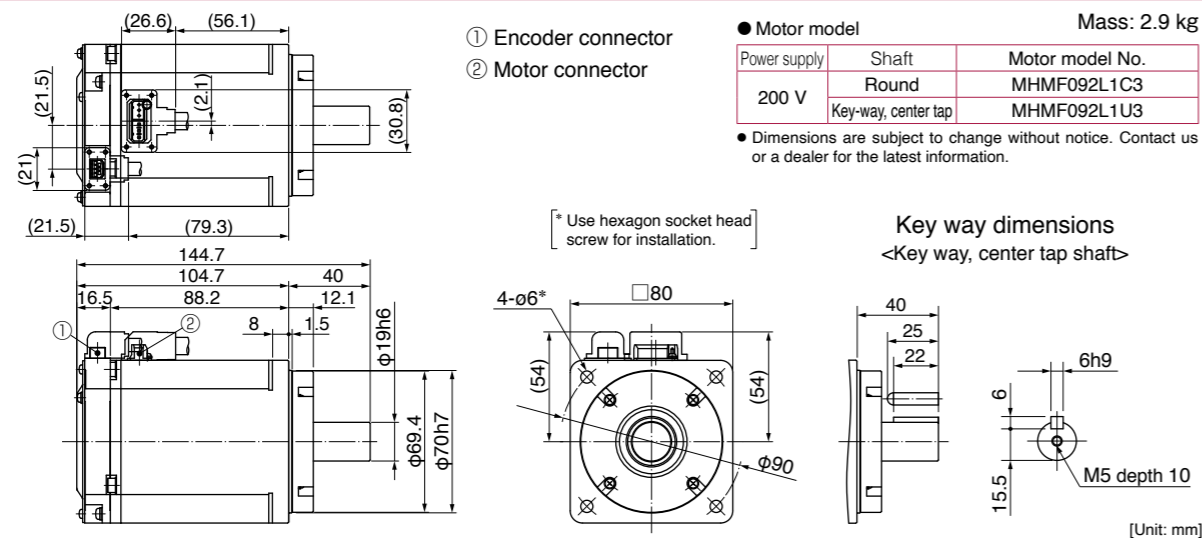
Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



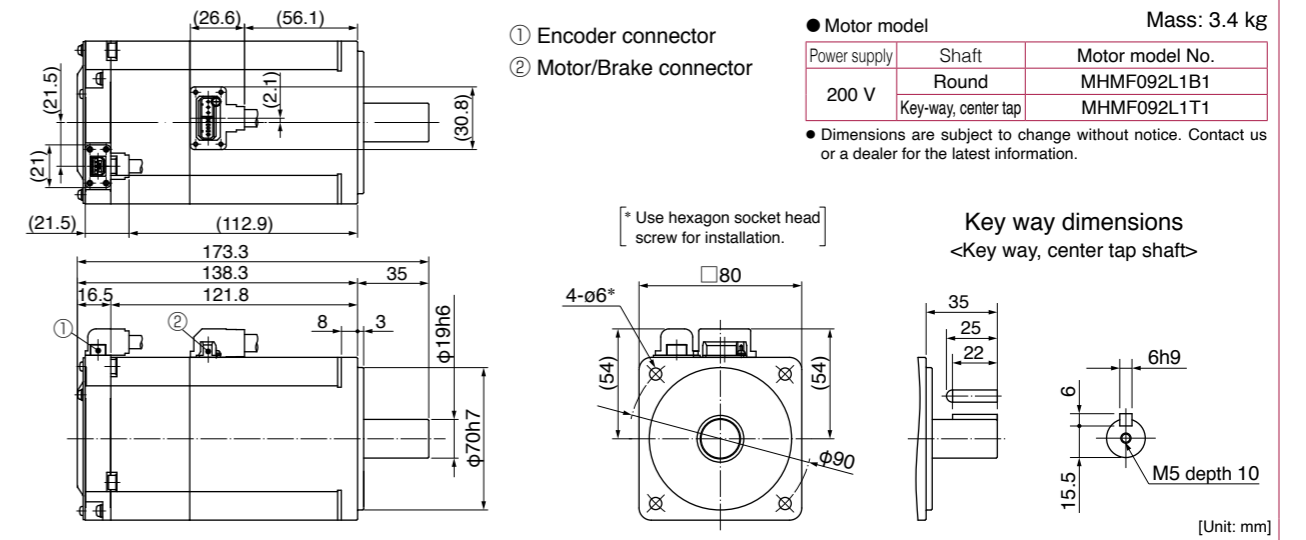
Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



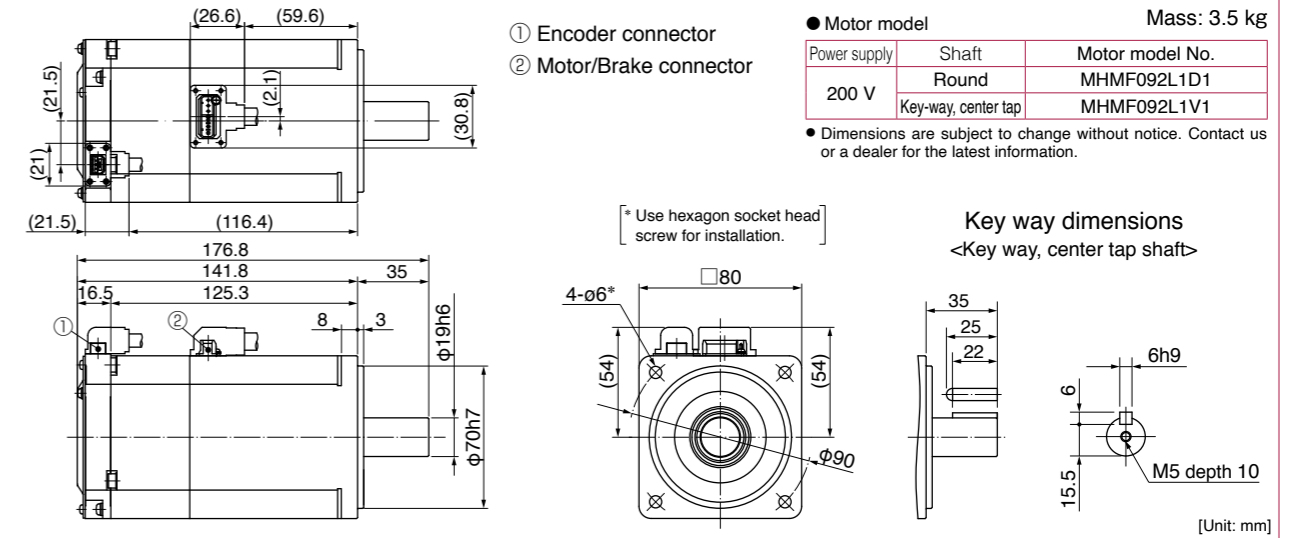
\* For motors specifications, refer to P.94.

MHMF 1000 W

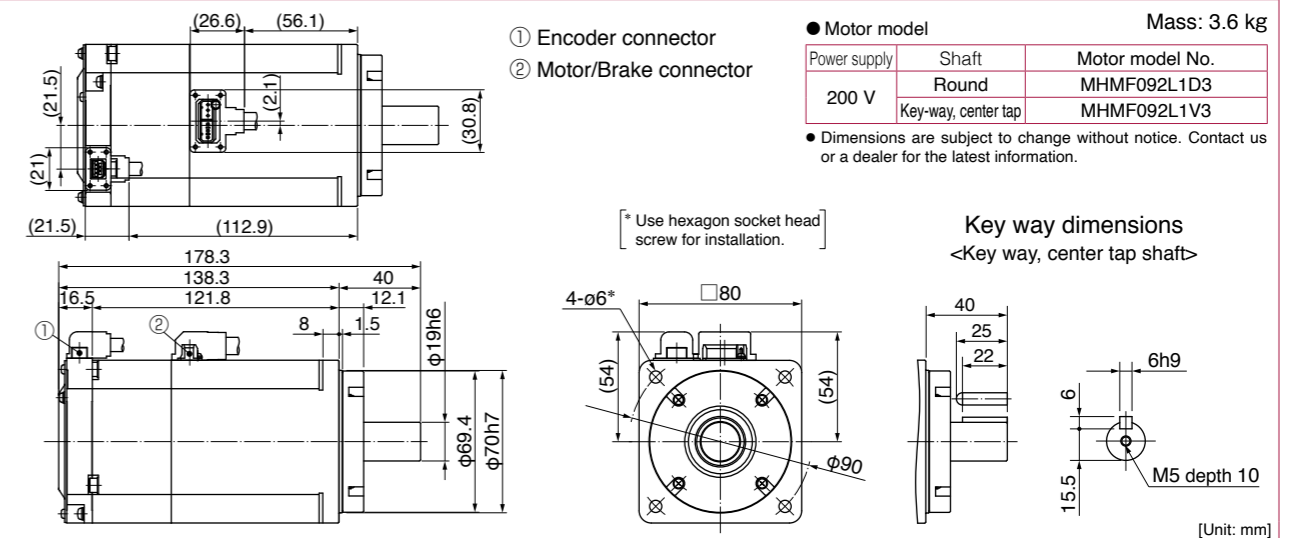
Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



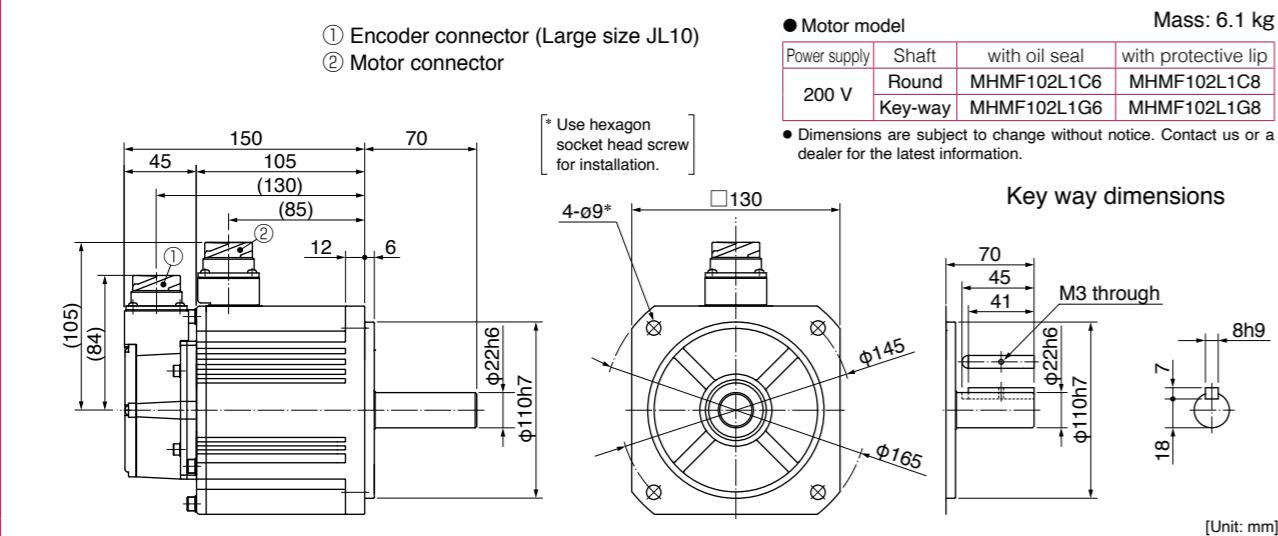
Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



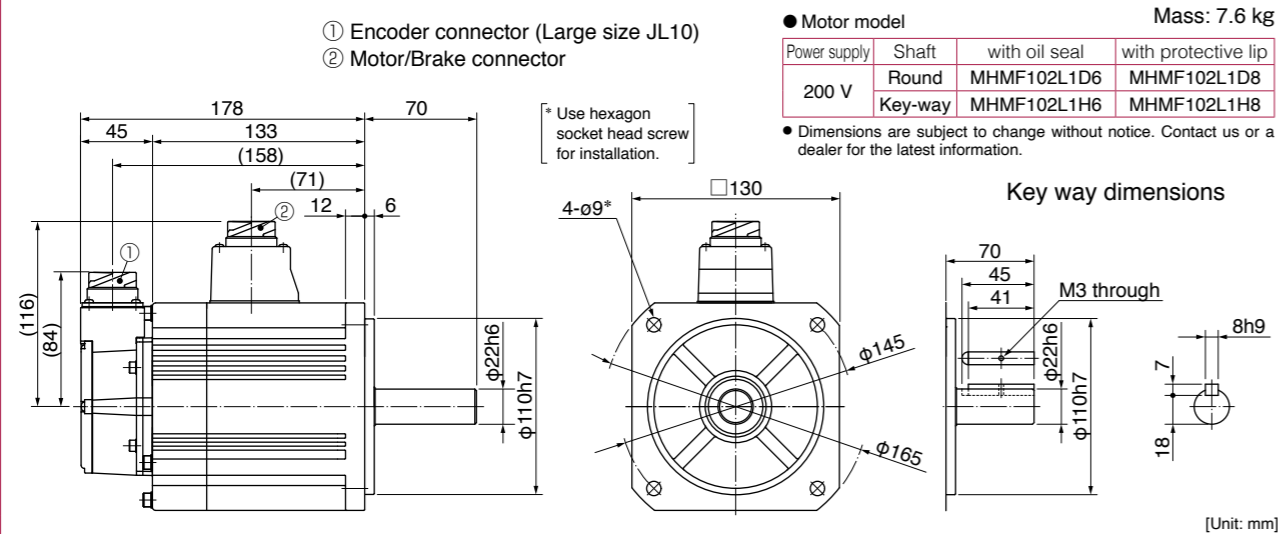
\* For motors specifications, refer to P.94.

MHMF 1.0 kW

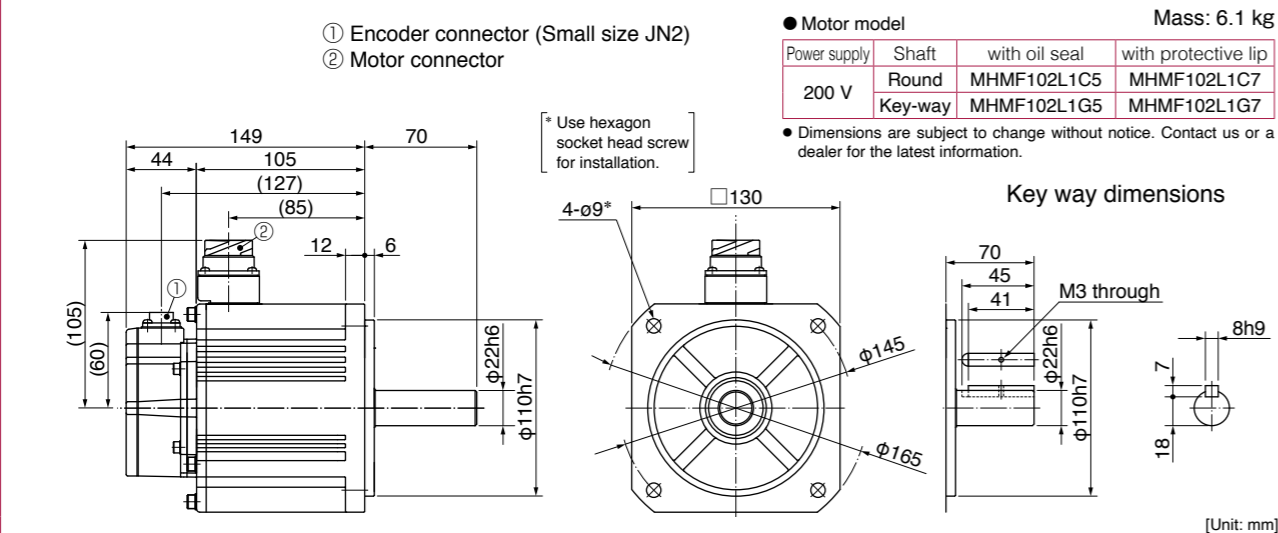
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



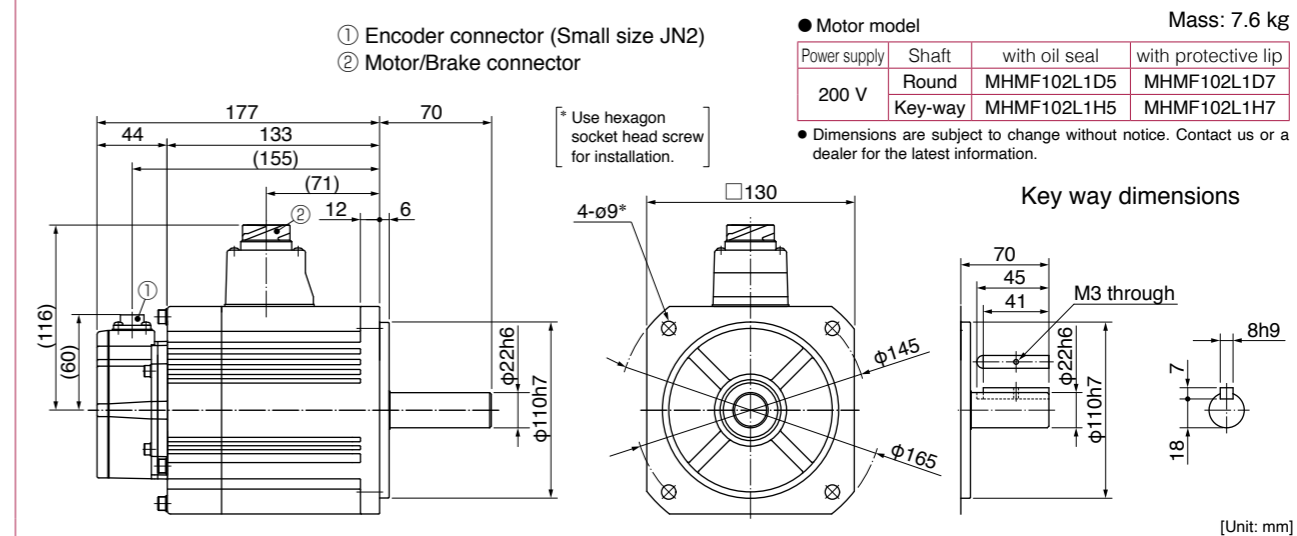
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.95.

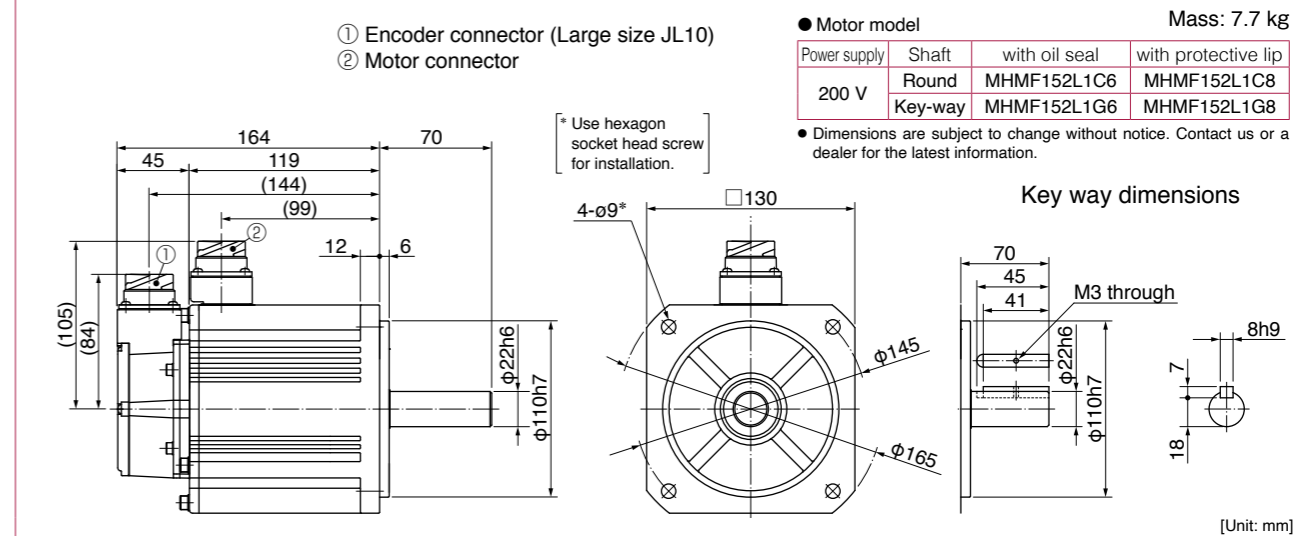
MHMF 1.0 kW

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

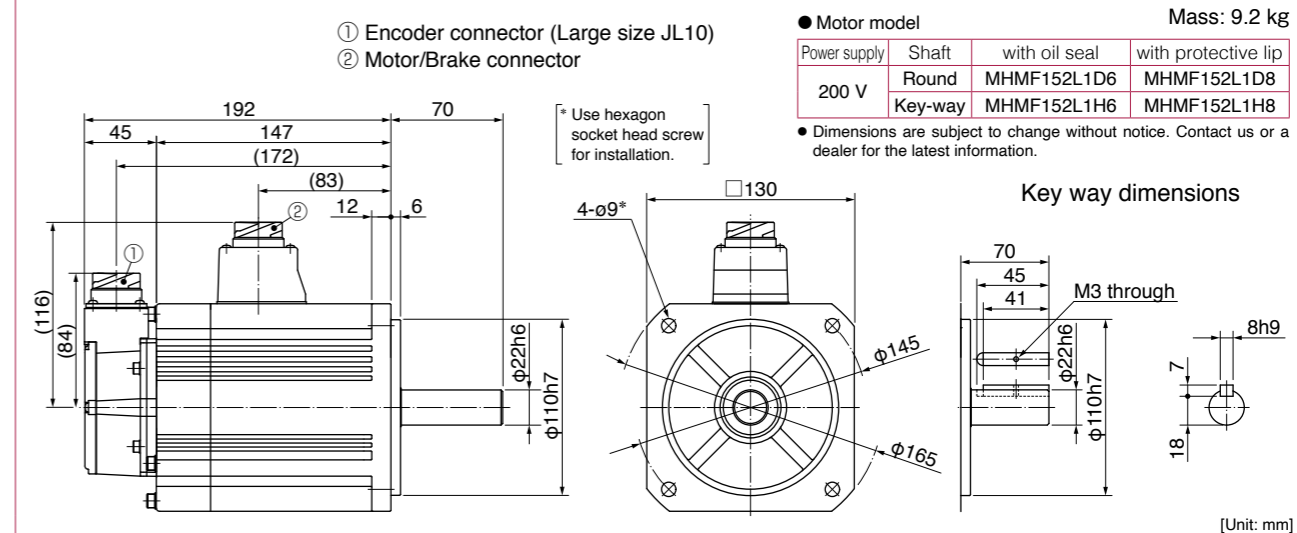


MHMF 1.5 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



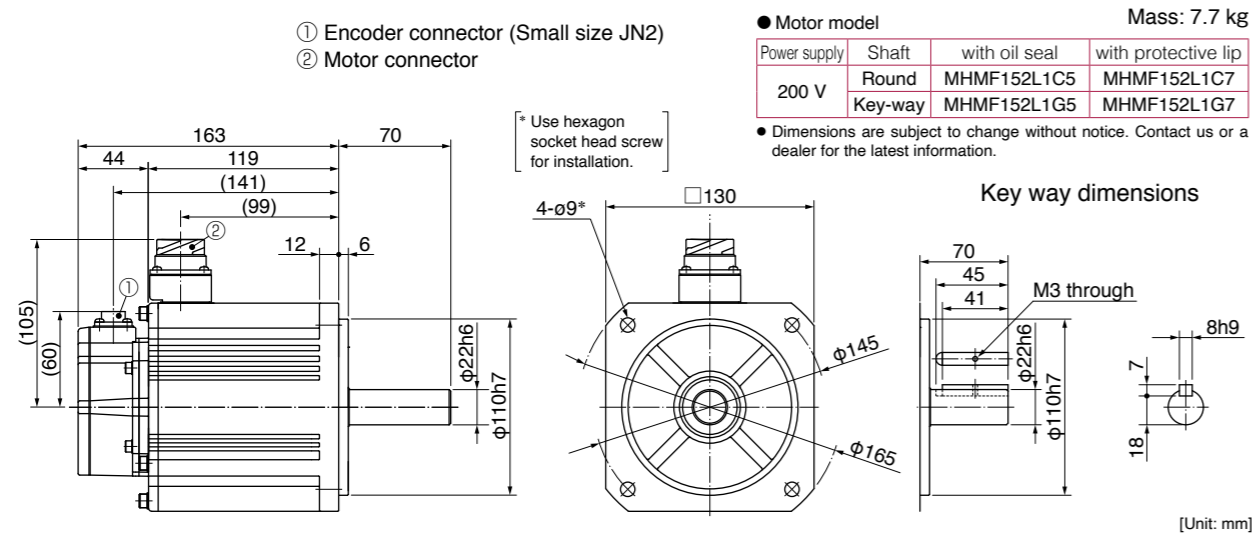
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



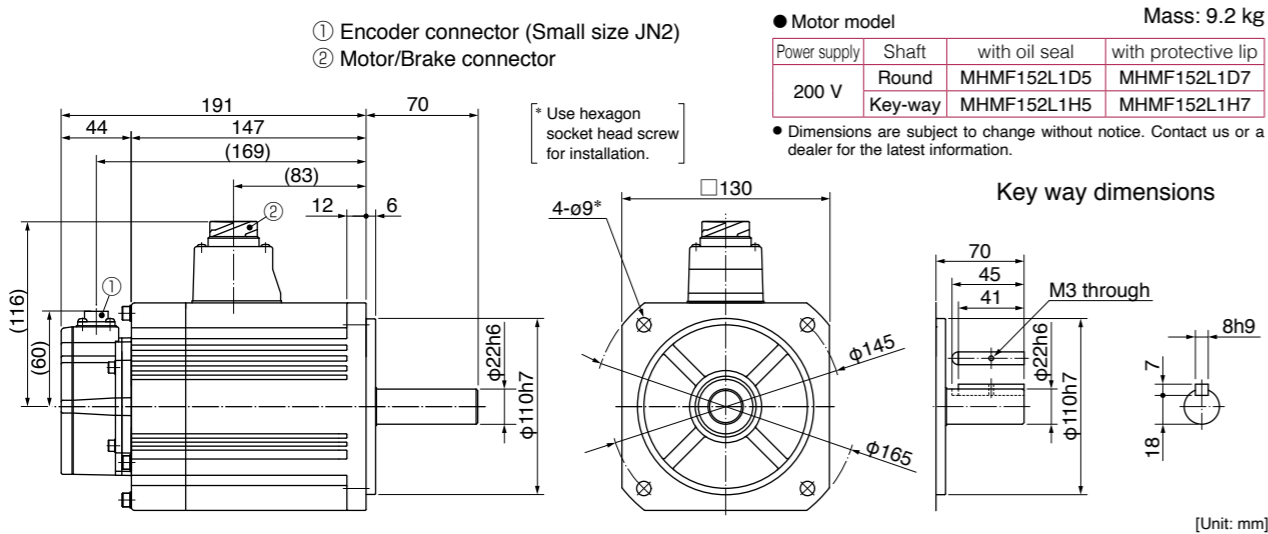
\* For motors specifications, refer to P.95, P.96.

MHMF 1.5 kW

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

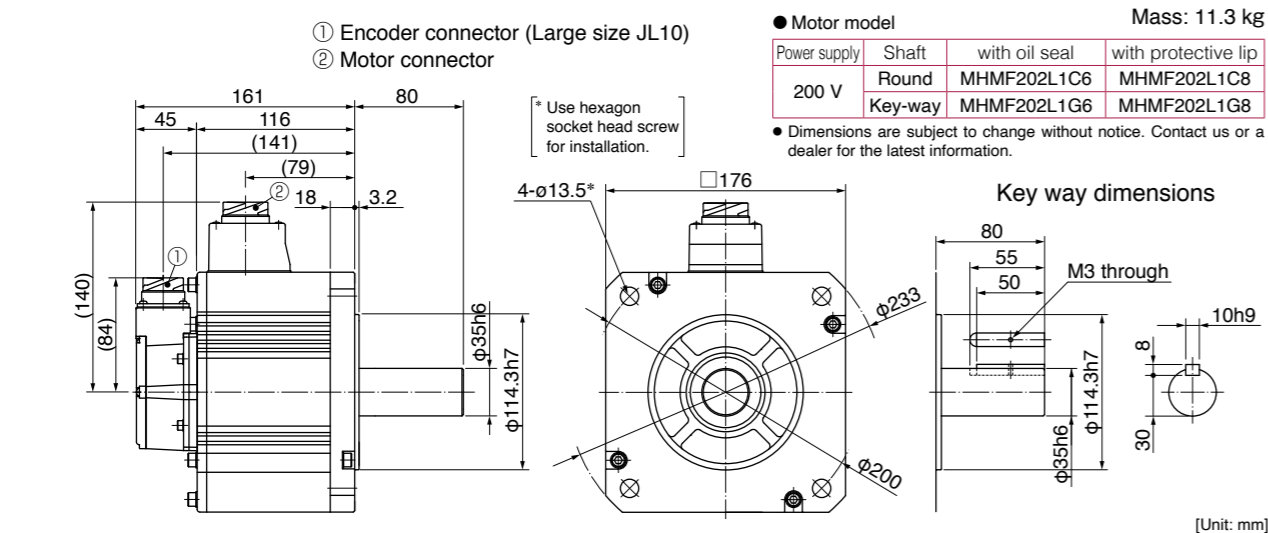


Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MHMF 2.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

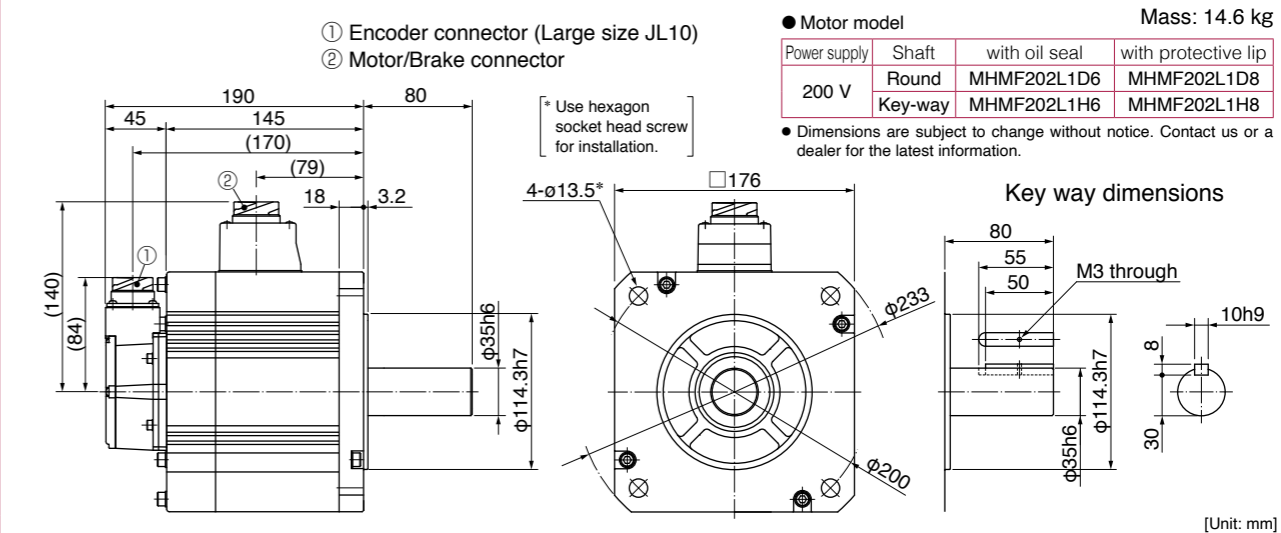


\* For motors specifications, refer to P.96, P.97.

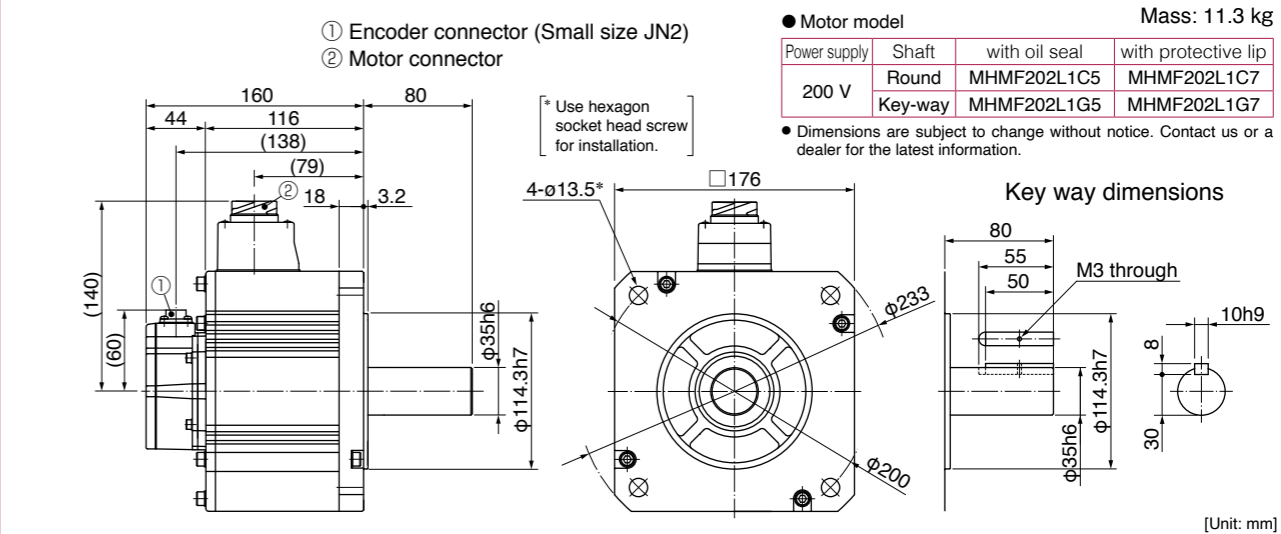
MHMF 2.0 kW

MHMF 2.0 kW

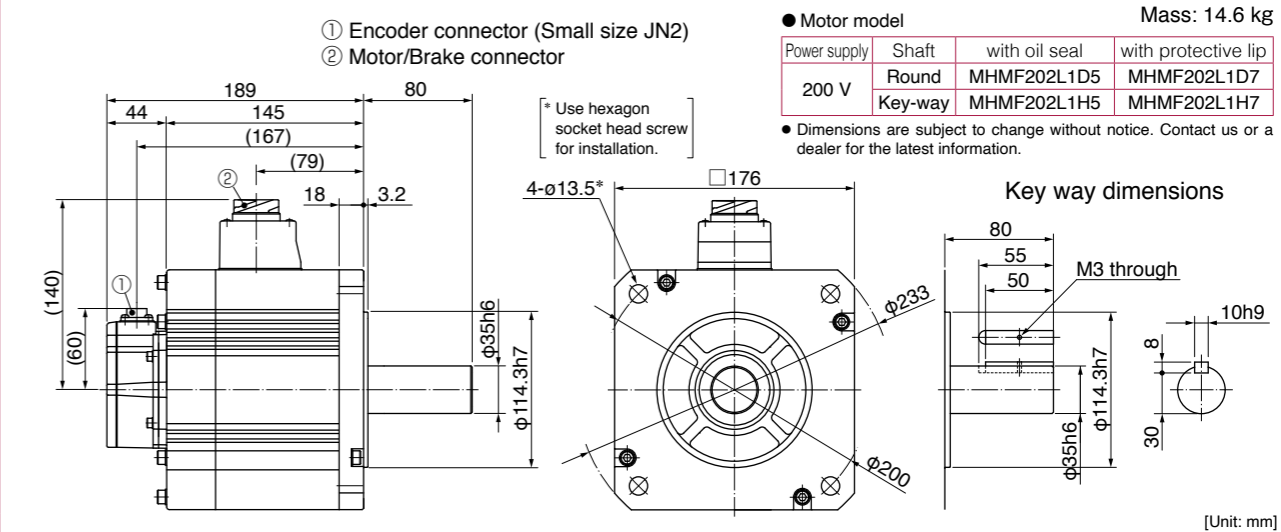
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

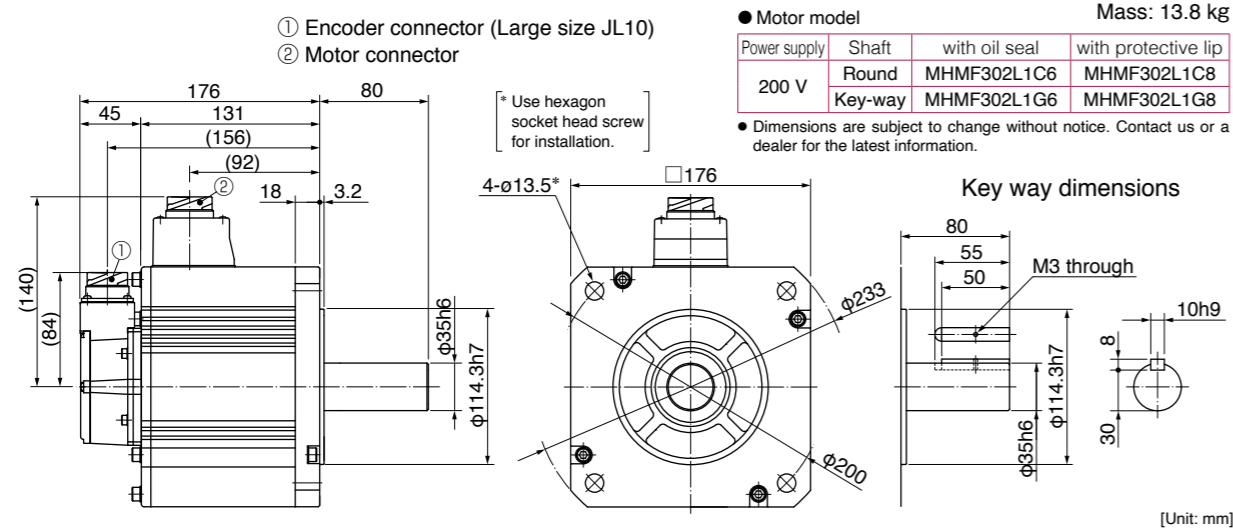


\* For motors specifications, refer to P.97.

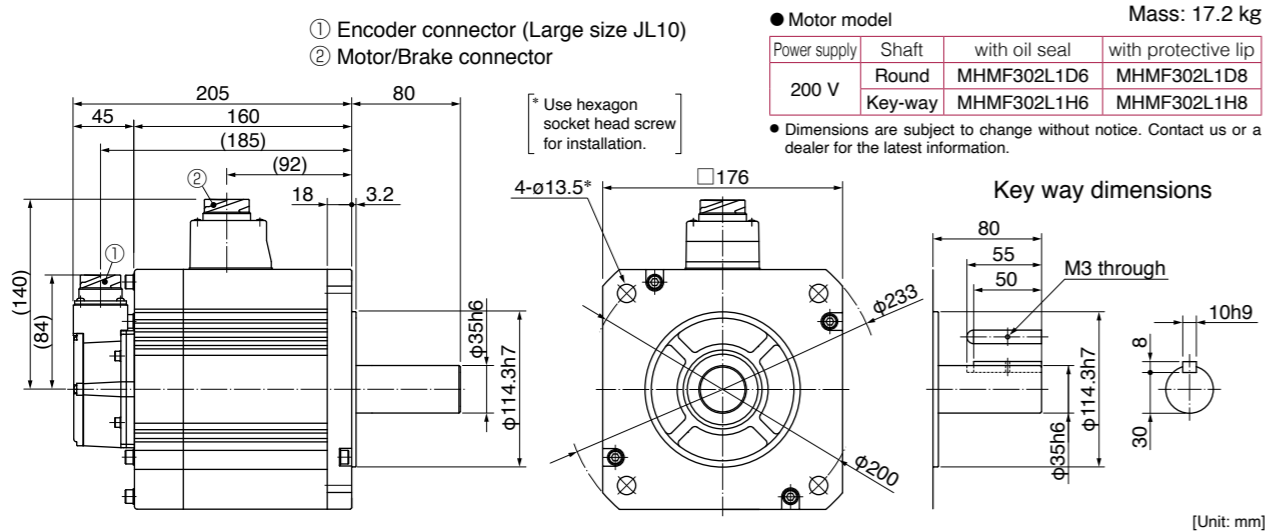


MHMF 3.0 kW

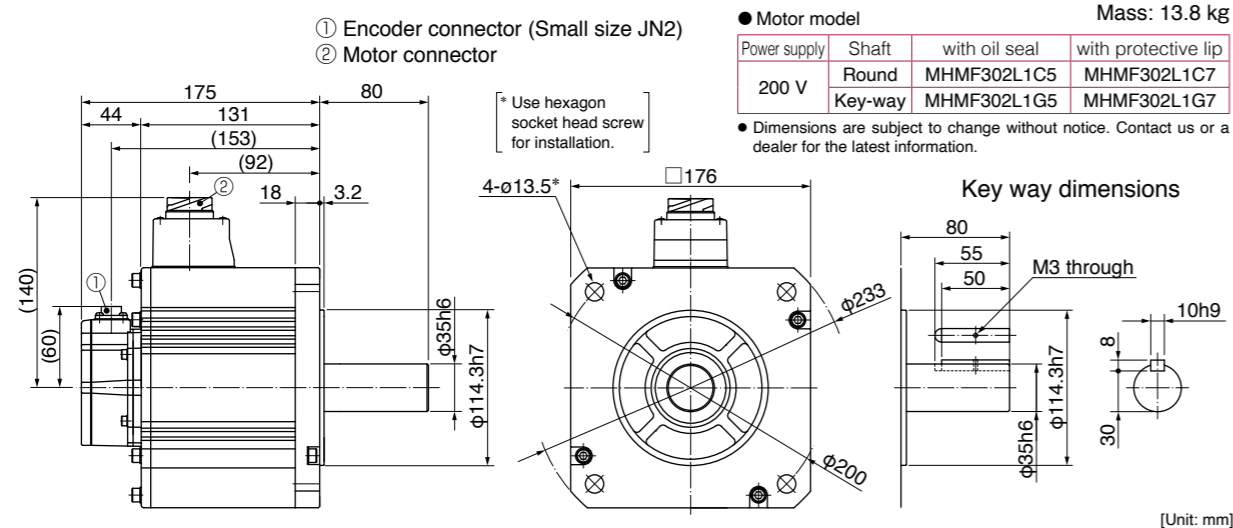
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



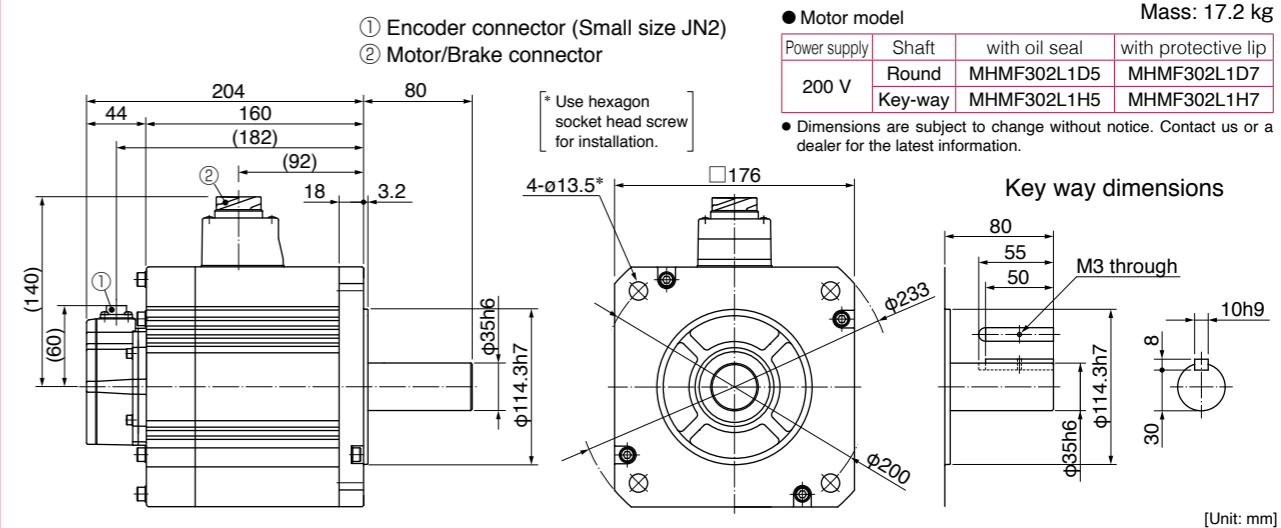
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.98.

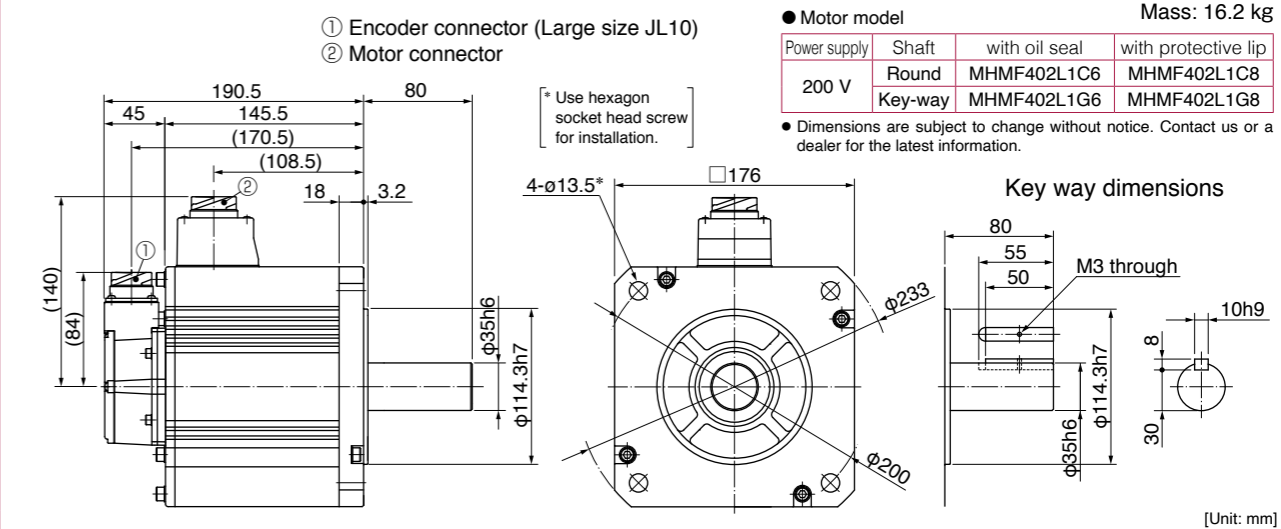
MHMF 3.0 kW

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

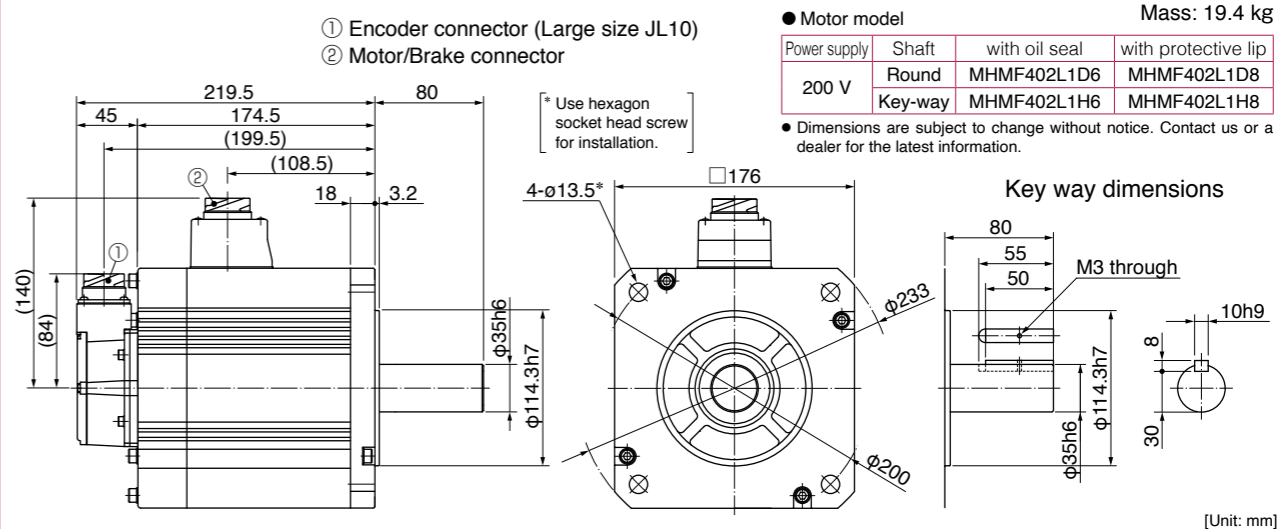


MHMF 4.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



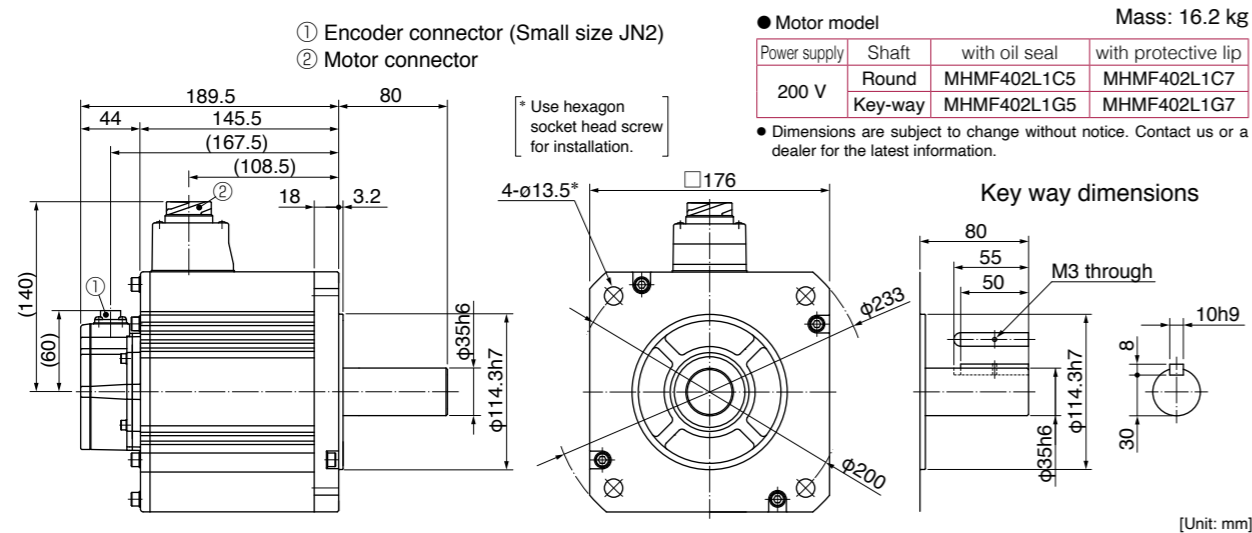
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



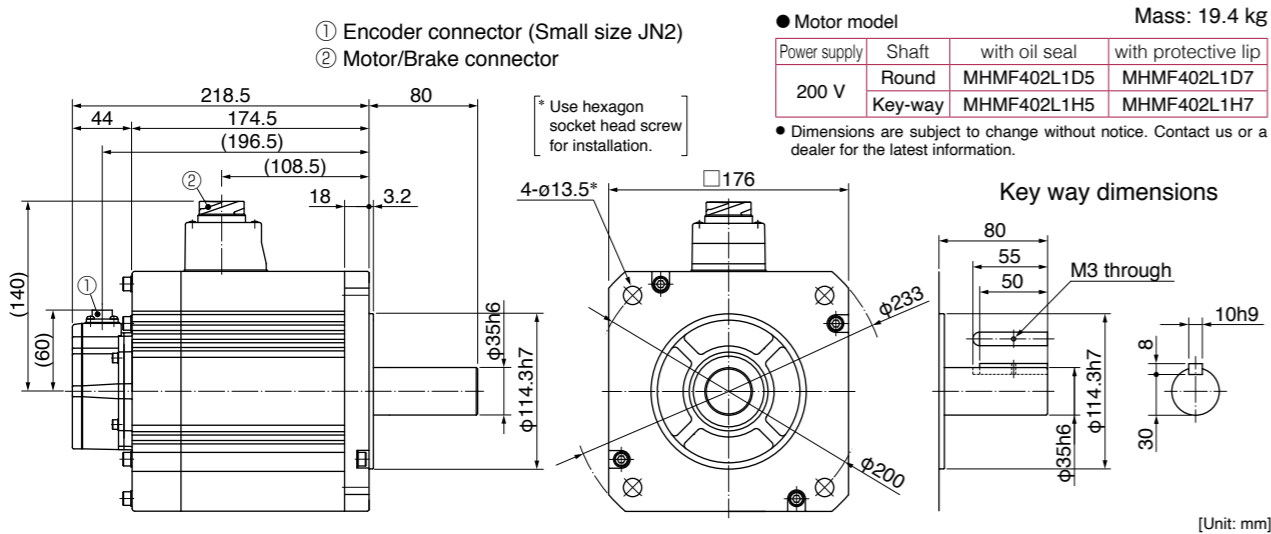
\* For motors specifications, refer to P.98, P.99.

MHMF 4.0 kW

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

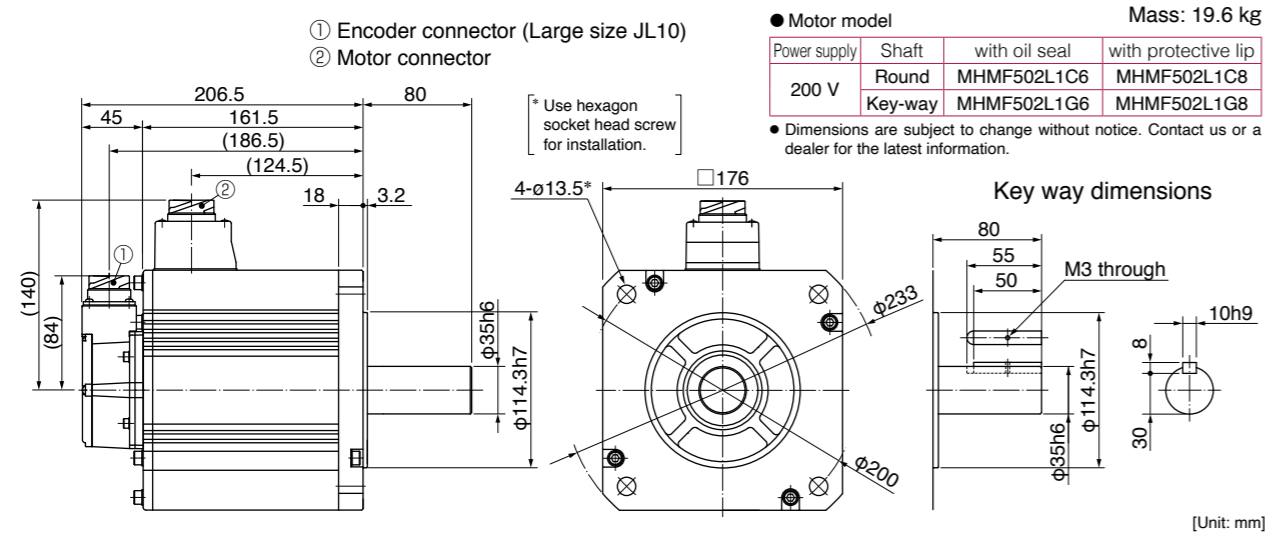


Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MHMF 5.0 kW

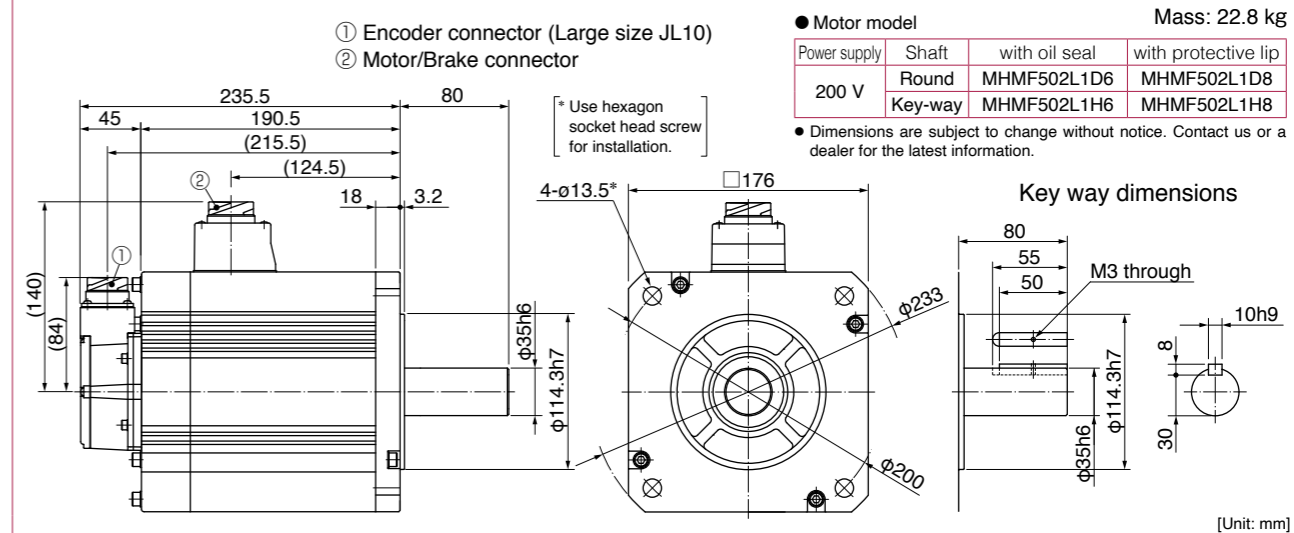
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



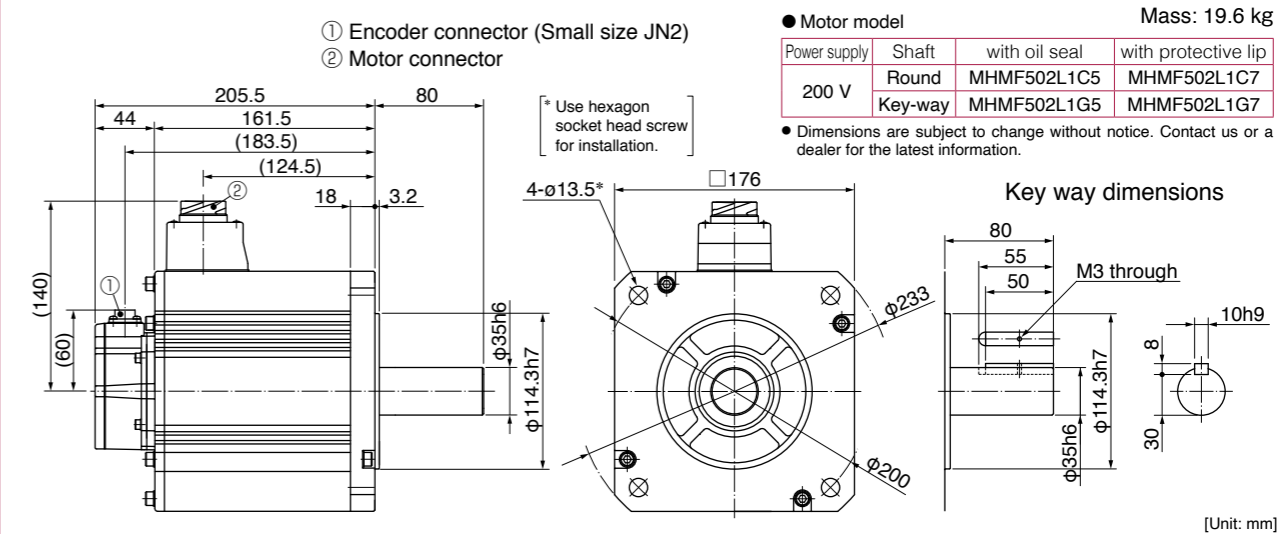
\* For motors specifications, refer to P.99, P.100.

MHMF 5.0 kW

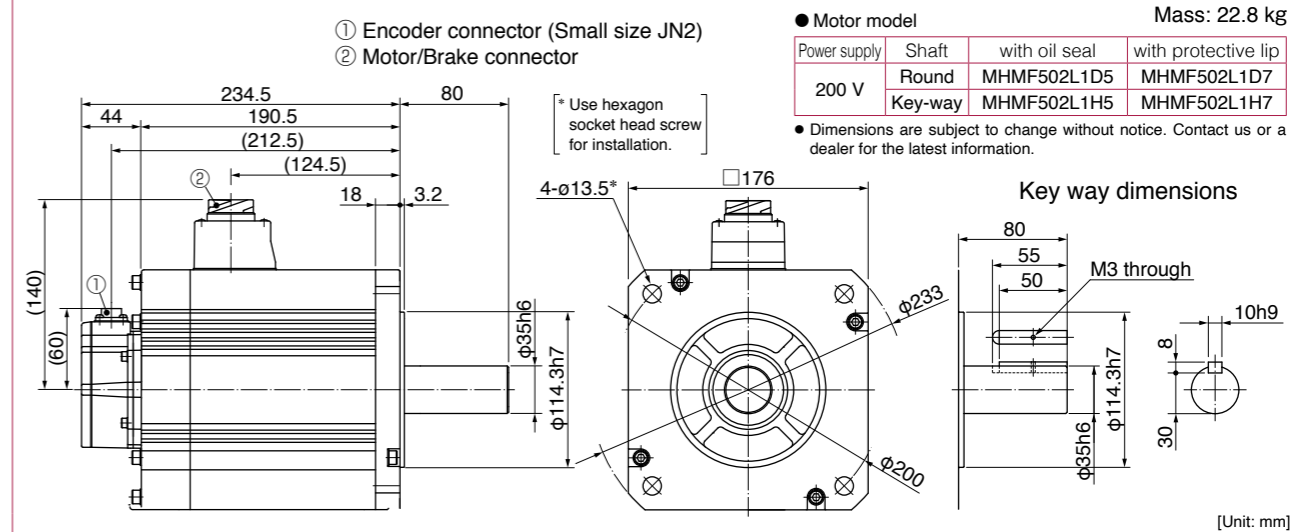
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



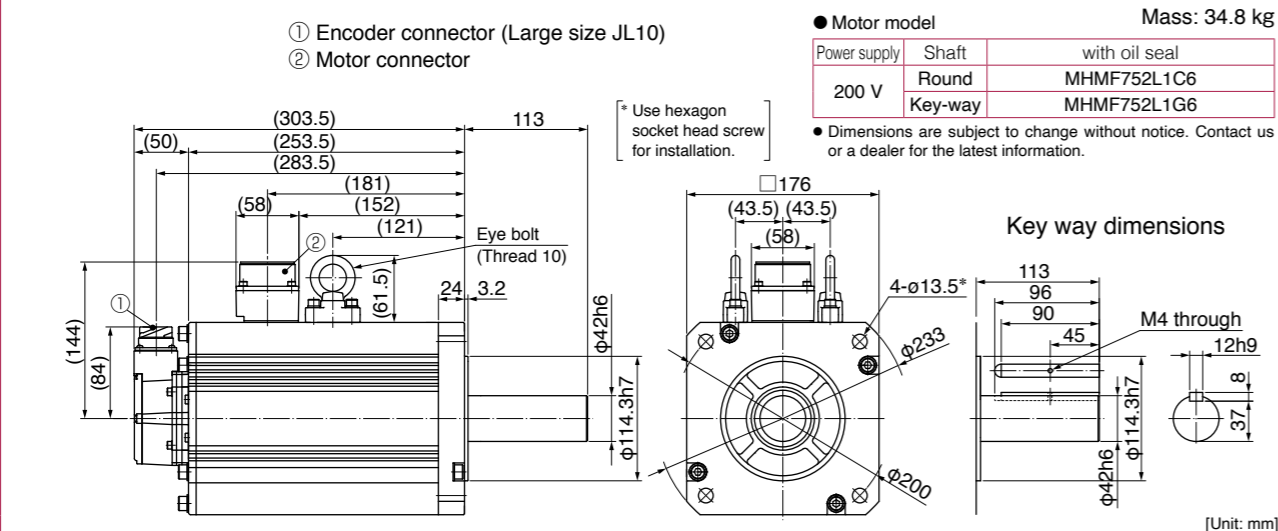
Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



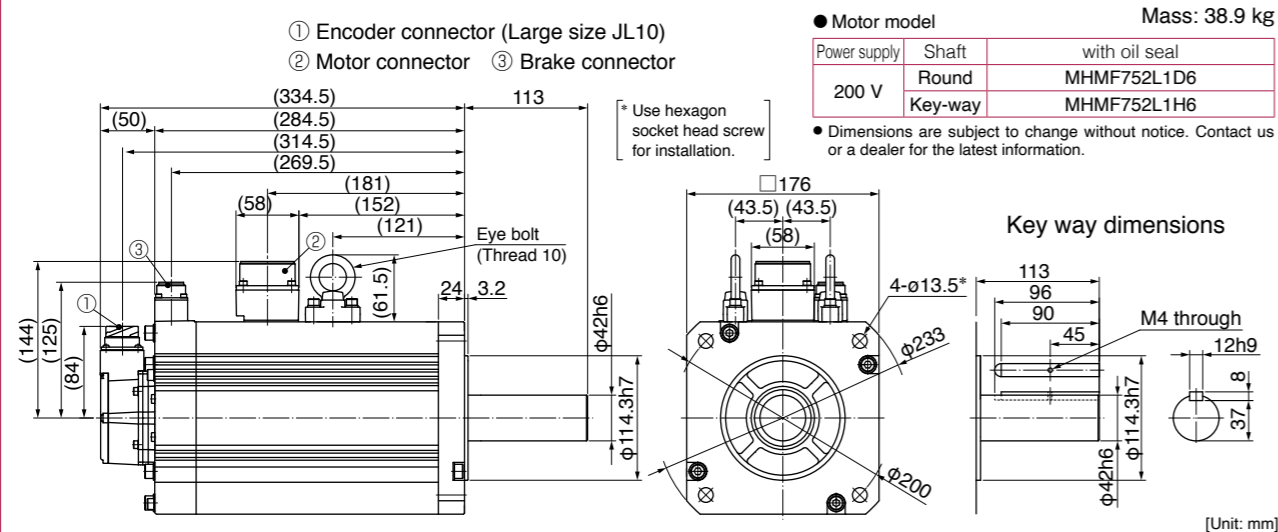
\* For motors specifications, refer to P.100.

MHMF 7.5 kW

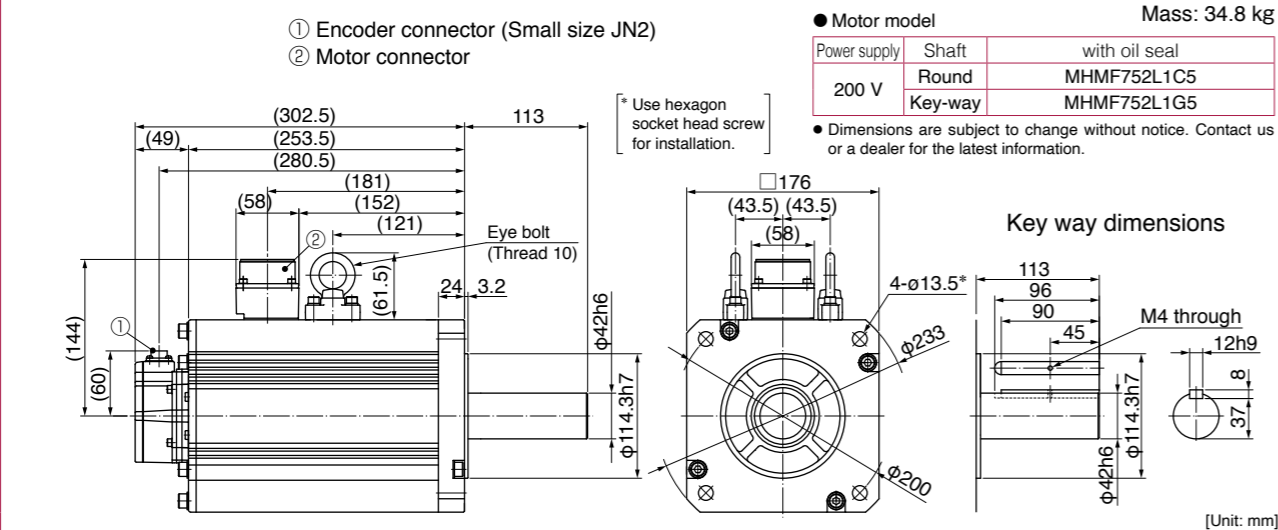
Large size connector (JL10) type • without brake • with oil seal • Key way shaft/ Round shaft



Large size connector (JL10) type • with brake • with oil seal • Key way shaft/ Round shaft



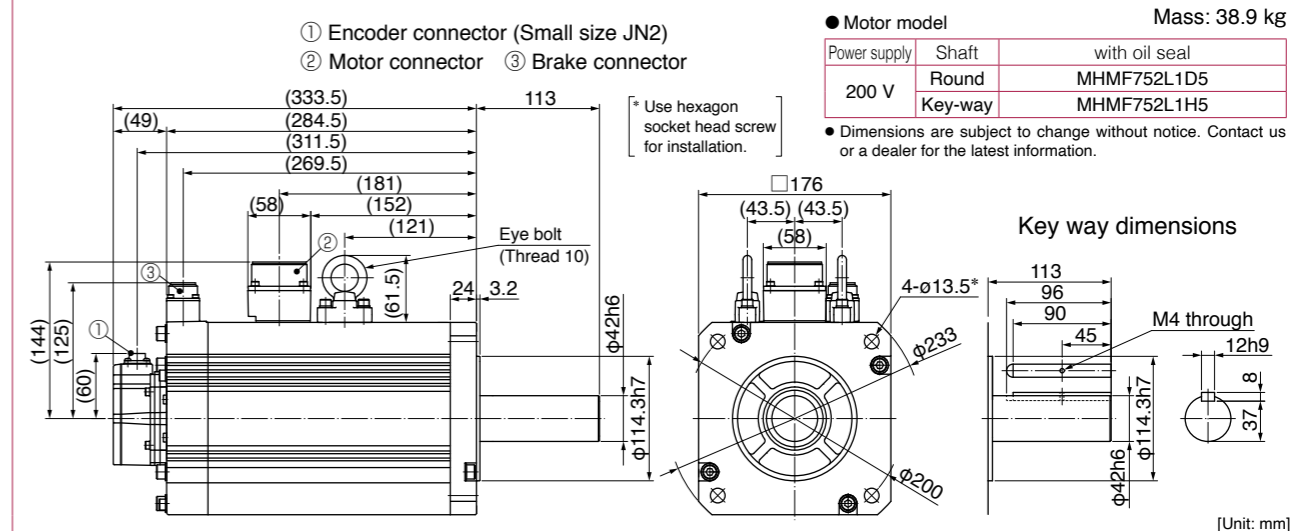
Small size connector (JN2) type • without brake • with oil seal • Key way shaft/ Round shaft



\* For motors specifications, refer to P.101.

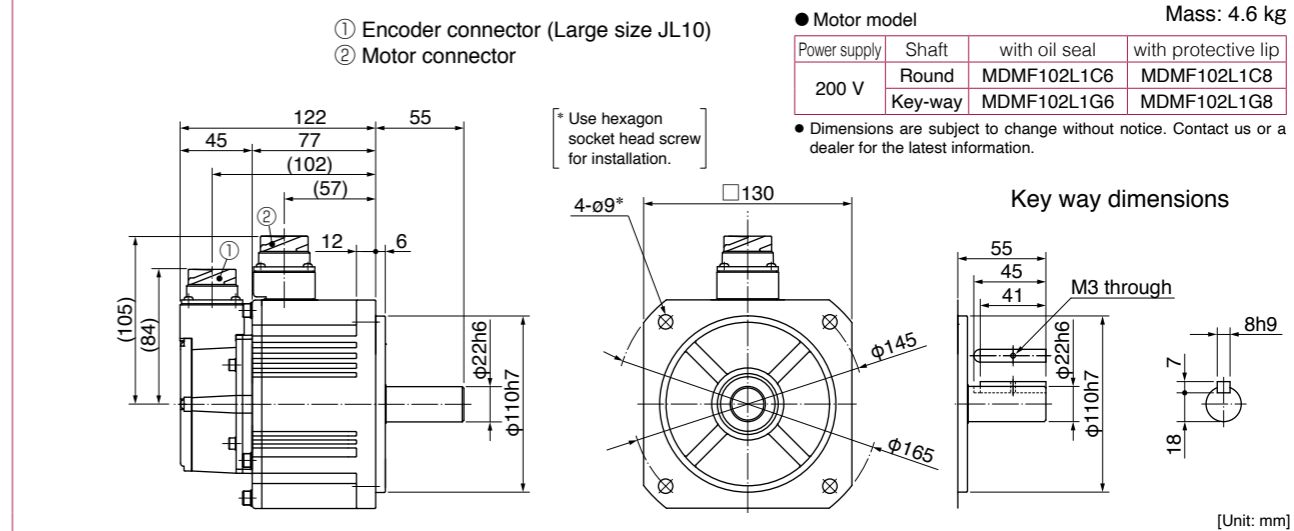
MHMF 7.5 kW

Small size connector (JN2) type • with brake • with oil seal • Key way shaft/ Round shaft

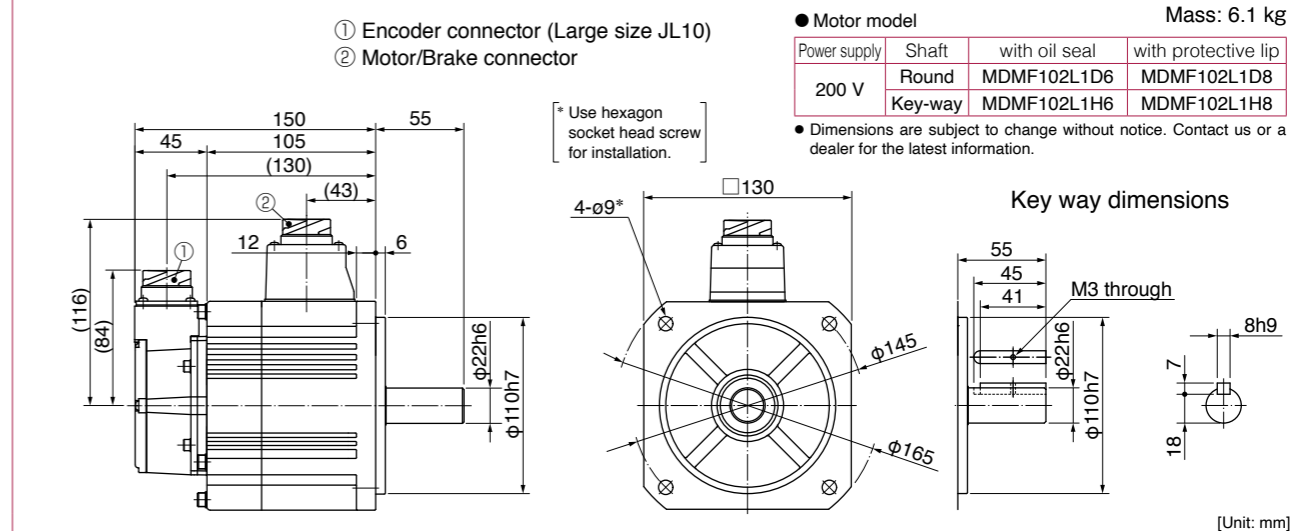


MDMF 1.0 kW

Large size connector (JL10) type • without brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



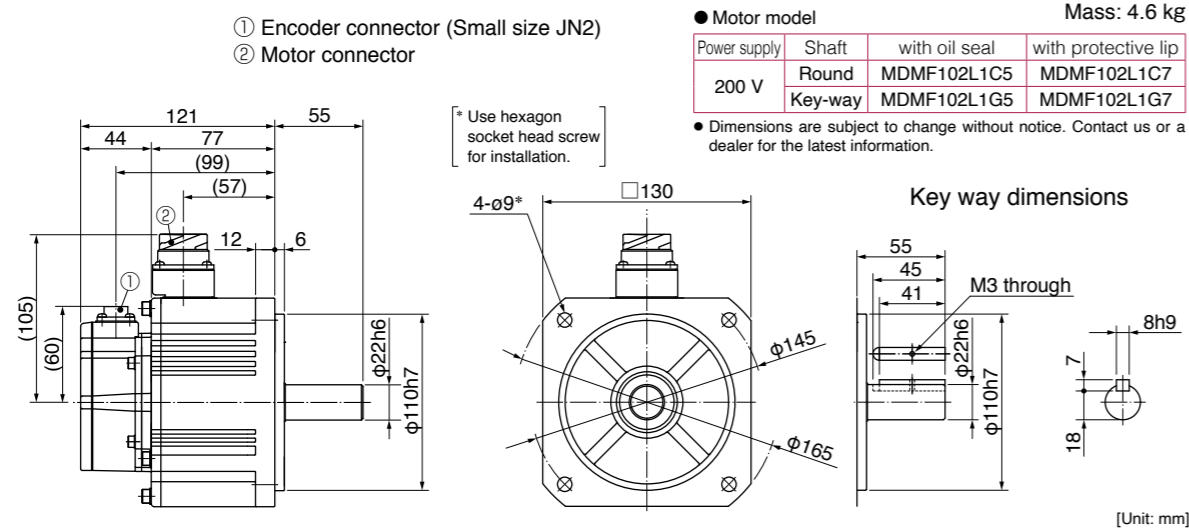
Large size connector (JL10) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



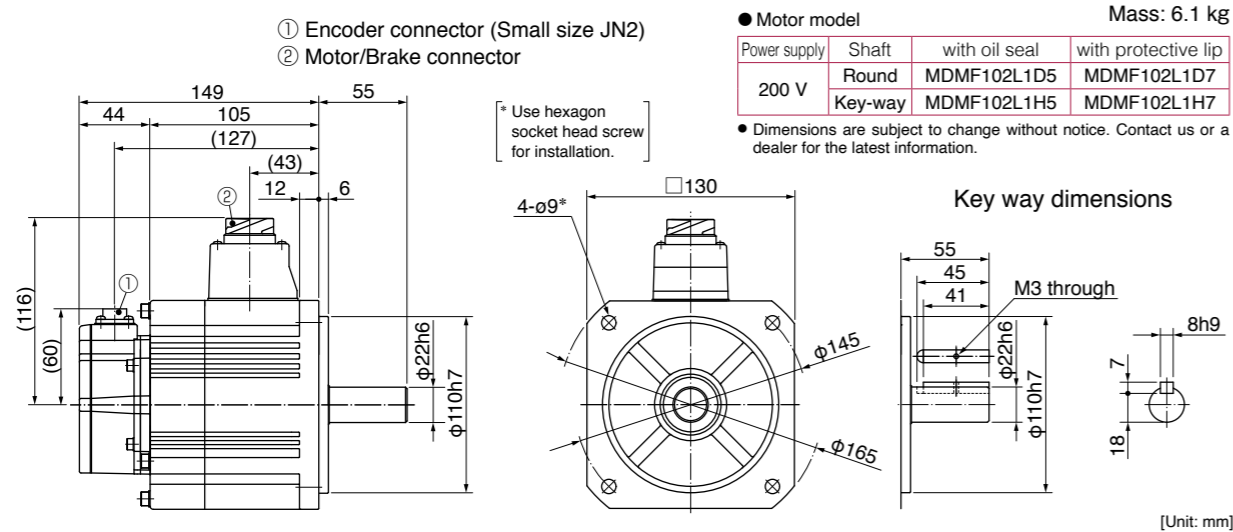
\* For motors specifications, refer to P.101, P.102.

**MDMF 1.0 kW**

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

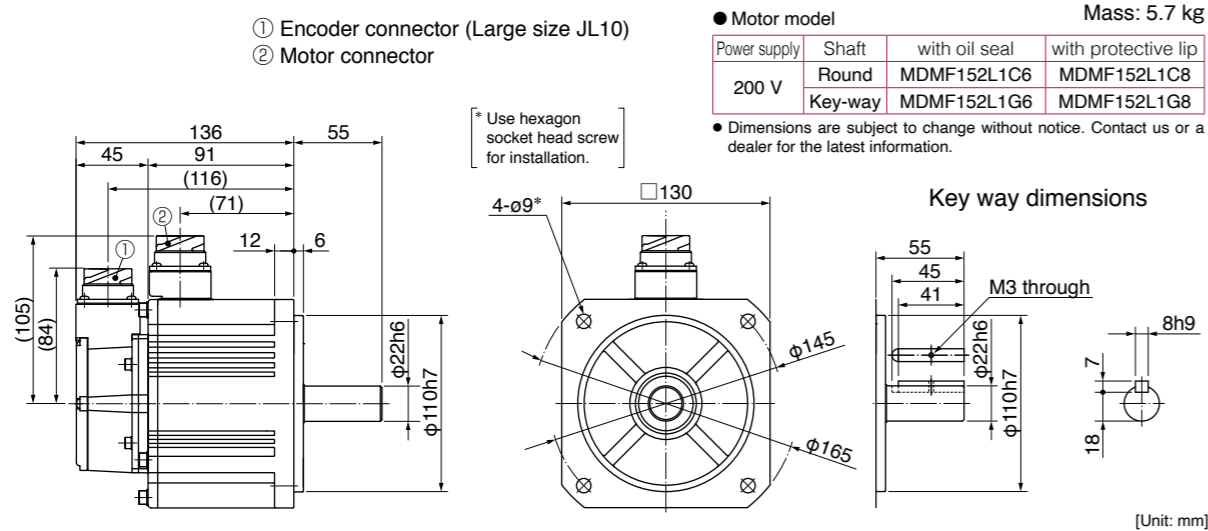


Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



**MDMF 1.5 kW**

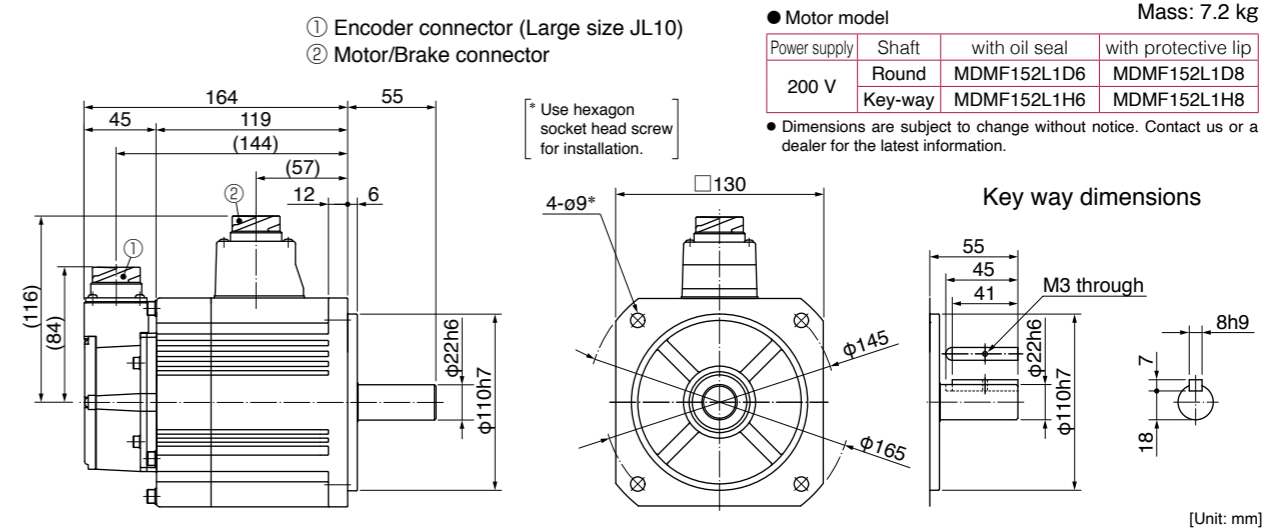
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



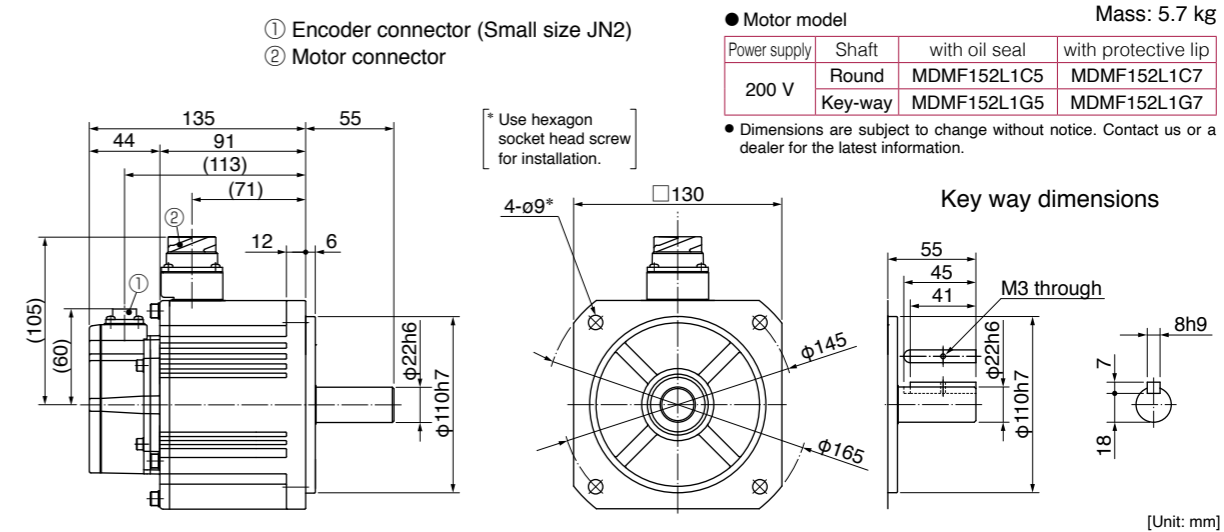
\* For motors specifications, refer to P.102, P.103.

**MDMF 1.5 kW**

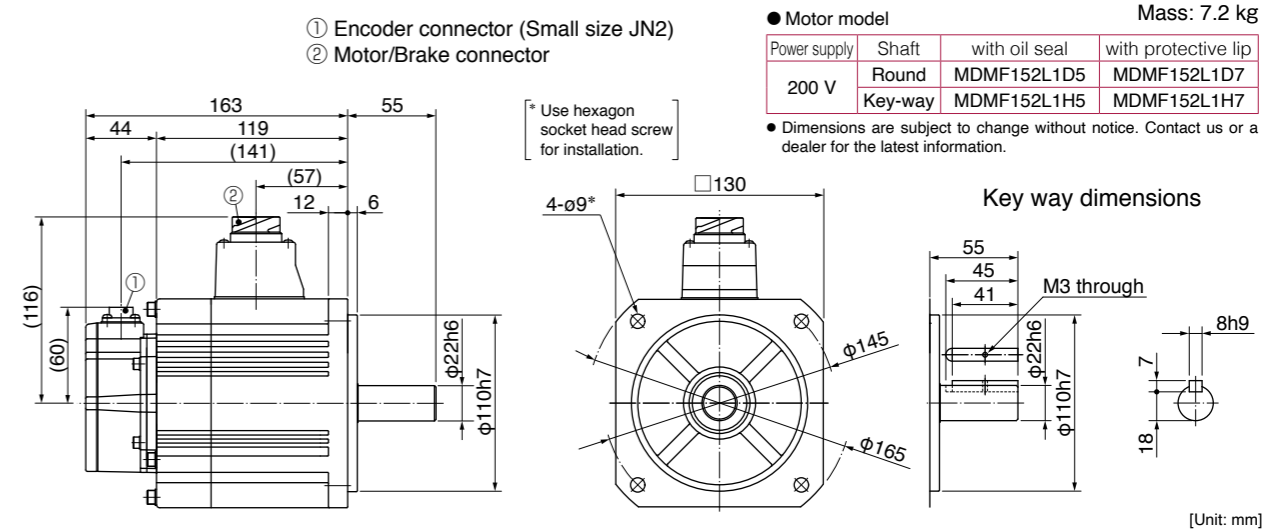
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.103.

MDMF 2.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Large size JL10)  
② Motor connector

● Motor model Mass: 6.9 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MDMF202L1C6	MDMF202L1C8
	Key-way	MDMF202L1G6	MDMF202L1G8

\* Use hexagon socket head screw for installation.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions

[Unit: mm]

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Large size JL10)  
② Motor/Brake connector

● Motor model Mass: 8.4 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MDMF202L1D6	MDMF202L1D8
	Key-way	MDMF202L1H6	MDMF202L1H8

\* Use hexagon socket head screw for installation.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions

[Unit: mm]

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Small size JN2)  
② Motor connector

● Motor model Mass: 6.9 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MDMF202L1C5	MDMF202L1C7
	Key-way	MDMF202L1G5	MDMF202L1G7

\* Use hexagon socket head screw for installation.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions

[Unit: mm]

\* For motors specifications, refer to P.104.

MDMF 2.0 kW

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Small size JN2)  
② Motor/Brake connector

● Motor model Mass: 8.4 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MDMF202L1D5	MDMF202L1D7
	Key-way	MDMF202L1H5	MDMF202L1H7

\* Use hexagon socket head screw for installation.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions

[Unit: mm]

MDMF 3.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Large size JL10)  
② Motor connector

● Motor model Mass: 9.3 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MDMF302L1C6	MDMF302L1C8
	Key-way	MDMF302L1G6	MDMF302L1G8

\* Use hexagon socket head screw for installation.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Key way dimensions

[Unit: mm]

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

① Encoder connector (Large size JL10)  
② Motor/Brake connector

● Motor model Mass: 10.9 kg

Power supply	Shaft	with oil seal	with protective lip
200 V	Round	MDMF302L1D6	MDMF302L1D8
	Key-way	MDMF302L1H6	MDMF302L1H8

\* Use hexagon socket head screw for installation.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

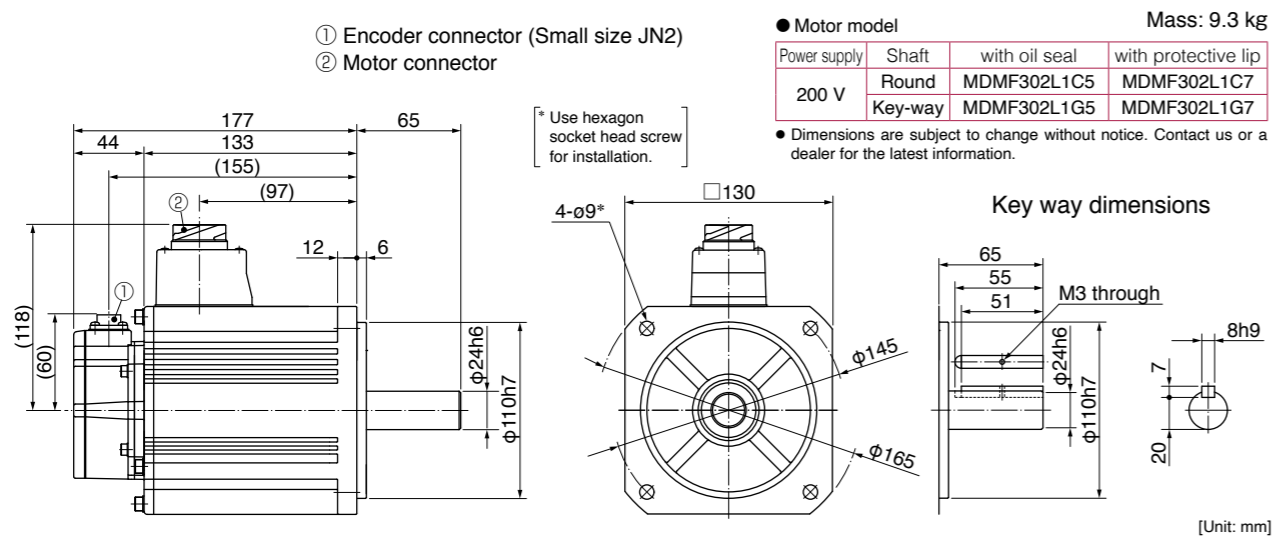
Key way dimensions

[Unit: mm]

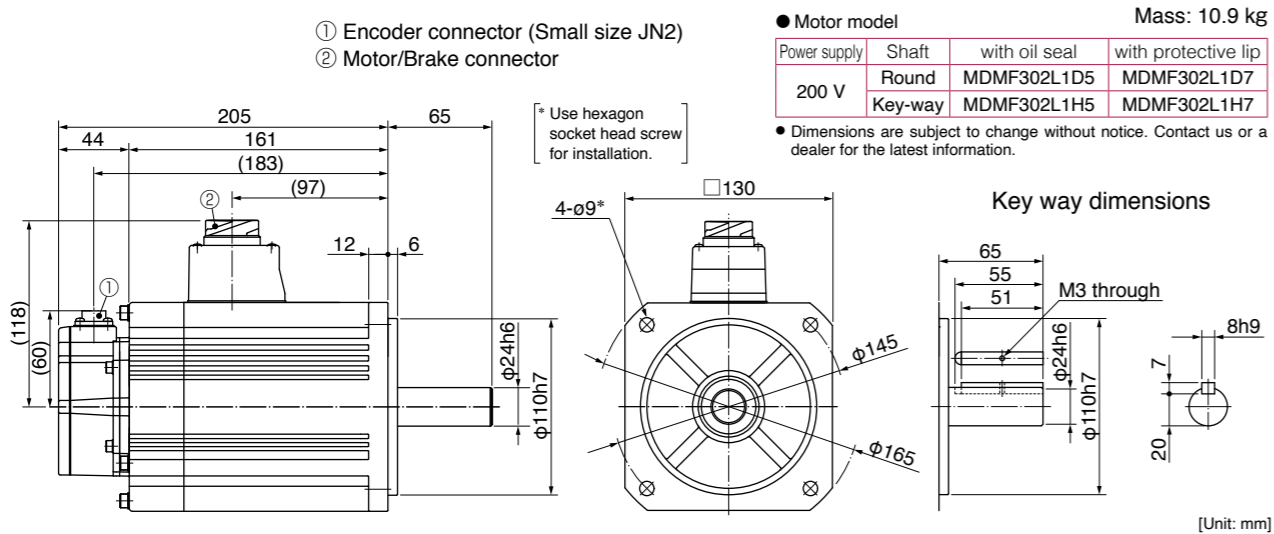
\* For motors specifications, refer to P.104, P.105.

MDMF 3.0 kW

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

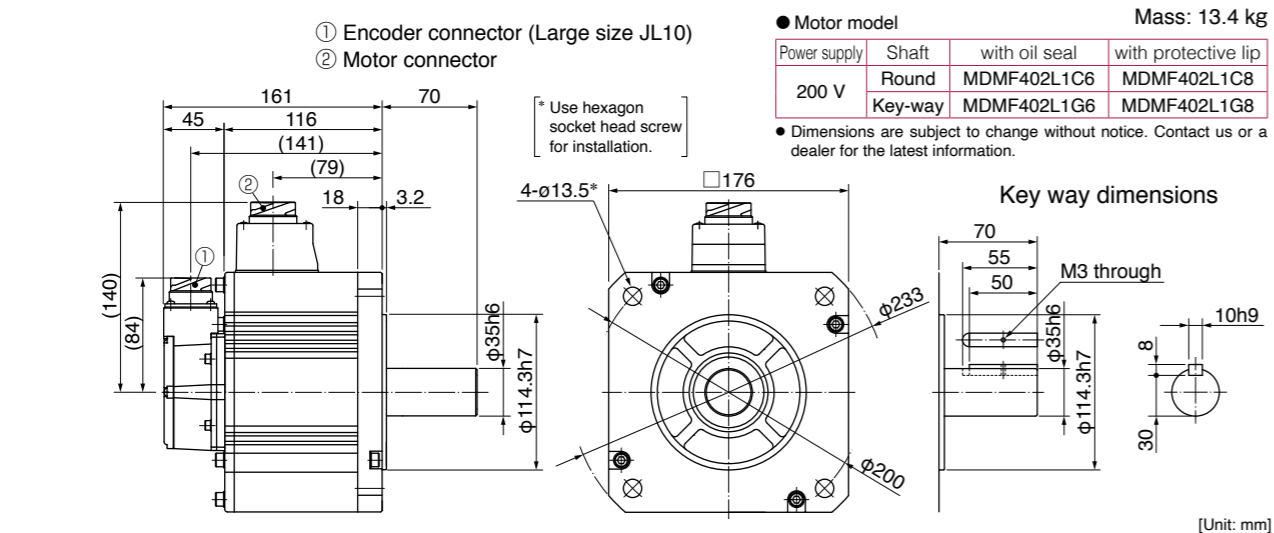


Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MDMF 4.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

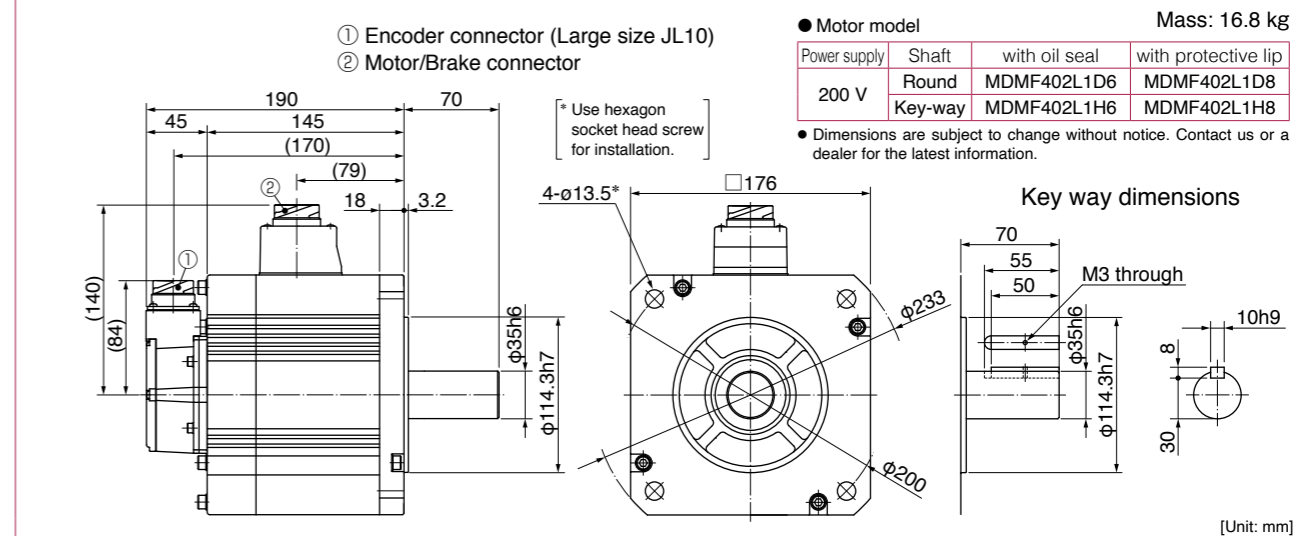


\* For motors specifications, refer to P.105, P.106.

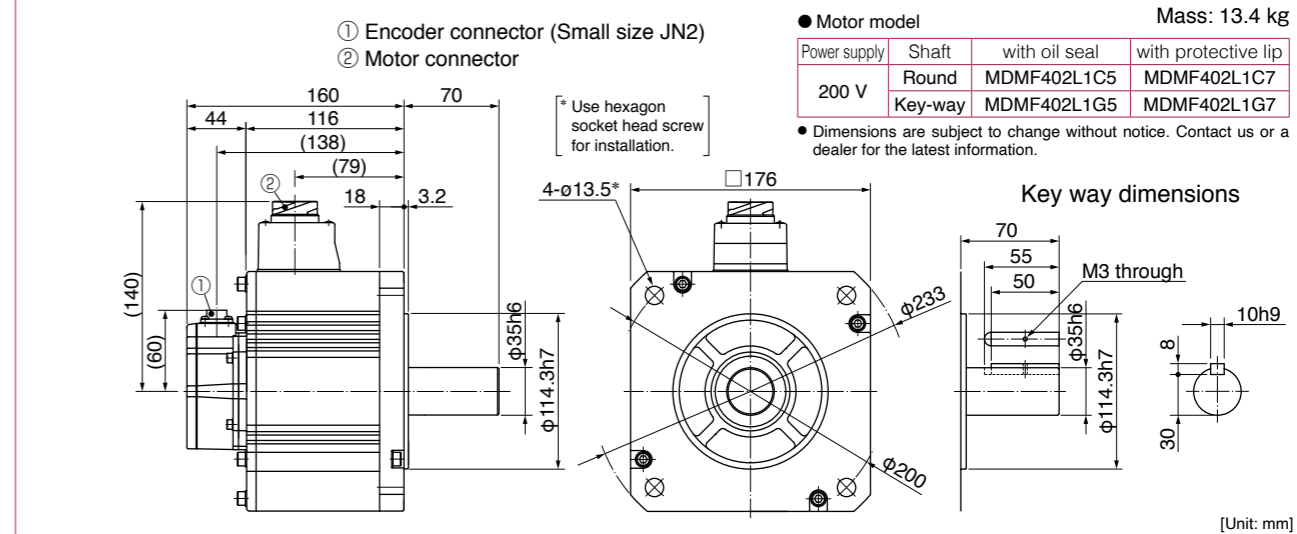
MDMF 4.0 kW

MDMF 4.0 kW

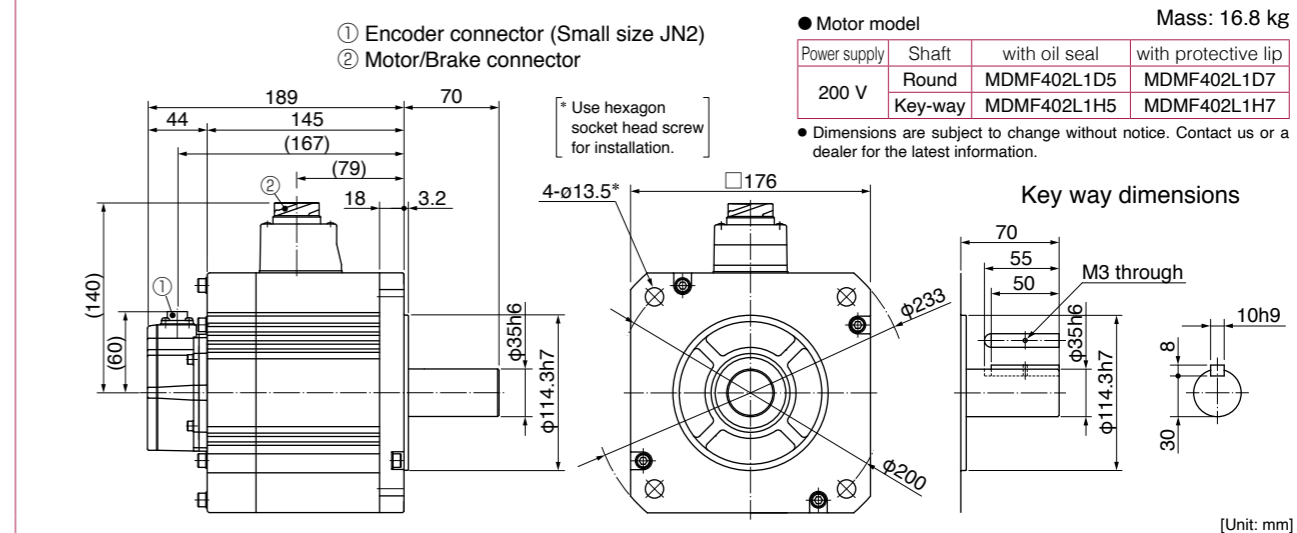
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



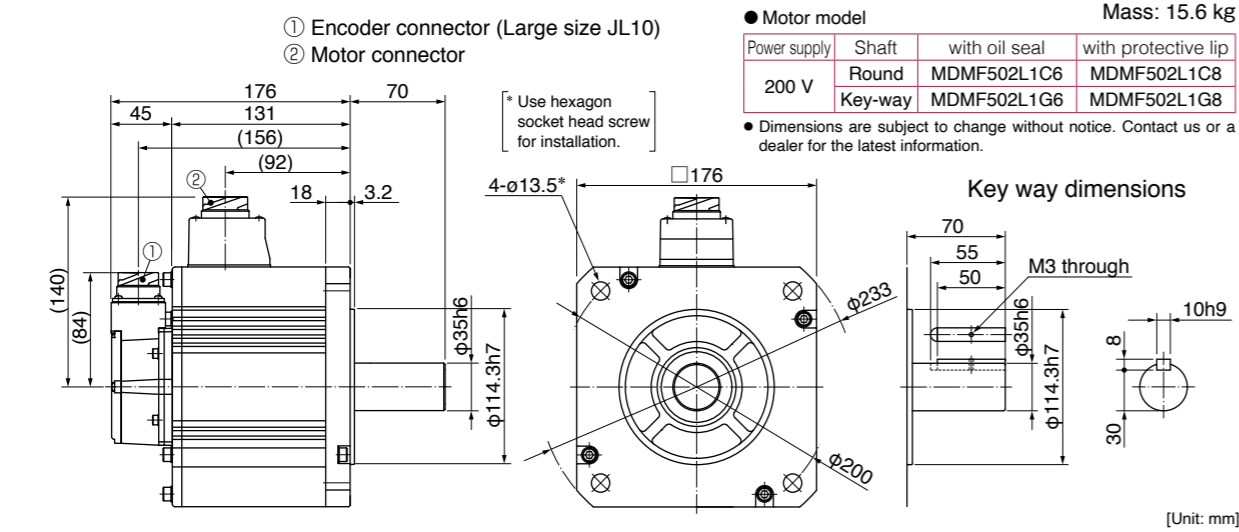
Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



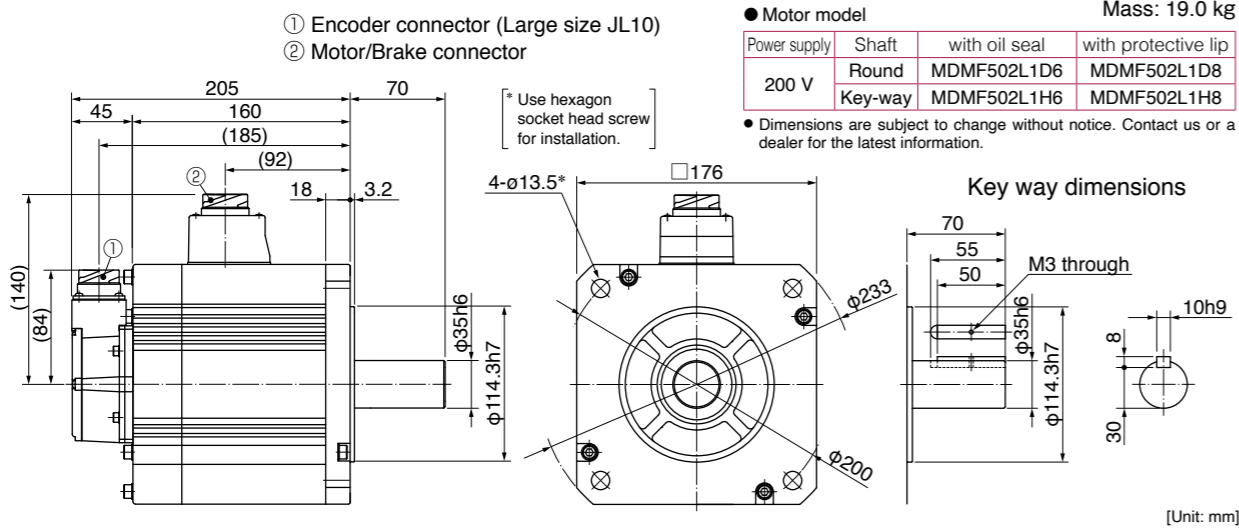
\* For motors specifications, refer to P.106.

**MDMF 5.0 kW**

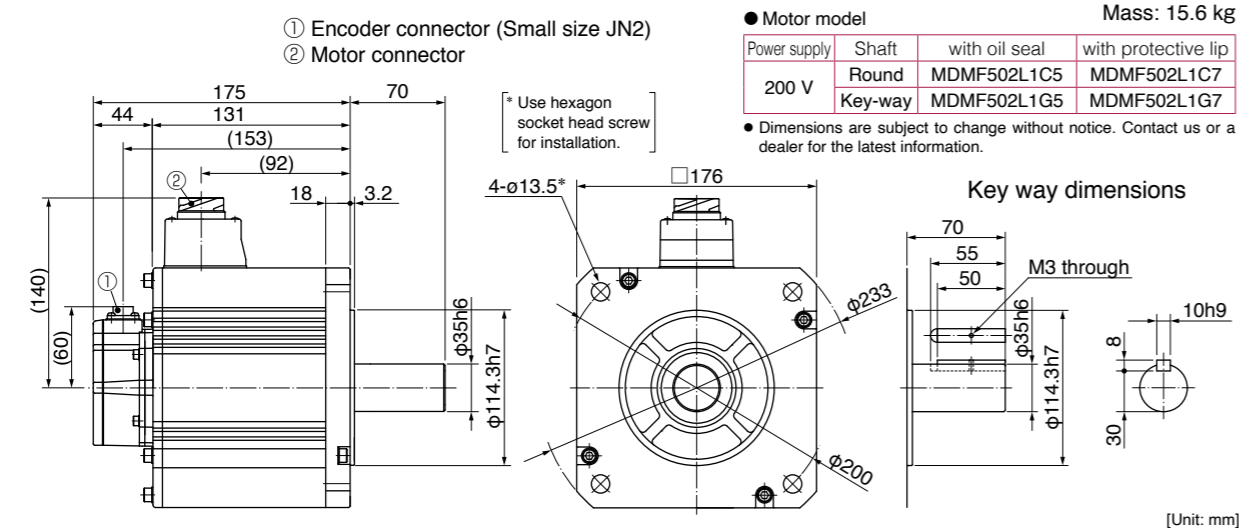
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



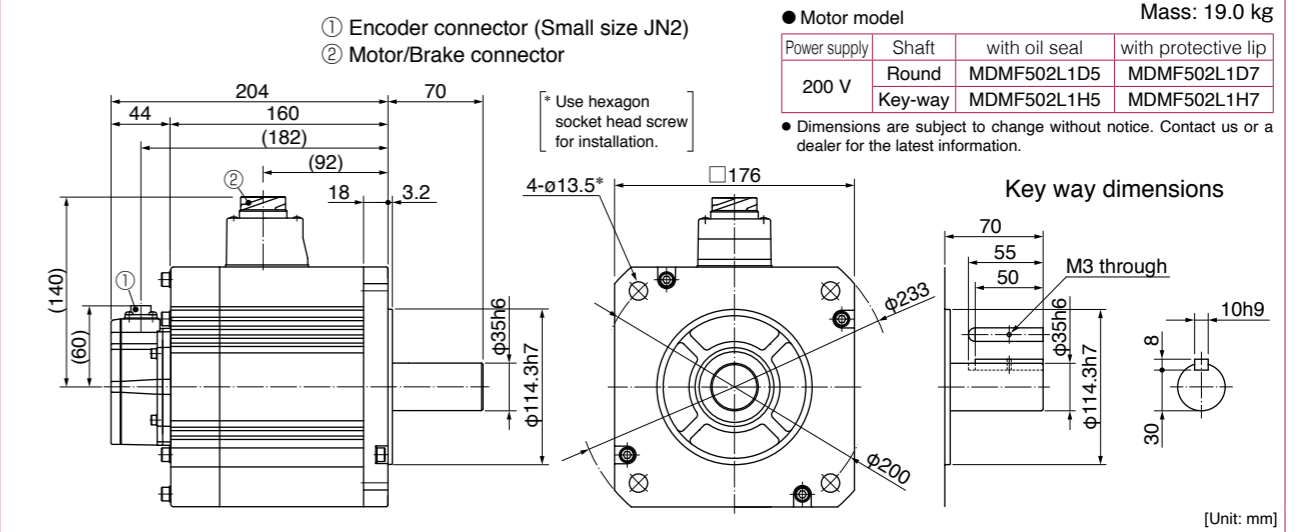
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.107.

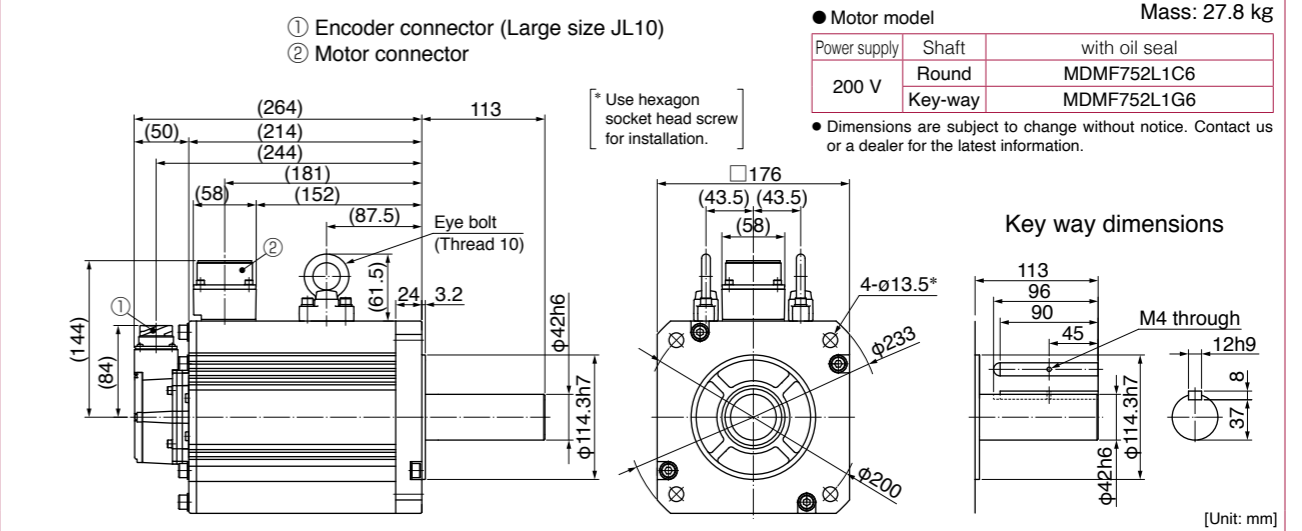
**MDMF 5.0 kW**

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

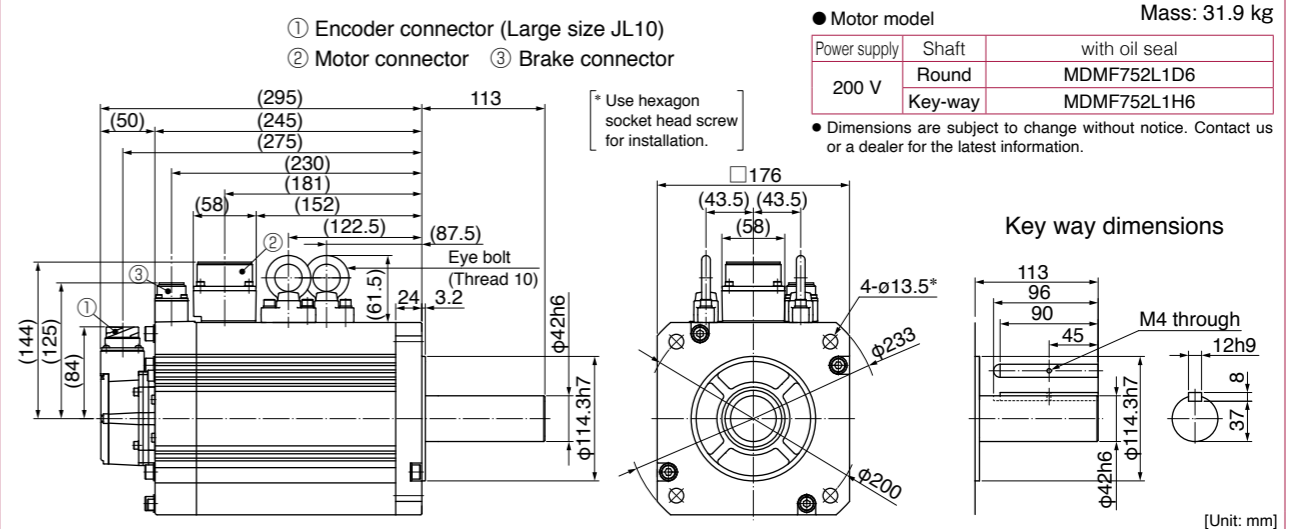


**MDMF 7.5 kW**

Large size connector (JL10) type · without brake · with oil seal · Key way shaft/ Round shaft

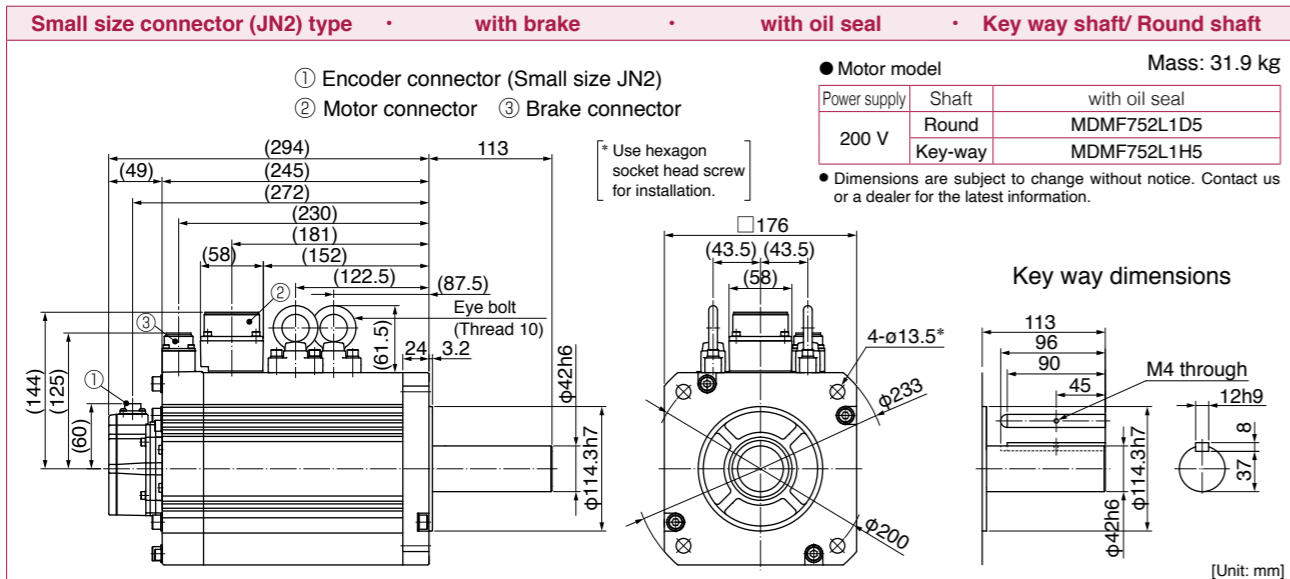
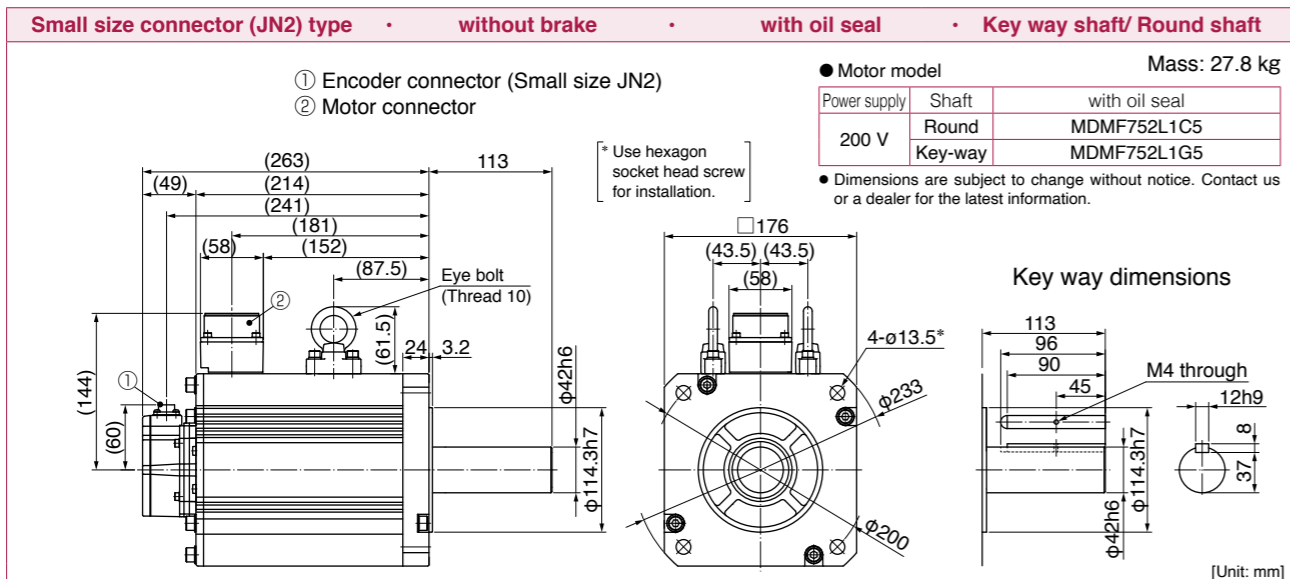


Large size connector (JL10) type · with brake · with oil seal · Key way shaft/ Round shaft

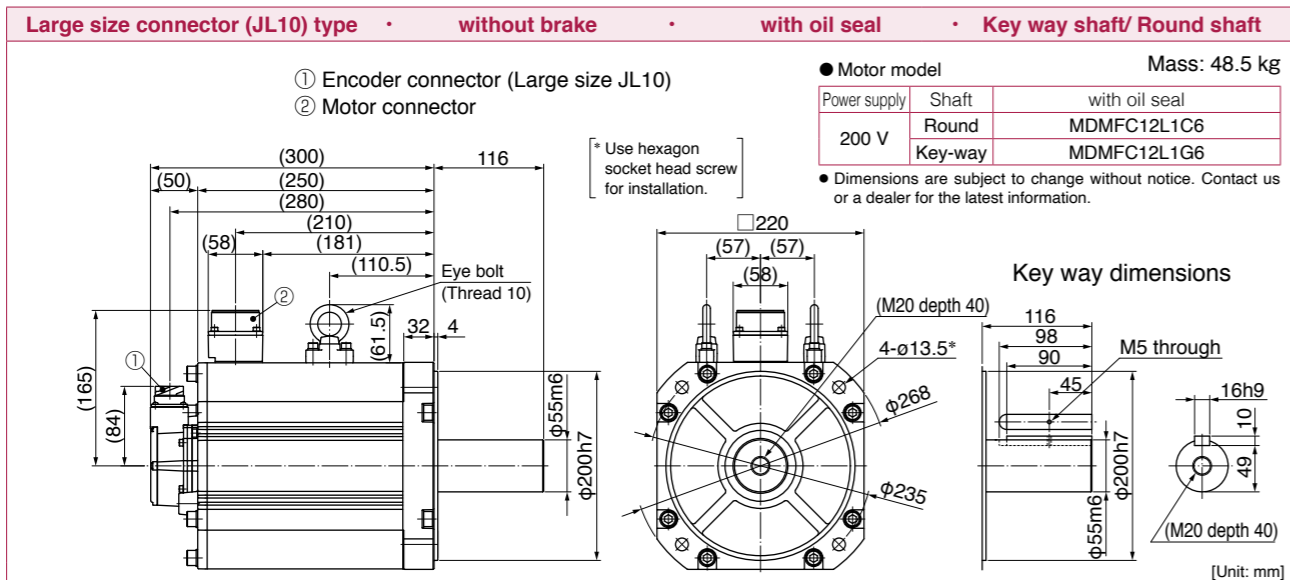


\* For motors specifications, refer to P.107, P.108.

MDMF 7.5 kW



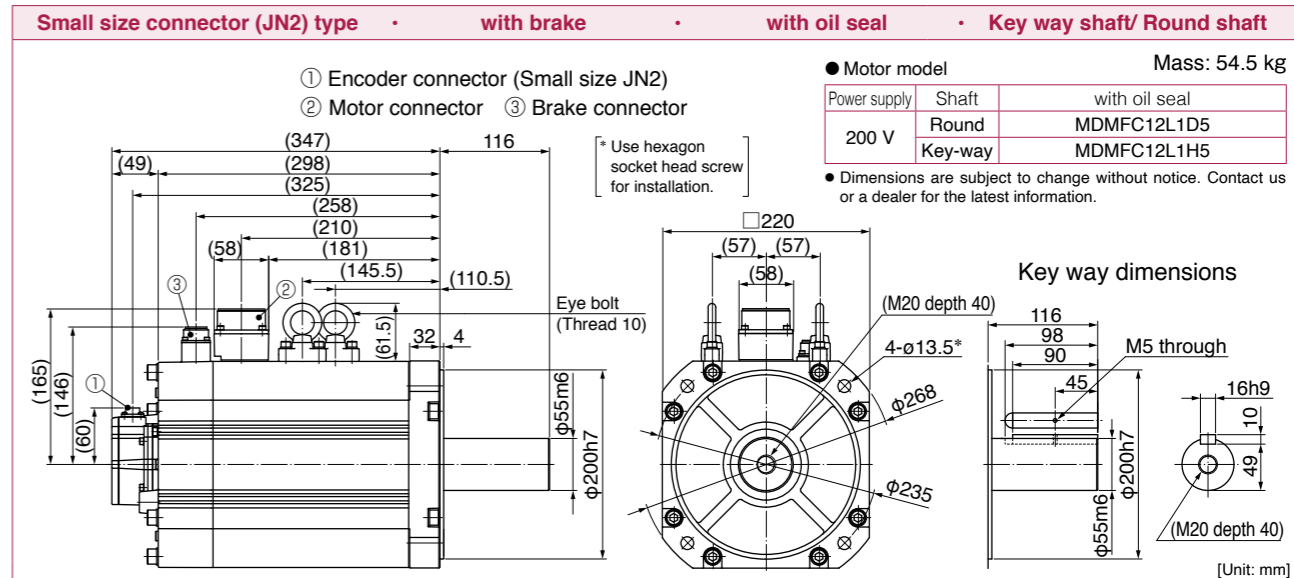
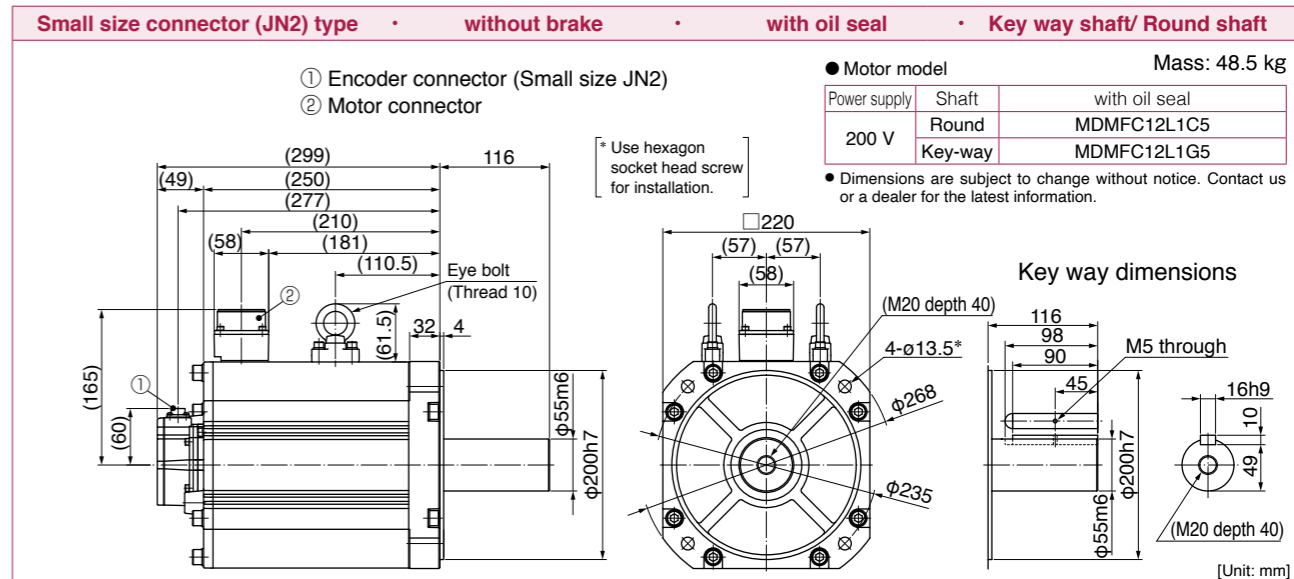
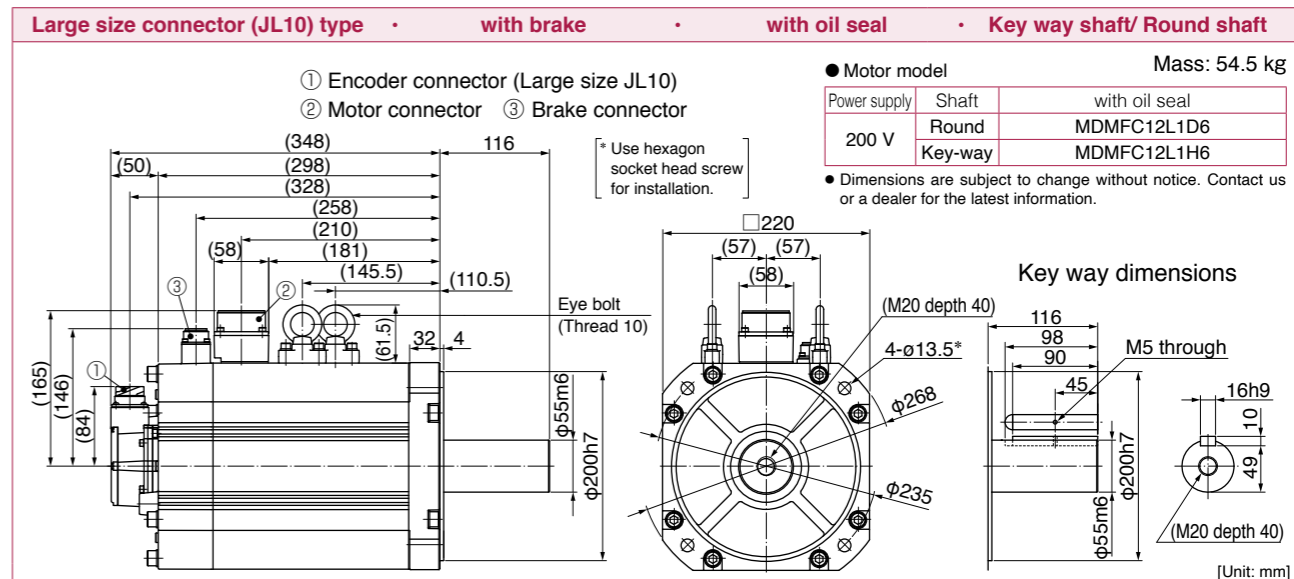
MDMF 11.0 kW



\* For motors specifications, refer to P:108, P:109.

MDMF 11.0 kW

MDMF 11.0 kW

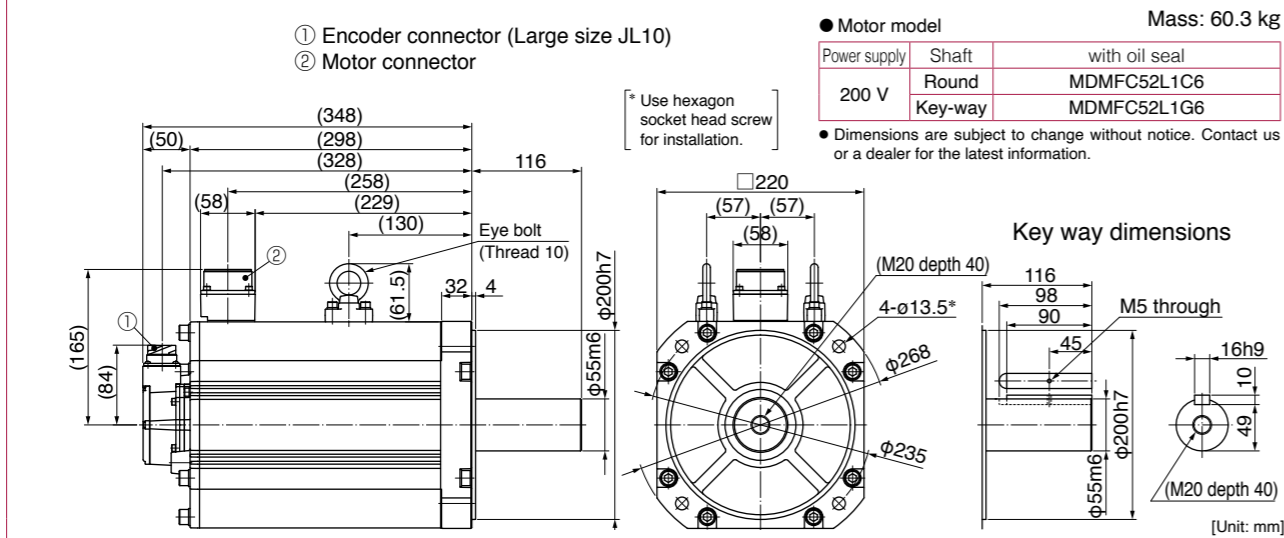


\* For motors specifications, refer to P:109.

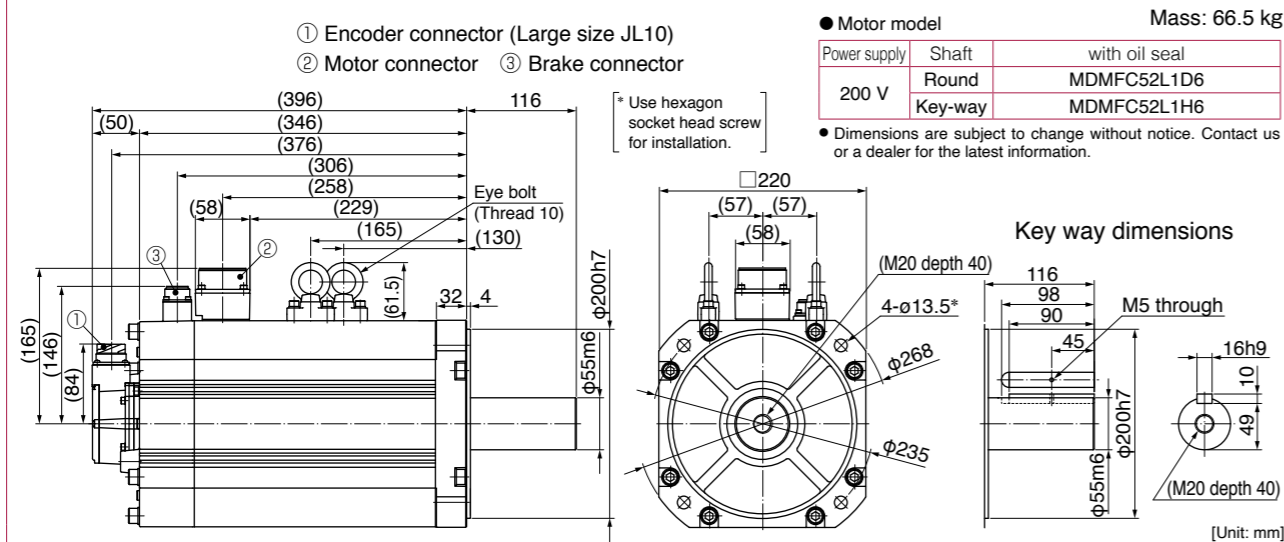


**MDMF 15.0 kW**

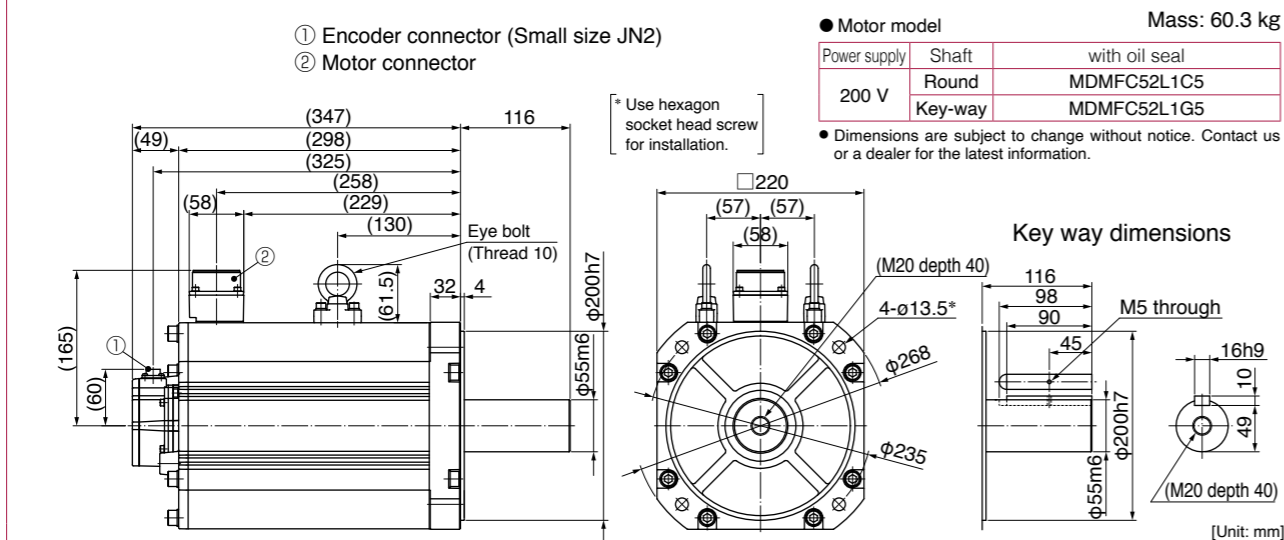
Large size connector (JL10) type • without brake • with oil seal • Key way shaft/ Round shaft



Large size connector (JL10) type • with brake • with oil seal • Key way shaft/ Round shaft



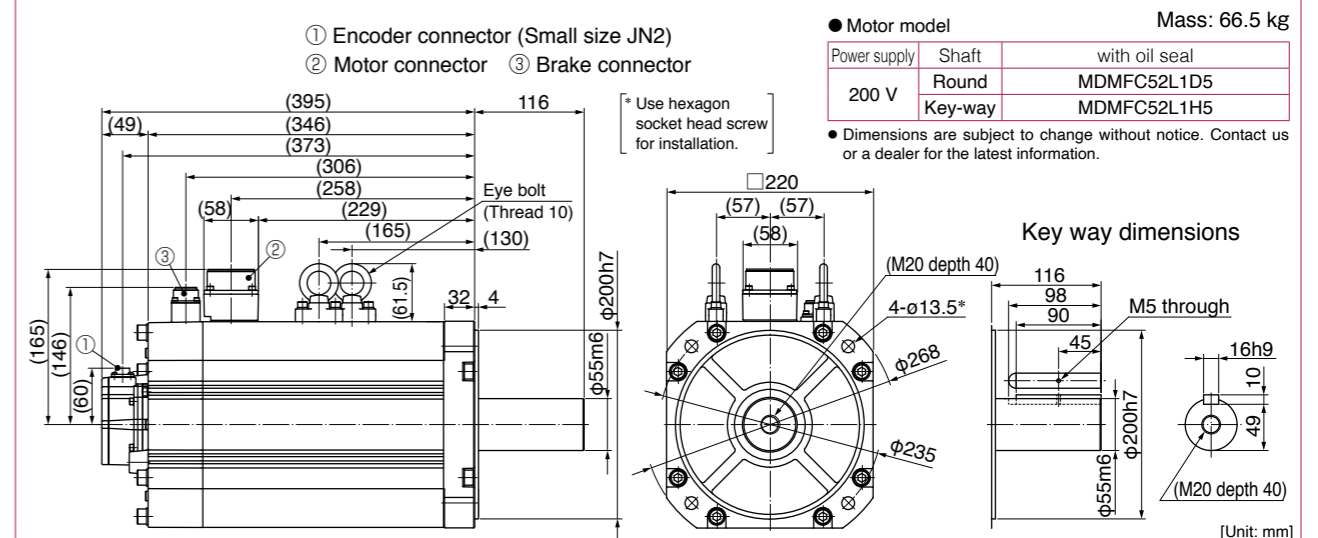
Small size connector (JN2) type • without brake • with oil seal • Key way shaft/ Round shaft



\* For motors specifications, refer to P.110.

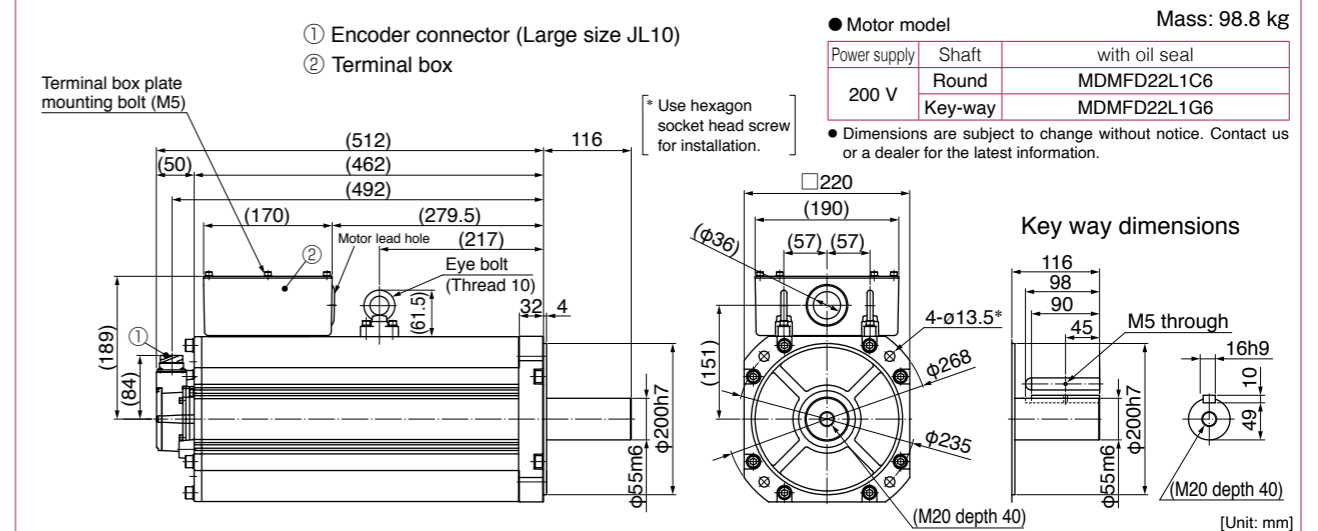
**MDMF 15.0 kW**

Small size connector (JN2) type • with brake • with oil seal • Key way shaft/ Round shaft

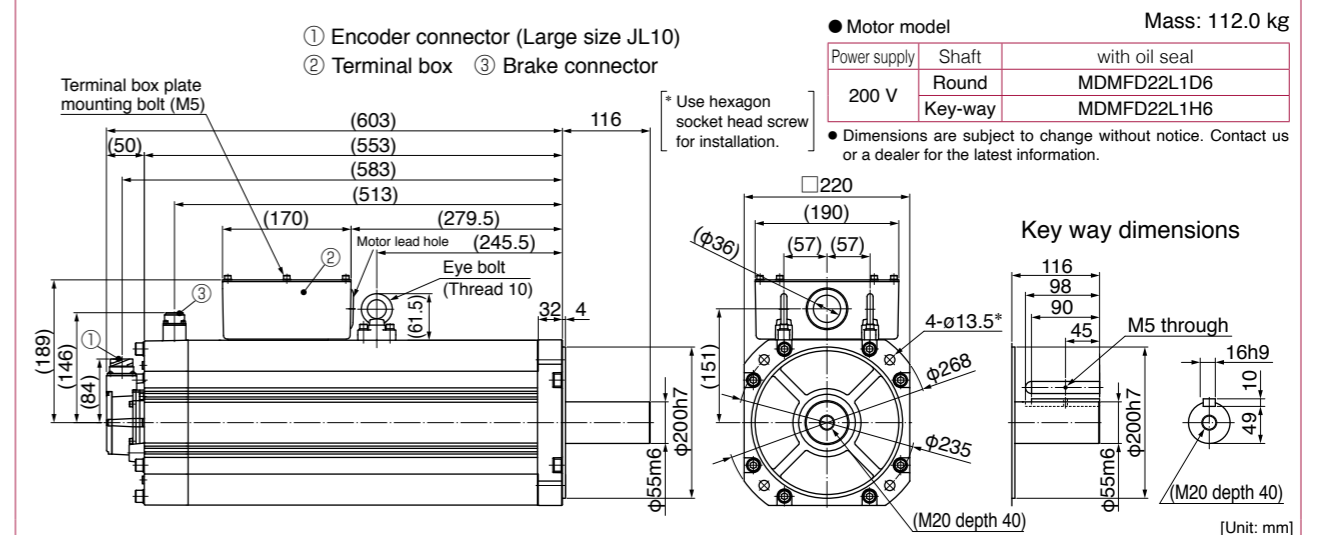


**MDMF 22.0 kW**

Large size connector (JL10) type • without brake • with oil seal • Key way shaft/ Round shaft



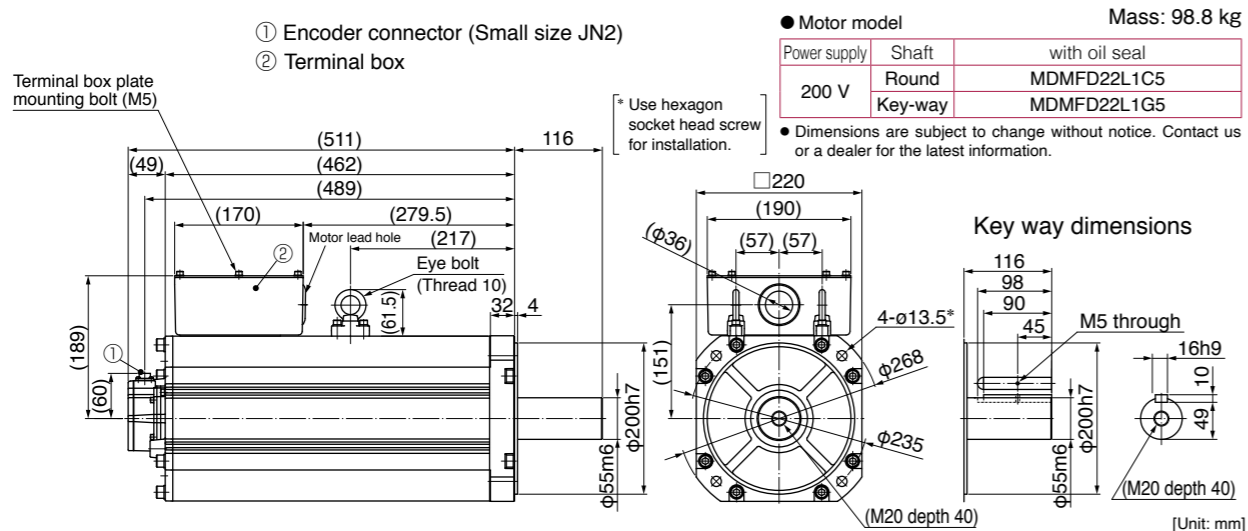
Large size connector (JL10) type • with brake • with oil seal • Key way shaft/ Round shaft



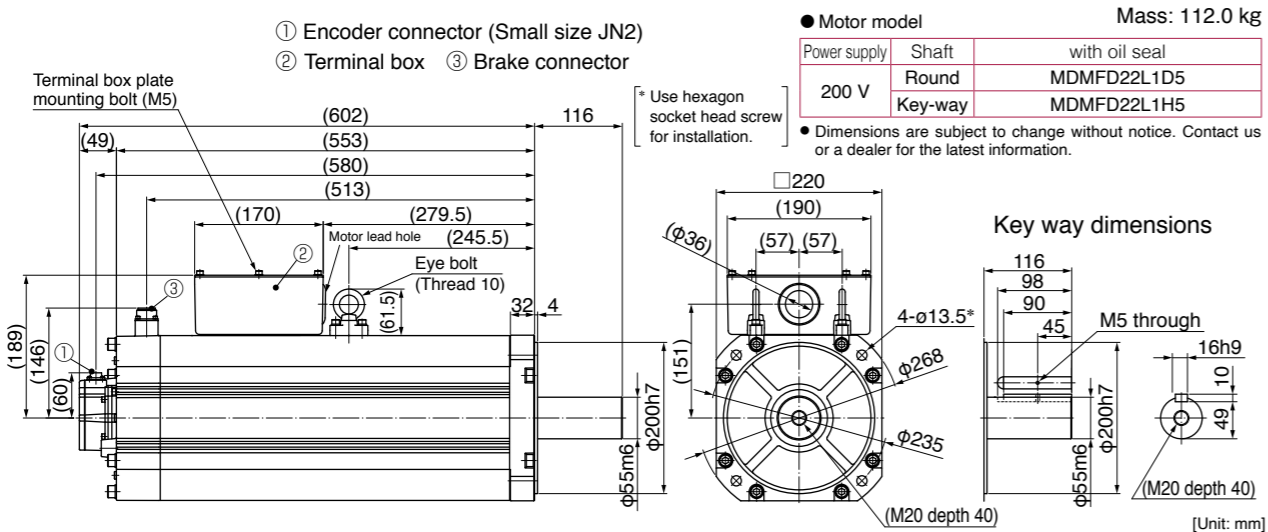
\* For motors specifications, refer to P.110, P.111.

MDMF 22.0 kW

Small size connector (JN2) type • without brake • with oil seal • Key way shaft/ Round shaft

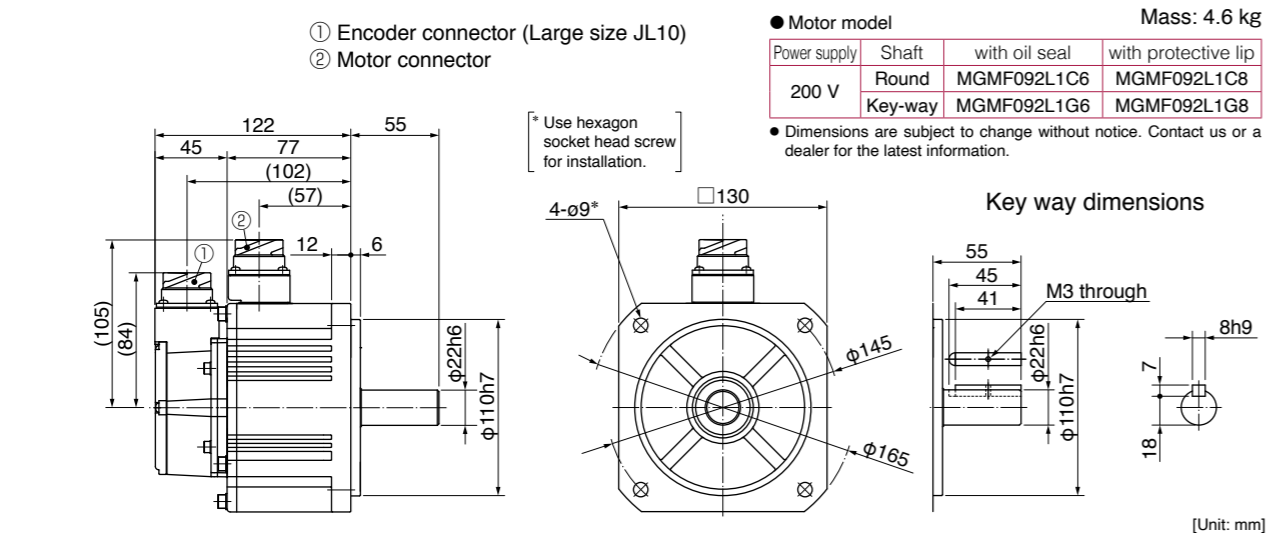


Small size connector (JN2) type • with brake • with oil seal • Key way shaft/ Round shaft



MGMF 0.85 kW

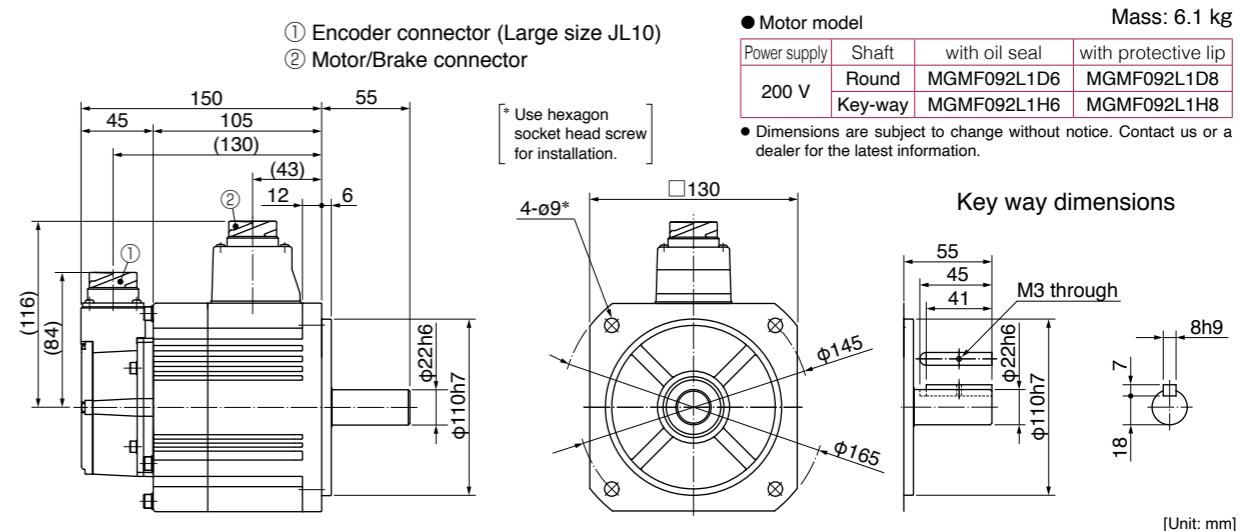
Large size connector (JL10) type • without brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



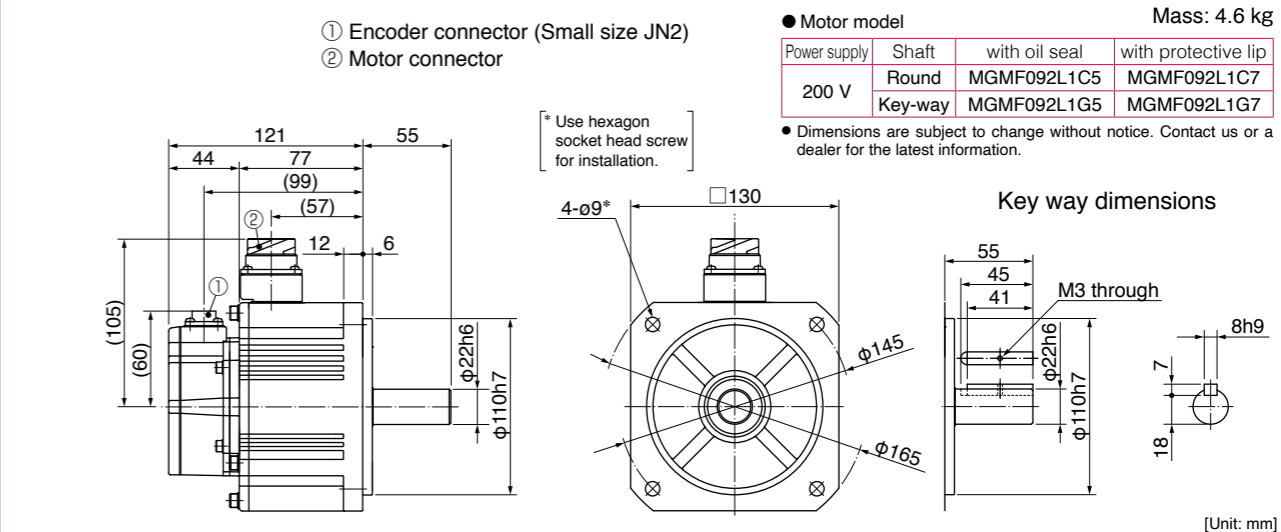
\* For motors specifications, refer to P.111, P.112.

MGMF 0.85 kW

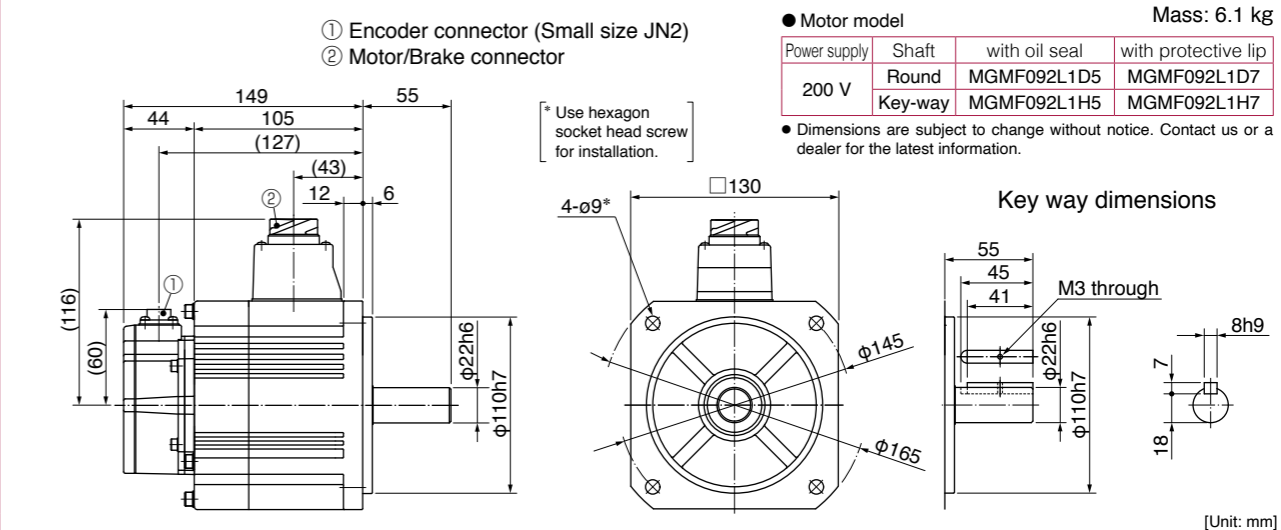
Large size connector (JL10) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



Small size connector (JN2) type • without brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



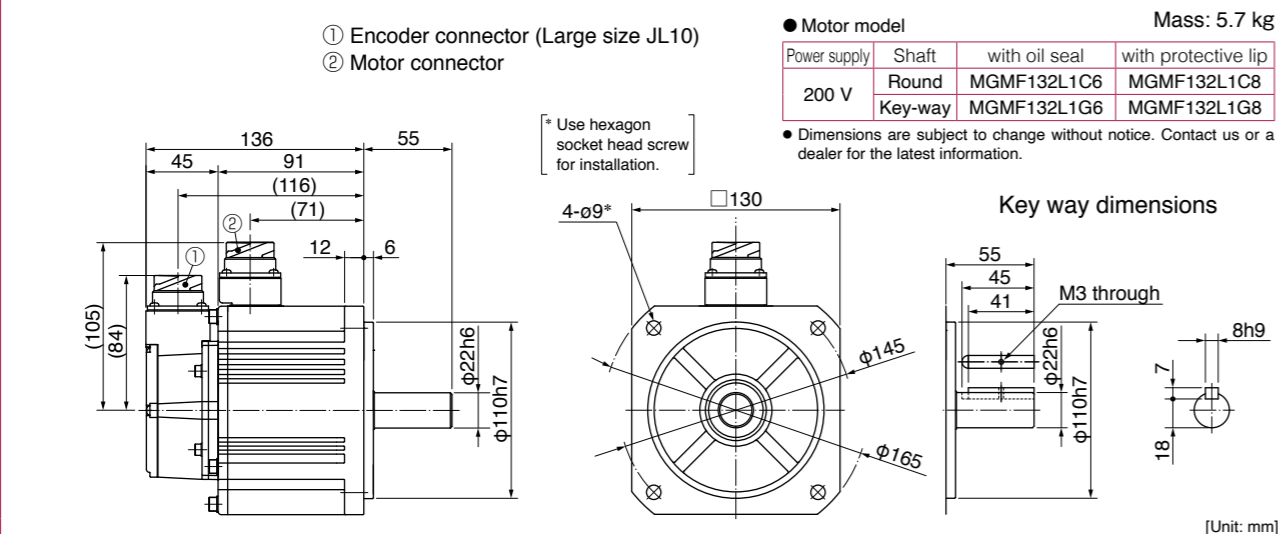
Small size connector (JN2) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



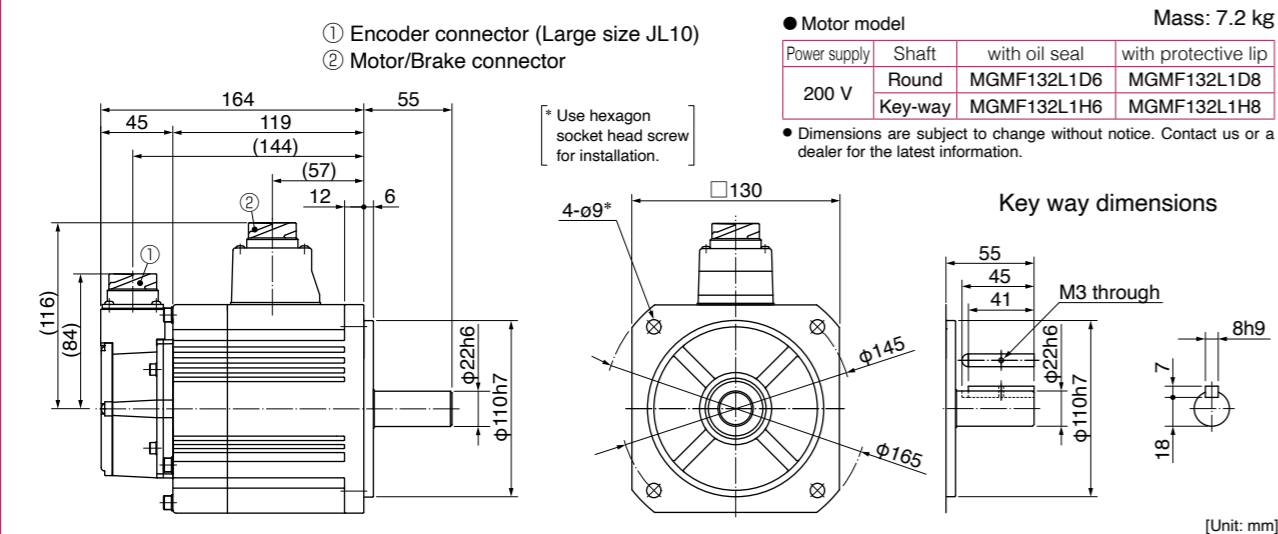
\* For motors specifications, refer to P.112.

MGMF 1.3 kW

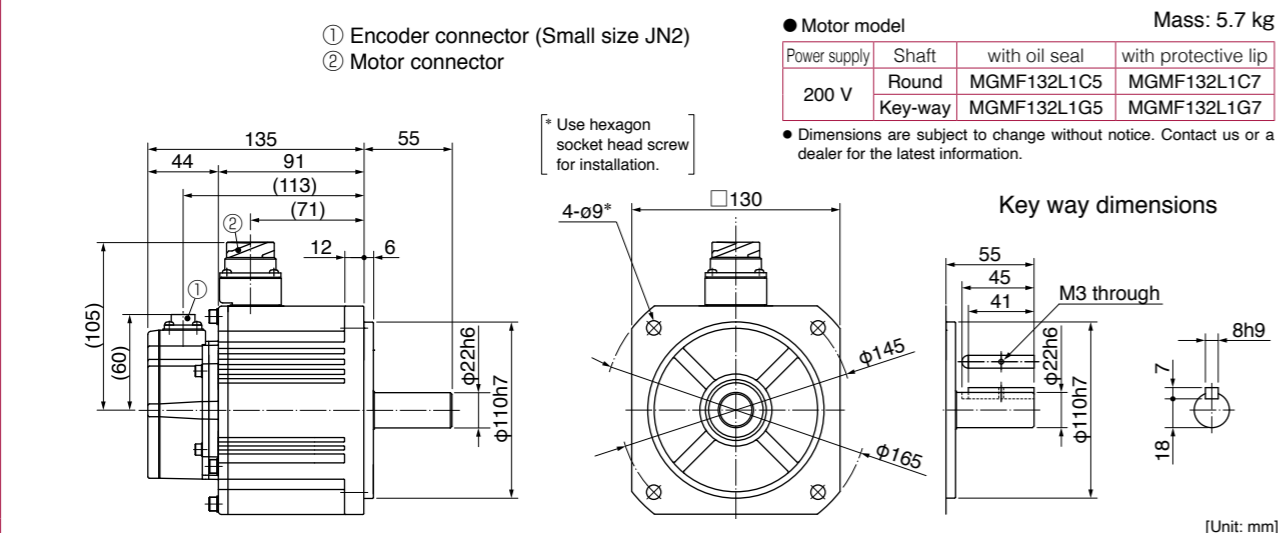
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



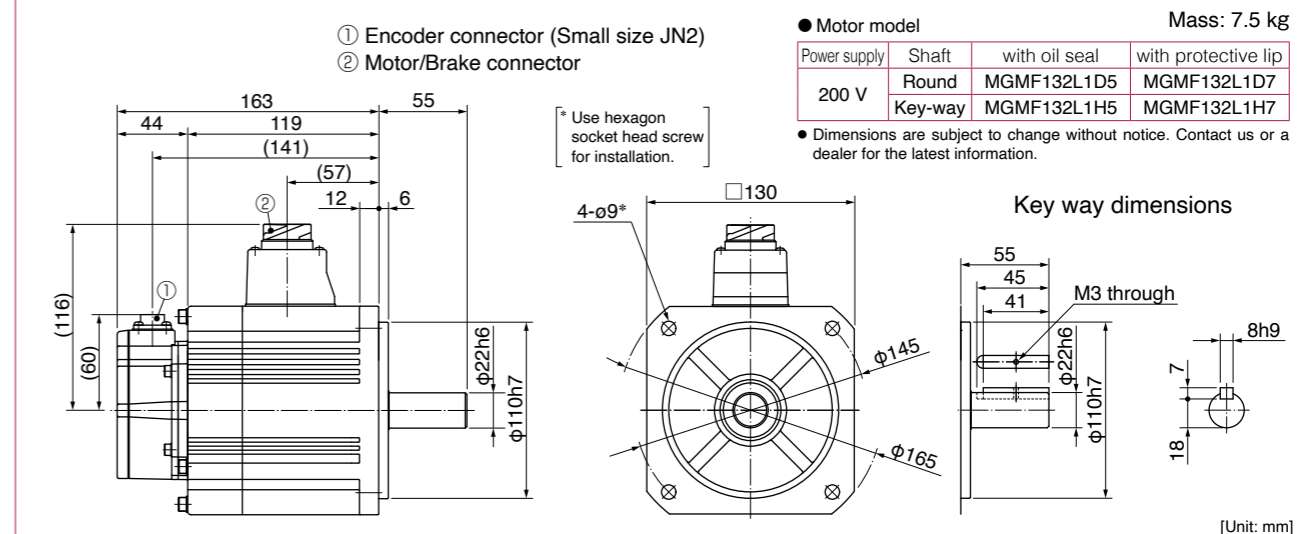
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.113.

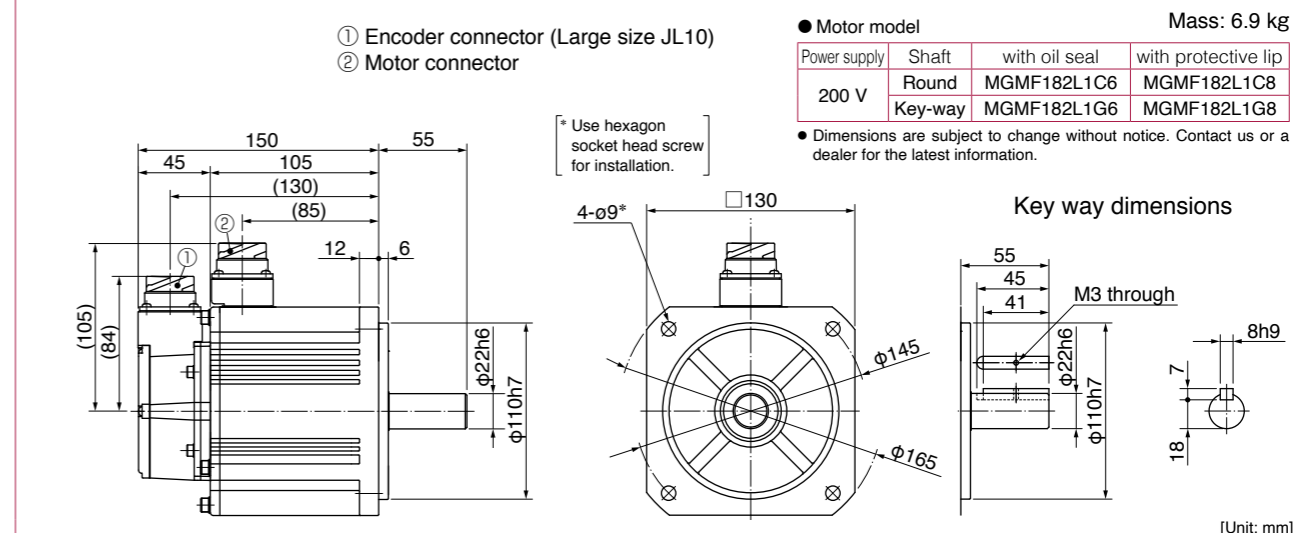
MGMF 1.3 kW

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

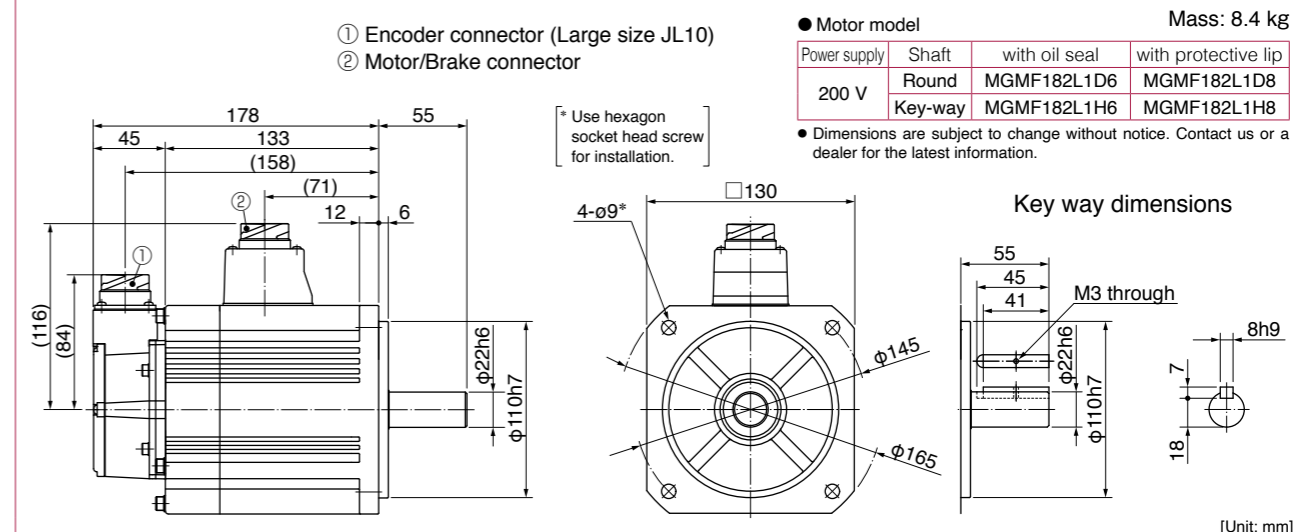


MGMF 1.8 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



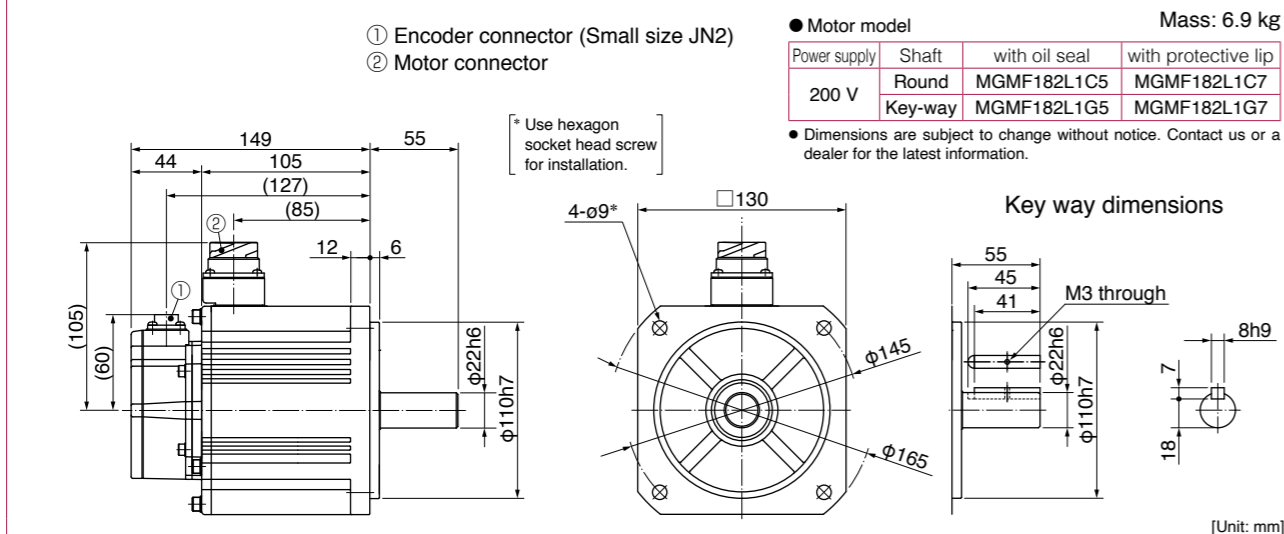
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



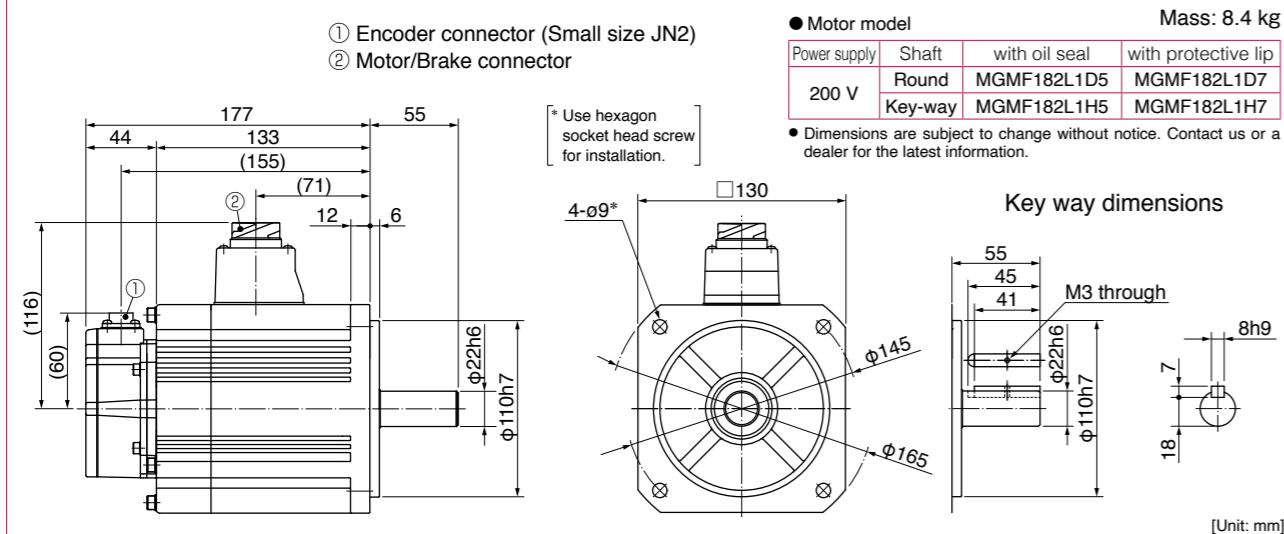
\* For motors specifications, refer to P.113, P.114.

**MGMF 1.8 kW**

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

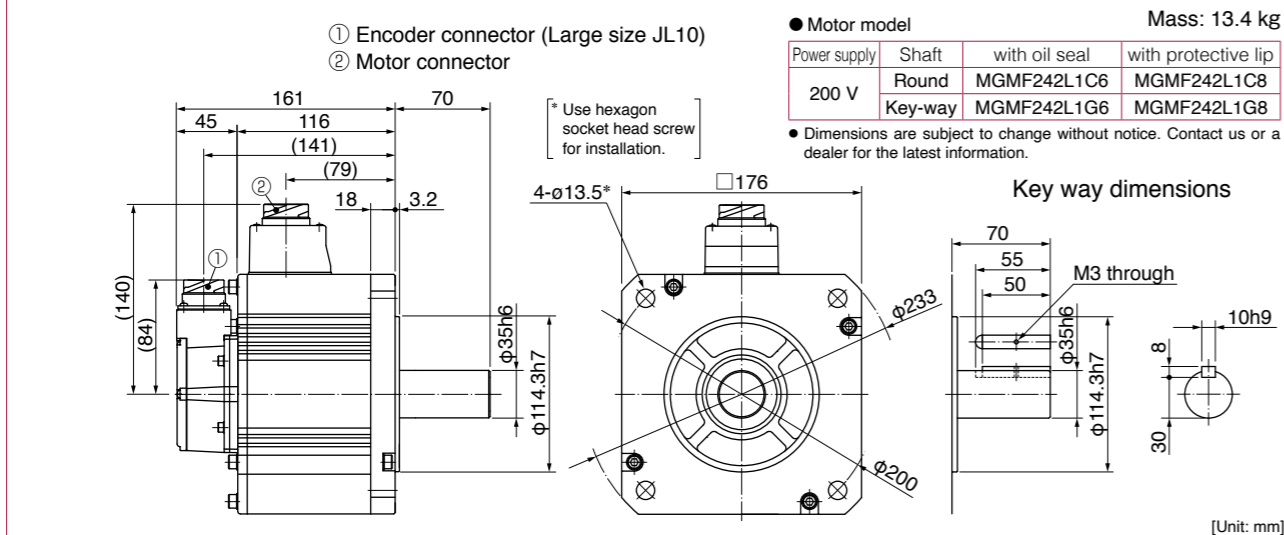


Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



**MGMF 2.4 kW**

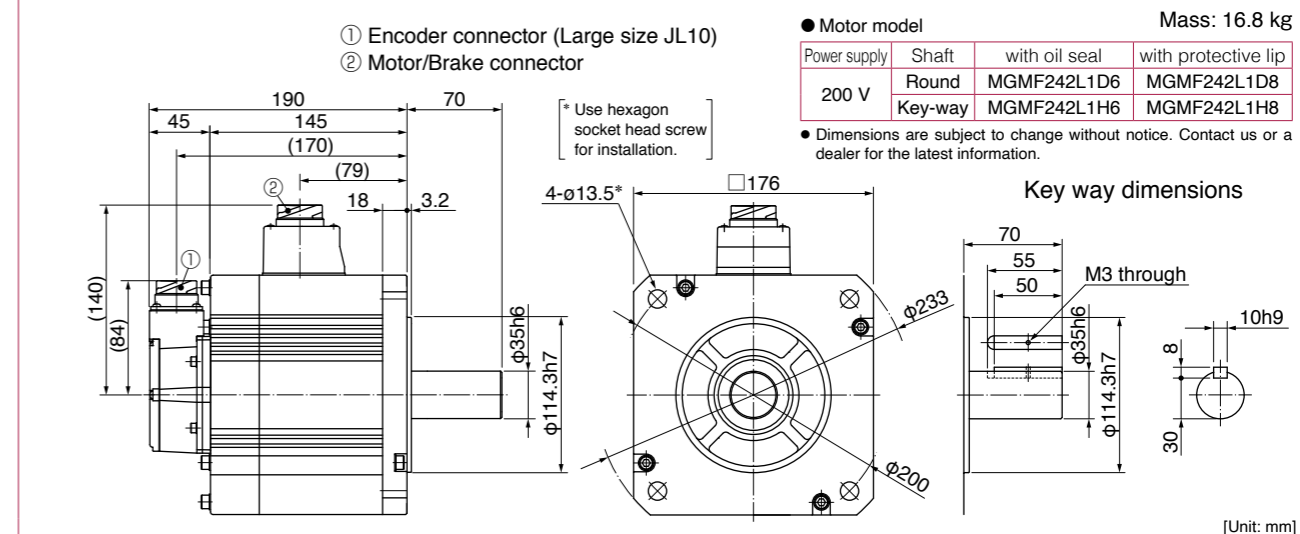
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



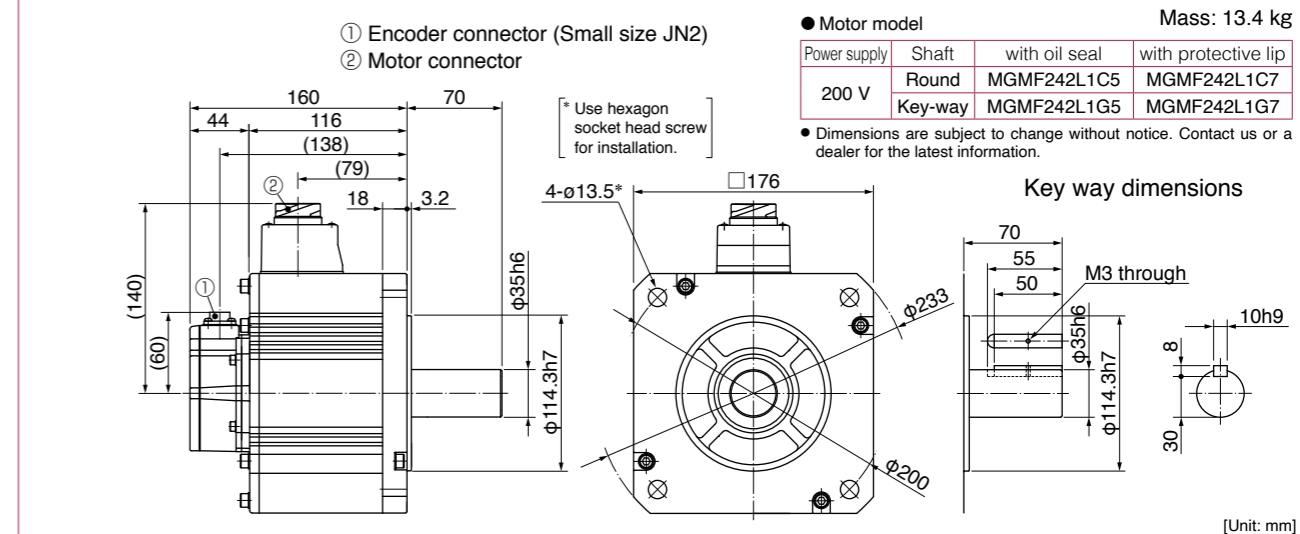
\* For motors specifications, refer to P.114, P.115.

**MGMF 2.4 kW**

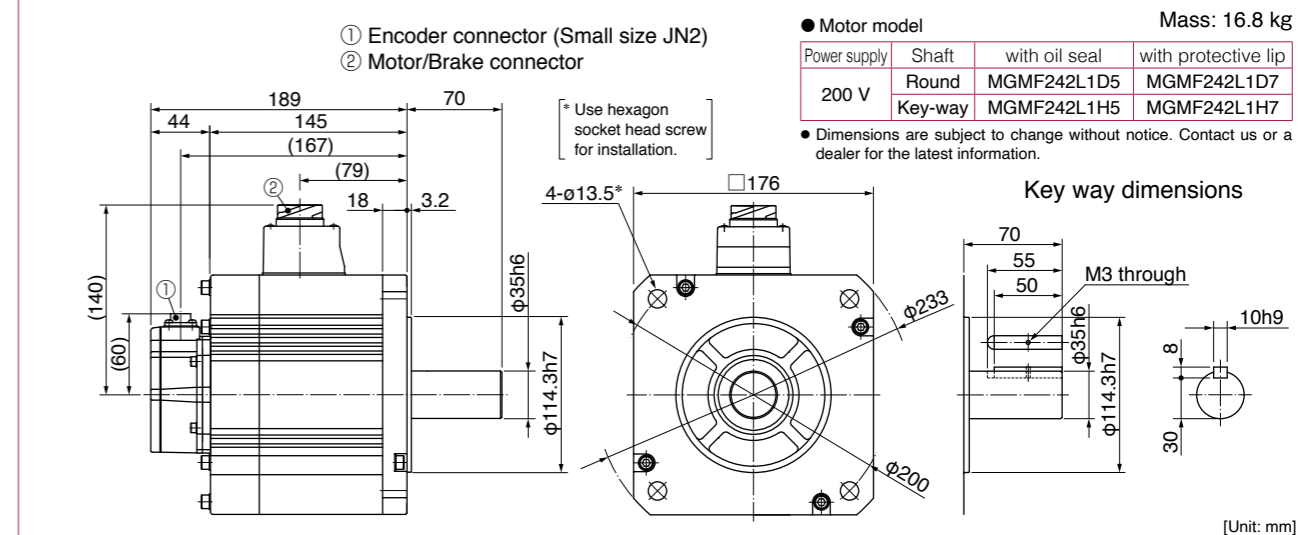
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



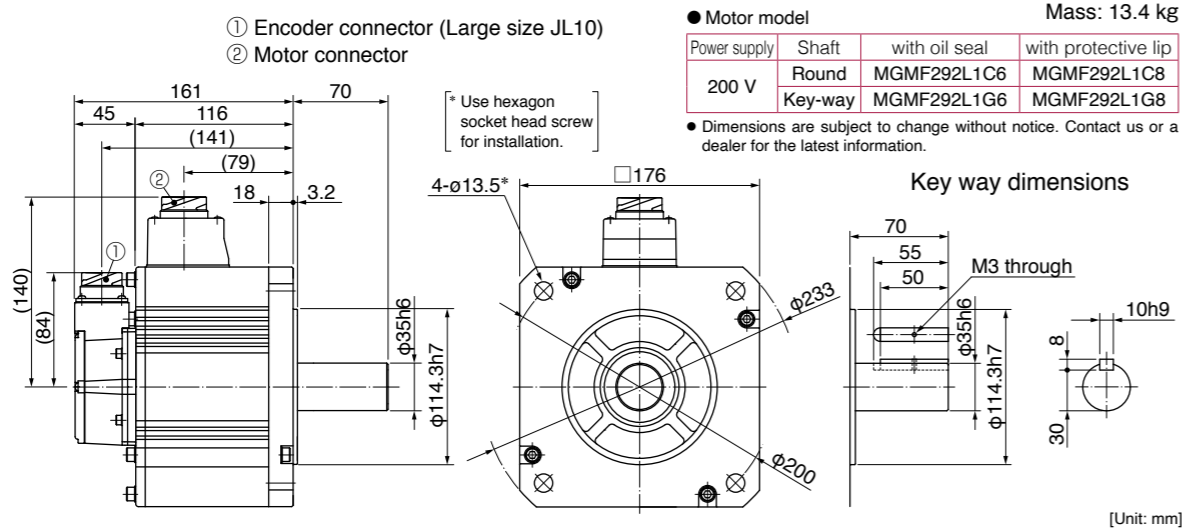
Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



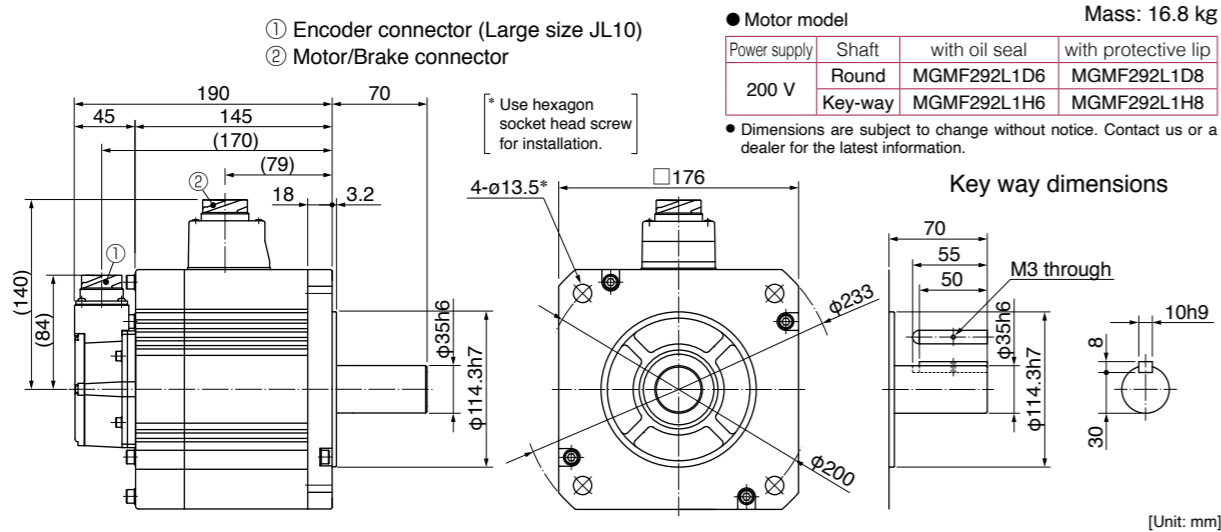
\* For motors specifications, refer to P.115.

MGMF 2.9 kW

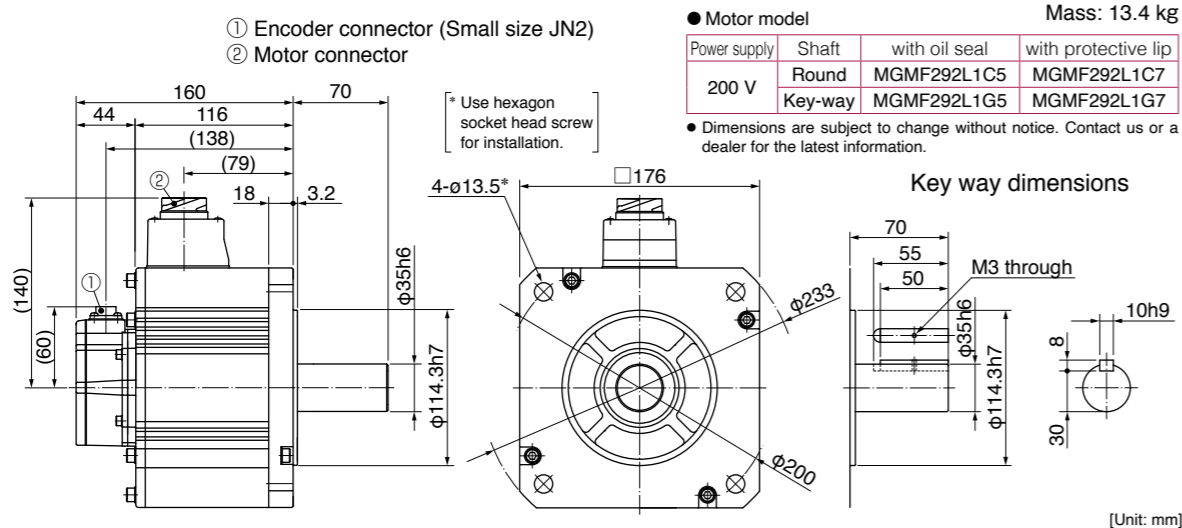
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



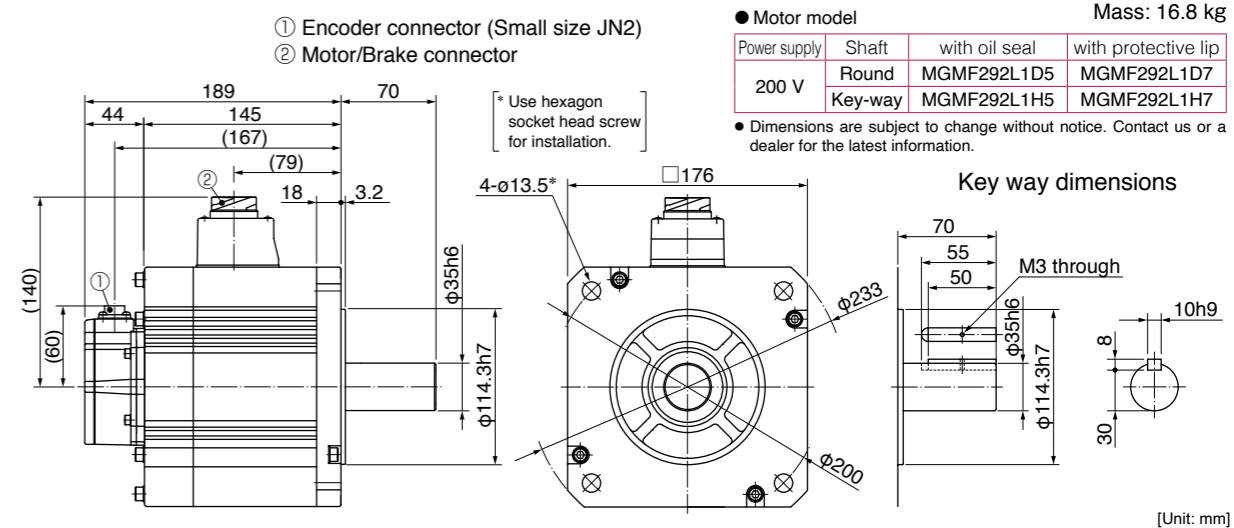
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.116.

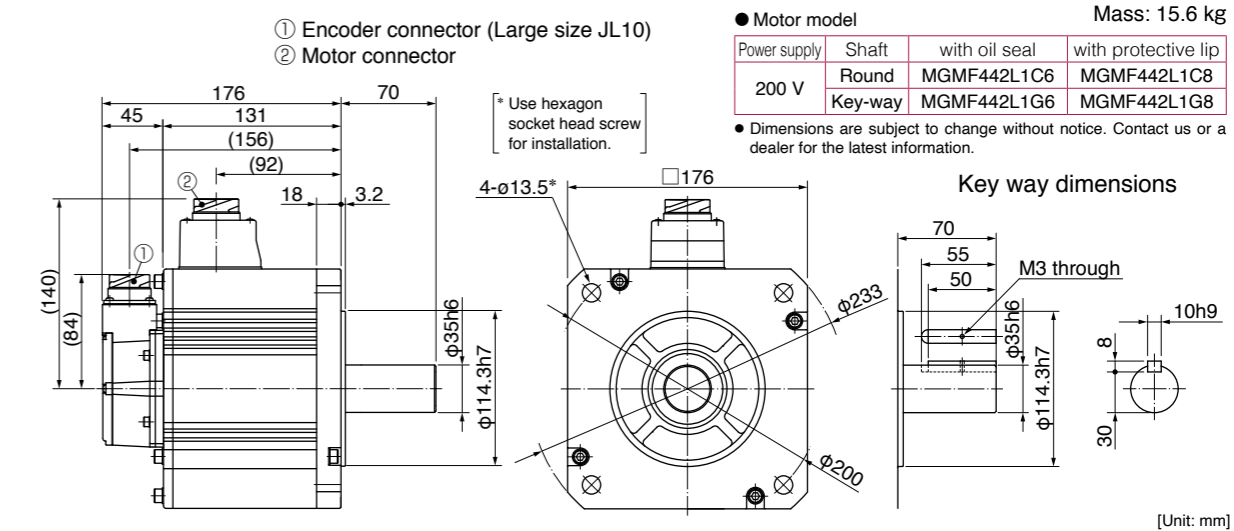
MGMF 2.9 kW

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

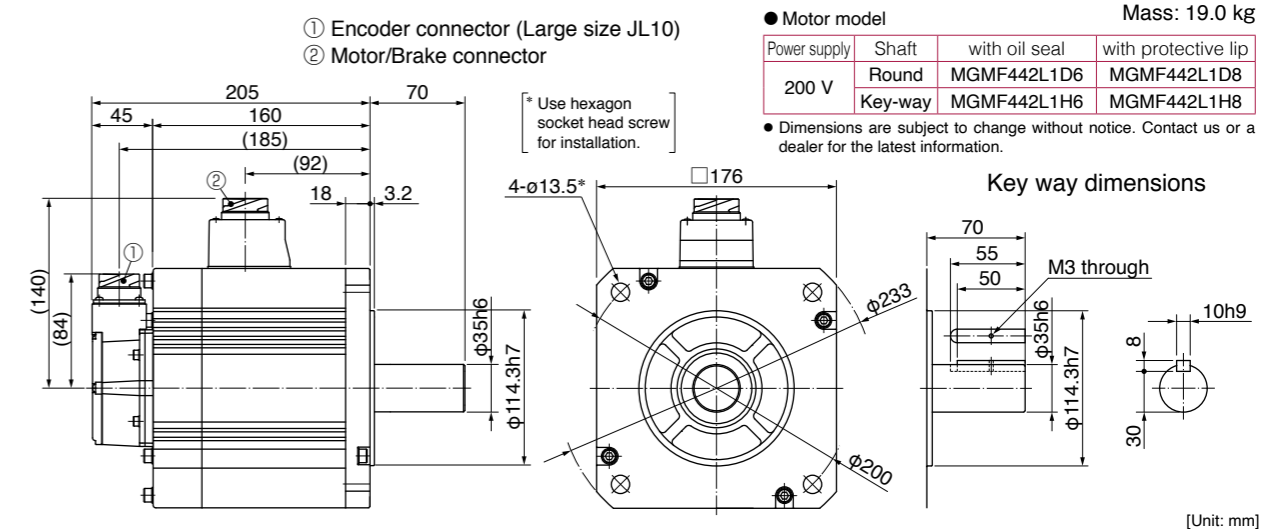


MGMF 4.4 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



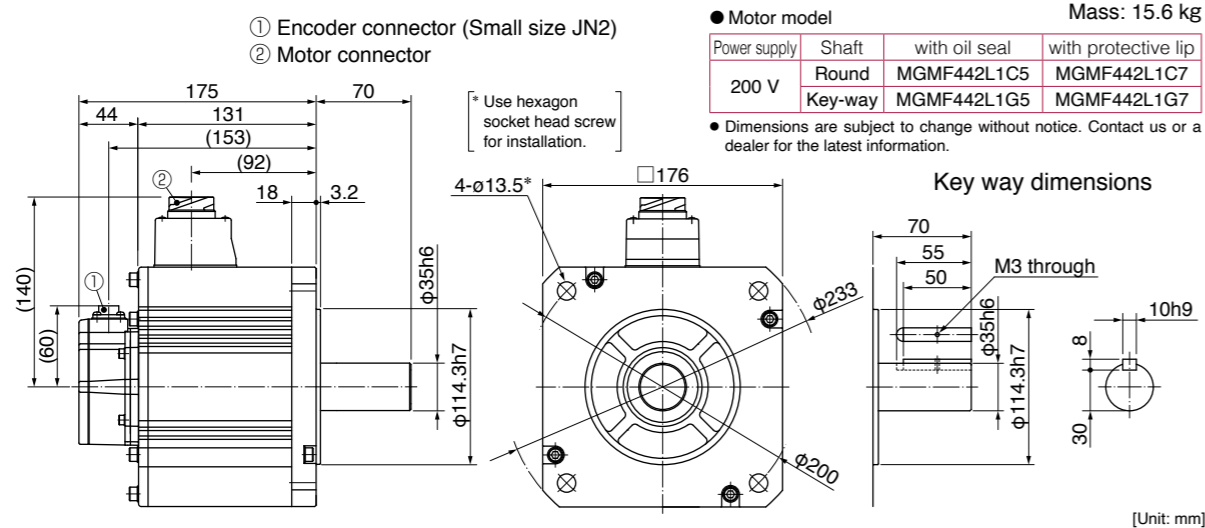
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



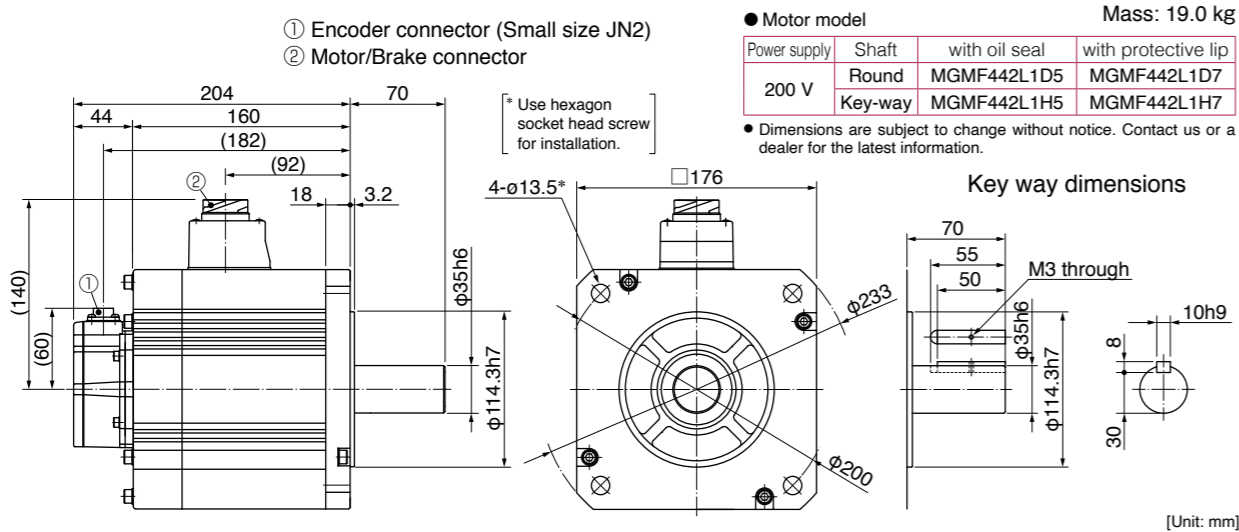
\* For motors specifications, refer to P.116, P.117.

**MGMF 4.4 kW**

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

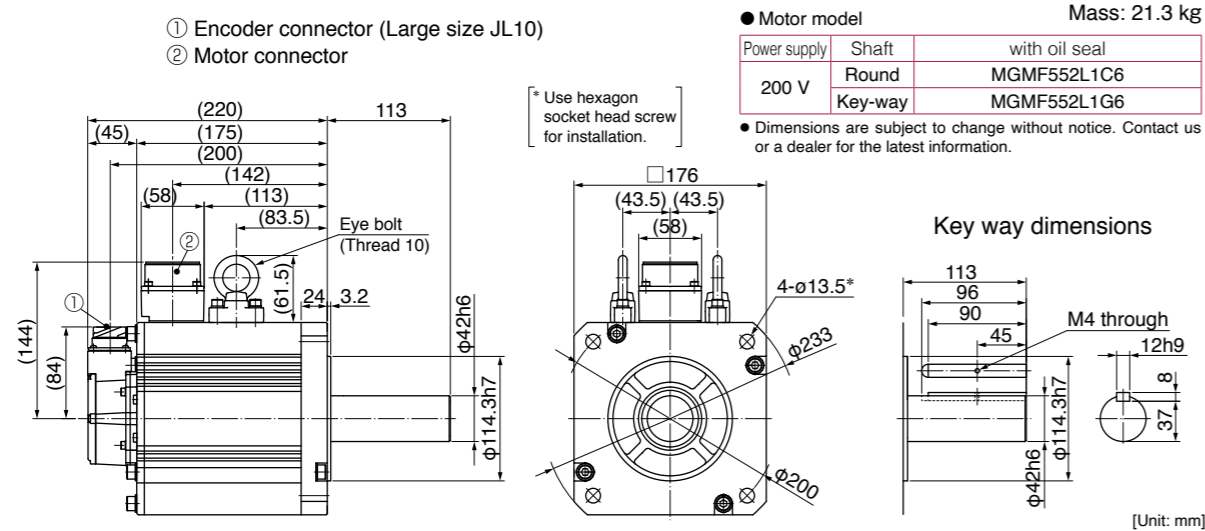


Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



**MGMF 5.5 kW**

Large size connector (JL10) type · without brake · with oil seal · Key way shaft/ Round shaft

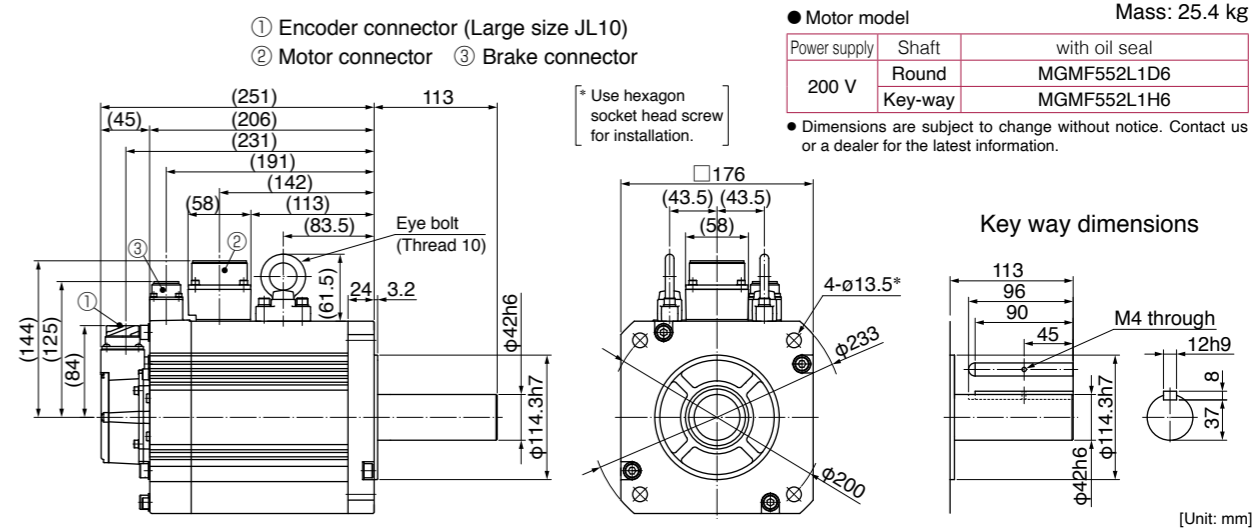


\* For motors specifications, refer to P.117, P.118.

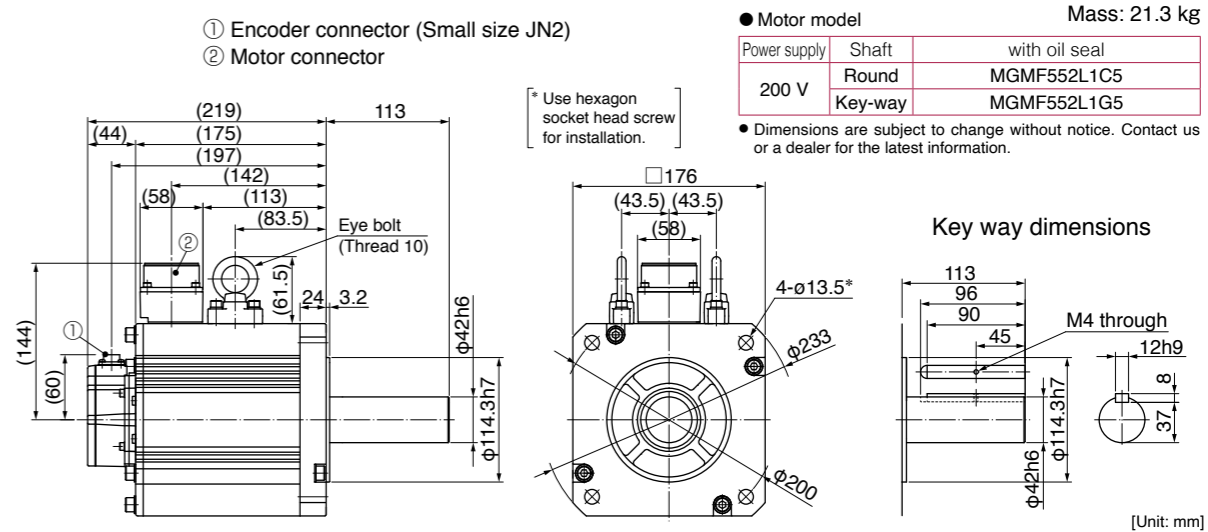
**MGMF 5.5 kW**

**MGMF 5.5 kW**

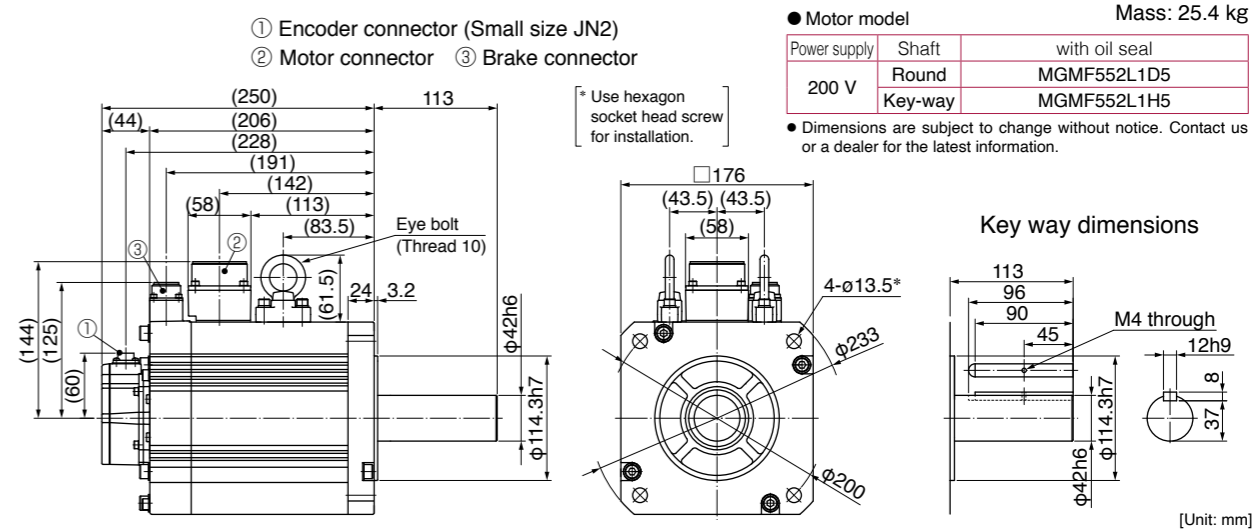
Large size connector (JL10) type · with brake · with oil seal · Key way shaft/ Round shaft



Small size connector (JN2) type · without brake · with oil seal · Key way shaft/ Round shaft



Small size connector (JN2) type · with brake · with oil seal · Key way shaft/ Round shaft



\* For motors specifications, refer to P.118.



Motor					Driver			Optional parts											
Motor series	Power supply	Output (W)	Part No. (Note)1	Rating/Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6 G series RS485 communication A6 SE series Basic (Pulse signal input) (Note)2, (Note)4	Frame	Power capacity (at rated load) (kVA)	Encoder Cable (Note)3		Motor Cable (Note)3		Brake Cable (Note)3	External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter (Single phase / 3-phase)			
									23-bit Absolute		without Brake	with Brake							
									Use in the absolute system (with battery box) (Note)5	Use in the incremental system (without battery box)									
									Fixed cable		Movable cable						Movable cable		
Low inertia	MSMF (Leadwire type) 3000 r/min IP65	Single phase/ 3-phase 200 V		50	MSMF5AZL1 □ 2M	211 253	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5	MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET (Note)6	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042		
				100	MSMF012L1 □ 2M	212 253	MADLT05SF	MADLN05S◇											
				200	MSMF022L1 □ 2M	213 254	MADLT15SF	MADLN15S◇											
				400	MSMF042L1 □ 2M	214 255	MBDLT25SF	MBDLN25S◇										B-frame ★	Approx. 0.9
				750	MSMF082L1 □ 2M	215 255	MCDLT35SF	MCDLN35S◇											
				1000	MSMF092L1 □ 2M	216 256	MDDLT45SF	MDDLN45S◇										D-frame	Approx. 2.4
Middle inertia Flat type	MQMF (Leadwire type) 3000 r/min IP65	Single phase/ 3-phase 200 V		100	MQMF012L1 □ 2M MQMF012L1 □ 4M	223 261	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5	MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET (Note)6	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042		
				200	MQMF022L1 □ 2M MQMF022L1 □ 4M	224 263	MADLT15SF	MADLN15S◇											
				400	MQMF042L1 □ 2M MQMF042L1 □ 4M	225 265	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9									
High inertia	MHMF (Leadwire type) 3000 r/min IP65	Single phase/ 3-phase 200 V		50	MHMF5AZL1 □ 2M MHMF5AZL1 □ 4M	226 267	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5	MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET (Note)6	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042		
				100	MHMF012L1 □ 2M MHMF012L1 □ 4M	227 269	MADLT05SF	MADLN05S◇											
				200	MHMF022L1 □ 2M MHMF022L1 □ 4M	228 271	MADLT15SF	MADLN15S◇											
				400	MHMF042L1 □ 2M MHMF042L1 □ 4M	229 273	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9									
				750	MHMF082L1 □ 2M MHMF082L1 □ 4M	230 275	MCDLT35SF	MCDLN35S◇										C-frame	Approx. 1.8
				1000	MHMF092L1 □ 2M MHMF092L1 □ 4M	231 277	MDDLT55SF	MDDLN55S◇	D-frame	Approx. 2.4									

★ : Frame-A and B drivers are not equipped with regenerative resistors. When regeneration occurs, please prepare an optional external regenerative resistor.

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.204.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P.204.)

Note)3 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030EAE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Note)6 Brake cable and motor cable are required for the motor with brake.



Motor series		Motor		Part No.		Rating/ Spec. Dimensions (page)	Driver		Frame	Power capacity (at rated load) (kVA)	Optional parts ▶ refer to P.306														
		Power supply	Output (W)	Note)1			A6 SF series Multi function type (Pulse, analog, full-closed)	A6 SG series RS485 communication A6 SE series Basic (Pulse signal input) Note)2, Note)4			Encoder Cable Note)3,5 JL10 (Large size) (One-touch lock type) N/MS screwed type	Motor Cable Note)3,5 JL10 (One-touch lock type) JL04 screwed type	External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter										
										Use in the absolute system (with battery box) Note)7	Use in the incremental system (without battery box)	without Brake				with Brake									
										Fixed cable	Movable cable														
Low inertia	MSMF Large size JL10 type 3000 r/min IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □ 6M MSMF102L1 □ 8M	217 257	MDDL55SF	MDDL55S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE	MFECA 0 * * 0EPD	MFCA 0 * * 2EUD	MFCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220									
			1500	MSMF152L1 □ 6M MSMF152L1 □ 8M	218 257	MDDL55SF	MDDL55S◇		Approx. 2.9						DV0PM20047 / DV0P222										
		3-phase 200 V	2000	MSMF202L1 □ 6M MSMF202L1 □ 8M	219 258	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8						MFCA 0 * * 2ECD	MFCA 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043						
			3000	MSMF302L1 □ 6M MSMF302L1 □ 8M	220 259	MFDLT3SF	MFDLNA3S◇		F-frame						Approx. 5.2	MFCA 0 * * 3EUT	MFCA 0 * * 3FUT	DV0P4285 x2 in parallel		DV0P224					
			4000	MSMF402L1 □ 6M MSMF402L1 □ 8M	221 259	MFDLT3SF	MFDLNB3S◇								Approx. 6.5	MFCA 0 * * 3ECT	MFCA 0 * * 3FCT			DV0P225	DV0P3410				
5000	MSMF502L1 □ 6M MSMF502L1 □ 8M	222 260	MFDLT3SF	MFDLNB3S◇	Approx. 7.8																				
Middle inertia	MDMF Large size JL10 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □ 6M MDMF102L1 □ 8M	239 283	MDDL45SF	MDDL45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE	MFECA 0 * * 0EPD	MFCA 0 * * 2EUD	MFCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220									
			1500	MDMF152L1 □ 6M MDMF152L1 □ 8M	240 284	MDDL55SF	MDDL55S◇		Approx. 2.9						DV0PM20047 / DV0P222										
		3-phase 200 V	2000	MDMF202L1 □ 6M MDMF202L1 □ 8M	241 285	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8						MFCA 0 * * 2ECD	MFCA 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043						
			3000	MDMF302L1 □ 6M MDMF302L1 □ 8M	242 285	MFDLT3SF	MFDLNA3S◇		F-frame						Approx. 5.2	MFCA 0 * * 3EUT	MFCA 0 * * 3FUT	DV0P4285 x2 in parallel		DV0P224					
			4000	MDMF402L1 □ 6M MDMF402L1 □ 8M	243 286	MFDLT3SF	MFDLNB3S◇								Approx. 6.5	MFCA 0 * * 3ECT	MFCA 0 * * 3FCT			DV0P225	DV0P3410				
		5000	MDMF502L1 □ 6M MDMF502L1 □ 8M	245 287	MFDLT3SF	MFDLNB3S◇	Approx. 7.8																		
		MGMF Large size JL10 type (Low speed/ High torque type) 1500 r/min IP67	Single phase/ 3-phase 200 V	850	MGMF092L1 □ 6M MGMF092L1 □ 8M	246 288	MDDL45SF	MDDL45S◇	D-frame						Approx. 2.0	MFECA 0 * * 0EPE	MFECA 0 * * 0EPD	MFCA 0 * * 2EUD	MFCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P221	DV0P4220			
				1300	MGMF132L1 □ 6M MGMF132L1 □ 8M	247 289	MDDL55SF	MDDL55S◇							Approx. 2.6						DV0PM20047 / DV0P222				
			3-phase 200 V	1800	MGMF182L1 □ 6M MGMF182L1 □ 8M	248 289	MEDLT83SF	MEDLN83S◇	E-frame						Approx. 3.4						MFCE 0 * * 3EUT	MFCD 0 * * 3FUT	DV0P4285	DV0P223	DV0PM20043
				2400	MGMF242L1 □ 6M MGMF242L1 □ 8M	249 290	MEDLT93SF	MEDLN93S◇							F-frame						Approx. 4.5	MFCE 0 * * 3ECT		MFCD 0 * * 3FCT	
2900	MGMF292L1 □ 6M MGMF292L1 □ 8M			250 291	MFDLT3SF	MFDLNB3S◇	Approx. 5.0	MFCA 0 * * 3EUT		MFCA 0 * * 3FUT		DV0P3410													
4400	MGMF442L1 □ 6M MGMF442L1 □ 8M	251 291	MFDLT3SF	MFDLNB3S◇	Approx. 7.0	MFCA 0 * * 3ECT	MFCA 0 * * 3FCT		DV0P225																
High inertia	MHMF Large size JL10 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □ 6M MHMF102L1 □ 8M	232 279	MDDL45SF	MDDL45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE	MFECA 0 * * 0EPD	MFCA 0 * * 2EUD	MFCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220									
			1500	MHMF152L1 □ 6M MHMF152L1 □ 8M	233 279	MDDL55SF	MDDL55S◇		Approx. 2.9						DV0PM20047 / DV0P222										
		3-phase 200 V	2000	MHMF202L1 □ 6M MHMF202L1 □ 8M	234 280	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8						MFCE 0 * * 2EUD	MFCE 0 * * 2FUD	DV0P4285 Note)6	DV0P223	DV0PM20043						
			3000	MHMF302L1 □ 6M MHMF302L1 □ 8M	235 281	MFDLT3SF	MFDLNA3S◇		F-frame						Approx. 5.2	MFCE 0 * * 2ECD		MFCE 0 * * 2FCD		DV0P4285 x2 in parallel	DV0P224				
			4000	MHMF402L1 □ 6M MHMF402L1 □ 8M	236 281	MFDLT3SF	MFDLNB3S◇								Approx. 6.5	MFCA 0 * * 3EUT		MFCA 0 * * 3FUT			DV0P225	DV0P3410			
			5000	MHMF502L1 □ 6M MHMF502L1 □ 8M	237 282	MFDLT3SF	MFDLNB3S◇		Approx. 7.8						MFCA 0 * * 3ECT	MFCA 0 * * 3FCT									

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.204.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P.204.)

Note)3 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030EPE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.

Note)6 For other possible combinations, refer to P.343.

Note)7 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Motor					Driver				Optional parts ▶ refer to P.306							
Motor series	Power supply	Output (W)	Part No. (Note)1	Rating/Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input)	Frame	Power capacity (at rated load) (kVA)	Encoder Cable (Note)2,3		Motor Cable (Note)6		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter	
									JL10 (Large size) (One-touch lock type) (N/MS screwed type)		without Brake	with Brake				
23-bit Absolute		Use in the absolute system (with battery box) (Note)4	Use in the incremental system (without battery box)	Fixed cable												
Middle inertia	MDFM Large size JL10 type 1500 r/min IP67			3-phase 200 V	7500	MDMF752L1 □ 6M	245 287	MGDLTC3SF	—	G-frame	Approx. 11	MFECA 0* *0EPE MFECA 0* *0ESE	MFECA 0* *0EPD MFECA 0* *0ESD	Note)6	Note)6	DV0P4285 x3 in parallel
	MGMF Large size JL10 type (Low speed/High torque type) 1500 r/min IP67	3-phase 200 V	5500	MGMF552L1 □ 6M	252 292	MGDLTC3SF	—	G-frame	Approx. 8.5	MFECA 0* *0EPE MFECA 0* *0ESE	MFECA 0* *0EPD MFECA 0* *0ESD	Note)6	Note)6	DV0P4285 x3 in parallel	— Note)5	HF3080C-SZA (Recommended components) P.413
High inertia	MHMF Large size JL10 type 1500 r/min IP67	3-phase 200 V	7500	MHMF752L1 □ 6M	238 283	MGDLTC3SF	—	G-frame	Approx. 11	MFECA 0* *0EPE MFECA 0* *0ESE	MFECA 0* *0EPD MFECA 0* *0ESD	Note)6	Note)6	— Note)5	HF3080C-SZA (Recommended components) P.413	

■ About dynamic brake

G frame is built in / external, H frame is external  
 Built-in / {external} The standard of the dynamic brake resistance's capability is up to three consecutive emergency stops from the rated speed at the maximum allowable inertia (load inertia moment ratio 10 times the rotor inertia moment). If it is used under more conditions, the resistance may be broken and the dynamic brake may not operate.

Recommended resistance: 1.2 Ω 400 W or more × 3 pieces  
 For inquiries: Iwaki Musen Kenkyusho Co.,Ltd. Tel: +81-44-833-4311

■ Connector kit (option) Component parts (Note)6

Motor	Driver		Option No. Connector Kit for motor, encoder connection	Encoder Cable		Motor Cable		Brake Cable	
	Frame	Connection terminal		Motor side	Driver side	Motor side	Driver side	Motor side	Power supply for brake
MDMF 7.5 kW MGMF 5.5 kW MHMF 7.5 kW	G	M5	DV0PM20107	Large size connector One-touch lock type	For Connector X6	Connector Screwed type	(to be supplied by customer) M5 Round terminal	not included	(to be supplied by customer)
			DV0PM20108					Connector Screwed type	
			DV0PM20111	Large size connector Screwed type				not included	
			DV0PM20112	Connector Screwed type					

- Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.204.)
- Note)2 \* \* : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE
- Note)3 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.
- Note)4 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.
- Note)5 Please prepare reactor for customer.
- Note)6 We recommend purchasing an optional connector kit.

Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF5AZL1□□M
Applicable driver	Model No.	Multifunction type MADLT05SF
	RS485 communication type <sup>2</sup>	MADLN05SG
	Basic type <sup>2</sup>	MADLN05SE
Frame symbol		A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	50
Rated torque	(N·m)	0.16
Continuous stall torque	(N·m)	0.16
Momentary Max. peak torque	(N·m)	0.48
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	4.7
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4281	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.026
	With brake	0.029
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

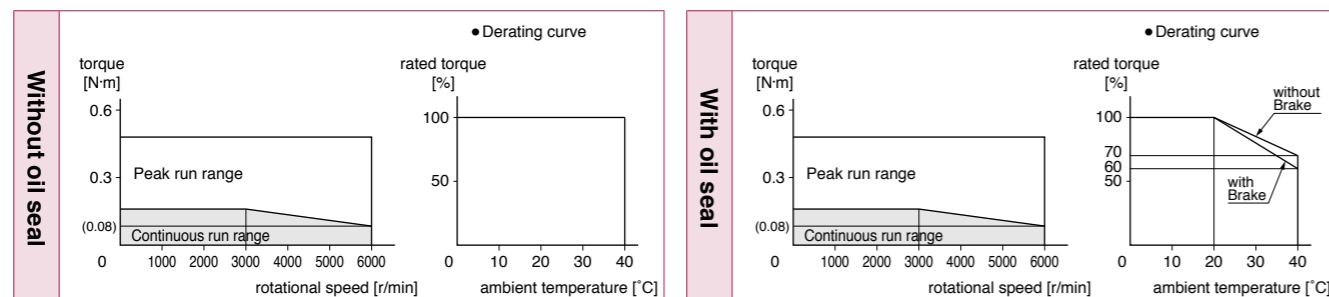
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.253			P.253		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF012L1□□M
Applicable driver	Model No.	Multifunction type MADLT05SF
	RS485 communication type <sup>2</sup>	MADLN05SG
	Basic type <sup>2</sup>	MADLN05SE
Frame symbol		A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	100
Rated torque	(N·m)	0.32
Continuous stall torque	(N·m)	0.32
Momentary Max. peak torque	(N·m)	0.95
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	4.7
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4281	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.048
	With brake	0.051
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

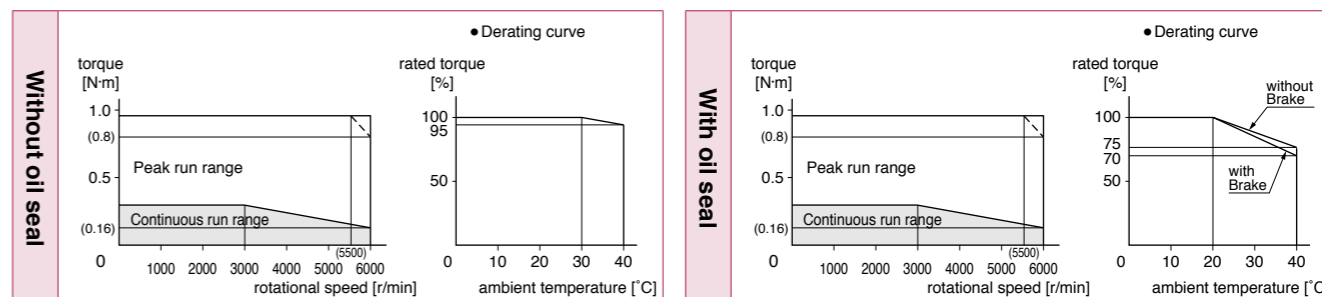
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.253			P.254		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF022L1□□M
Applicable driver	Model No.	Multifunction type MADLT15SF
		RS485 communication type <sup>2</sup> MADLN15SG
		Basic type <sup>2</sup> MADLN15SE
Frame symbol		A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	200
Rated torque	(N·m)	0.64
Continuous stall torque	(N·m)	0.64
Momentary Max. peak torque	(N·m)	1.91
Rated current	(A(rms))	1.5
Max. current	(A(o-p))	6.5
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.14
	With brake	0.17
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

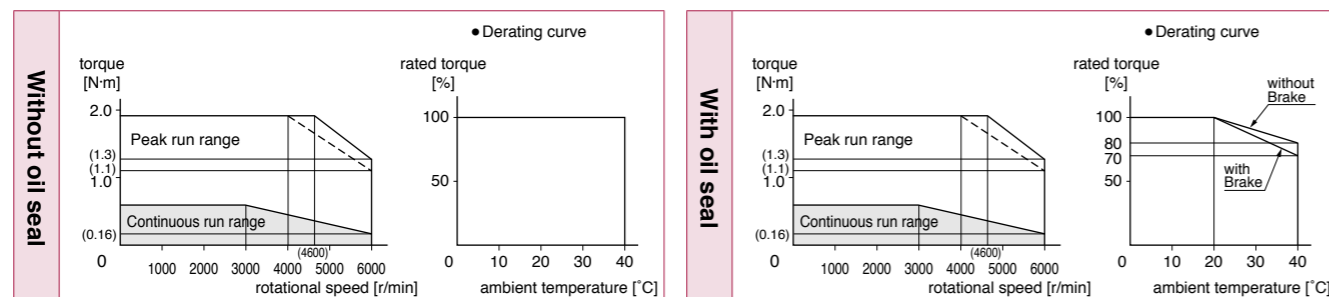
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.254		—	P.254		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
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• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF042L1□□M
Applicable driver	Model No.	Multifunction type MBDLT25SF
		RS485 communication type <sup>2</sup> MBDLN25SG
		Basic type <sup>2</sup> MBDLN25SE
Frame symbol		B-frame
Power supply capacity	(kVA)	0.9
Rated output	(W)	400
Rated torque	(N·m)	1.27
Continuous stall torque	(N·m)	1.27
Momentary Max. peak torque	(N·m)	3.82
Rated current	(A(rms))	2.4
Max. current	(A(o-p))	10.2
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.27
	With brake	0.30
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

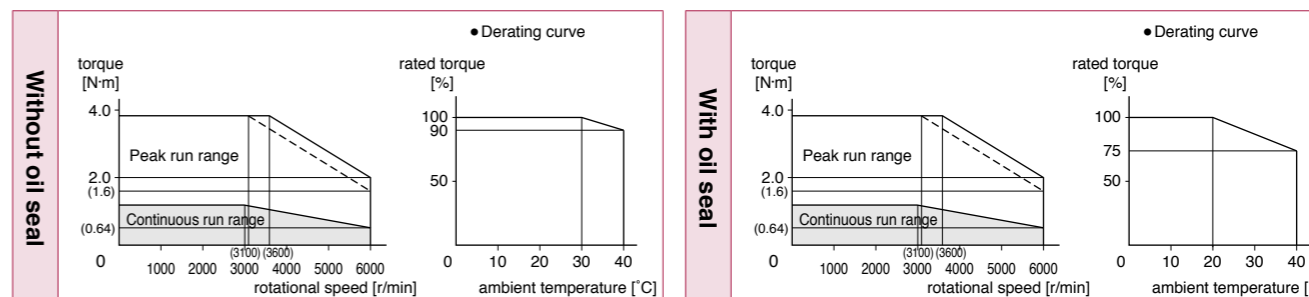
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.255		—	P.255		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
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Specifications

		AC200 V
Motor model *1		MSMF082L1□□M
Applicable driver	Model No.	Multifunction type MCDLT35SF
		RS485 communication type *2 MCDLN35SG
		Basic type *2 MCDLN35SE
Frame symbol		C-frame
Power supply capacity (kVA)		1.8
Rated output (W)		750
Rated torque (N·m)		2.39
Continuous stall torque (N·m)		2.39
Momentary Max. peak torque (N·m)		7.16
Rated current (A(rms))		4.1
Max. current (A(o-p))		17.4
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4283	No limit Note2
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.96
	With brake	1.06
Recommended moment of inertia ratio of the load and the rotor Note3		20 times or less
Rotary encoder specifications *3		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

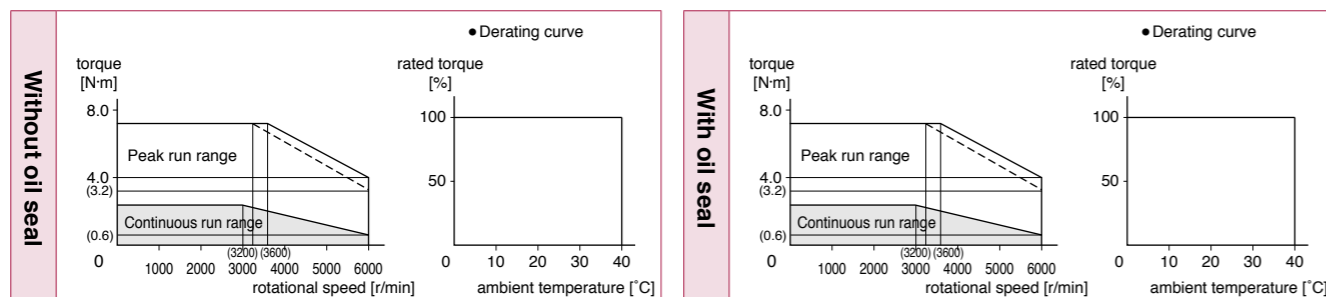
• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

• For details of Note1 to Note4, refer to P.303.  
• Dimensions of Driver, refer to P.58.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.255			P.256		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model *1		MSMF092L1□□M
Applicable driver	Model No.	Multifunction type MDDLTL45SF
		RS485 communication type *2 MDDLNL45SG
		Basic type *2 MDDLNL45SE
Frame symbol		D-frame
Power supply capacity (kVA)		2.4
Rated output (W)		1000
Rated torque (N·m)		3.18
Continuous stall torque (N·m)		3.18
Momentary Max. peak torque (N·m)		9.55
Rated current (A(rms))		5.7
Max. current (A(o-p))		24.2
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4284	No limit Note2
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	1.26
	With brake	1.36
Recommended moment of inertia ratio of the load and the rotor Note3		15 times or less
Rotary encoder specifications *3		23-bit Absolute
Resolution per single turn		8388608

• **Brake specifications** (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	3.80 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

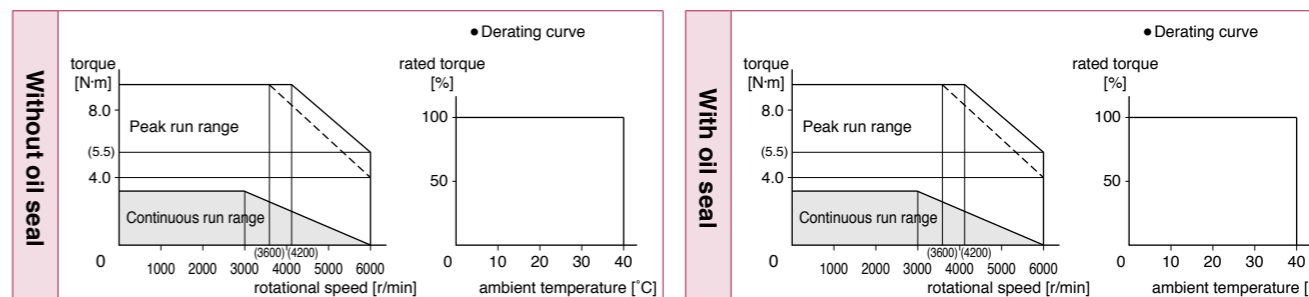
• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

• For details of Note1 to Note4, refer to P.303.  
• Dimensions of Driver, refer to P.58.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.256			P.256		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF102L1□□M
Applicable driver	Model No.	Multifunction type MDDL55SF
	RS485 communication type <sup>*2</sup>	MDDL55SG
	Basic type <sup>*2</sup>	MDDL55SE
Frame symbol		D-frame
Power supply capacity (kVA)		2.4
Rated output (W)		1000
Rated torque (N·m)		3.18
Continuous stall torque (N·m)		3.82
Momentary Max. peak torque (N·m)		9.55
Rated current (A(rms))		6.6
Max. current (A(o-p))		28
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		5000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	2.15
	With brake	2.47
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

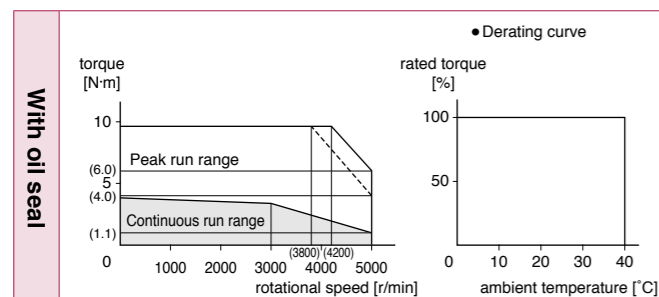
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.257		—	P.257	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF152L1□□M
Applicable driver	Model No.	Multifunction type MDDL55SF
	RS485 communication type <sup>*2</sup>	MDDL55SG
	Basic type <sup>*2</sup>	MDDL55SE
Frame symbol		D-frame
Power supply capacity (kVA)		2.9
Rated output (W)		1500
Rated torque (N·m)		4.77
Continuous stall torque (N·m)		5.72
Momentary Max. peak torque (N·m)		14.3
Rated current (A(rms))		8.2
Max. current (A(o-p))		35
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4284	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		5000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	3.10
	With brake	3.45
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

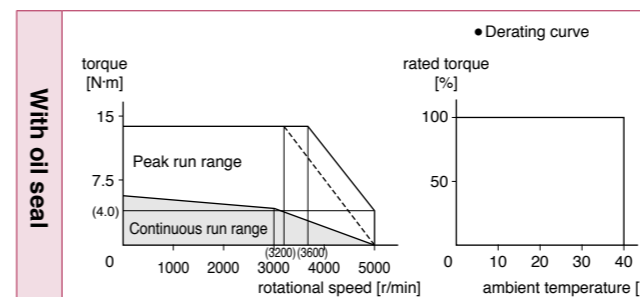
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.257		—	P.258	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
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Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF202L1□□M
Applicable driver	Model No.	Multifunction type MEDLT83SF
	RS485 communication type <sup>2</sup>	MEDLN83SG
	Basic type <sup>2</sup>	MEDLN83SE
Frame symbol		E-frame
Power supply capacity (kVA)		3.8
Rated output (W)		2000
Rated torque (N·m)		6.37
Continuous stall torque (N·m)		7.64
Momentary Max. peak torque (N·m)		19.1
Rated current (A(rms))		11.3
Max. current (A(o-p))		48
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		5000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	4.06
	With brake	4.41
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.59.

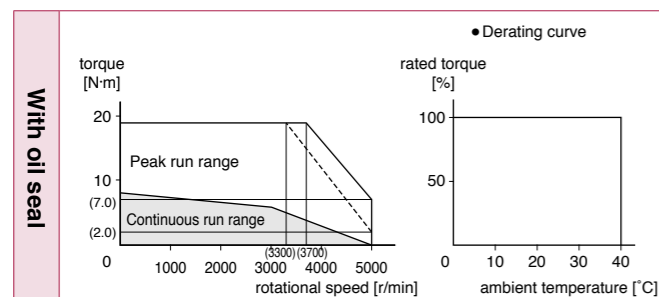
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.258		—	P.258	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MSMF302L1□□M
Applicable driver	Model No.	Multifunction type MFDLTA3SF
	RS485 communication type <sup>2</sup>	MFDLNA3SG
	Basic type <sup>2</sup>	MFDLNA3SE
Frame symbol		F-frame
Power supply capacity (kVA)		5.2
Rated output (W)		3000
Rated torque (N·m)		9.55
Continuous stall torque (N·m)		11.0
Momentary Max. peak torque (N·m)		28.6
Rated current (A(rms))		18.1
Max. current (A(o-p))		77
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285×2	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		5000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	7.04
	With brake	7.38
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	12.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) <sup>Note)4</sup>	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.59.

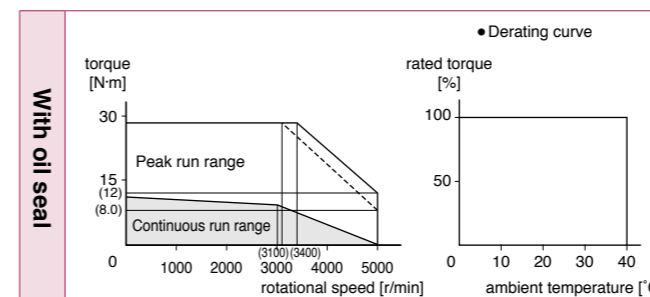
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.259		—	P.259	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF402L1□□M
Applicable driver	Model No.	Multifunction type MFDLTB3SF
		RS485 communication type <sup>*2</sup> MFDLNB3SG
		Basic type <sup>*2</sup> MFDLNB3SE
Frame symbol		F-frame
Power supply capacity (kVA)		6.5
Rated output (W)		4000
Rated torque (N·m)		12.7
Continuous stall torque (N·m)		15.2
Momentary Max. peak torque (N·m)		38.2
Rated current (A(rms))		19.6
Max. current (A(o-p))		83
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x2	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		4500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	14.4
	With brake	15.6
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.59.

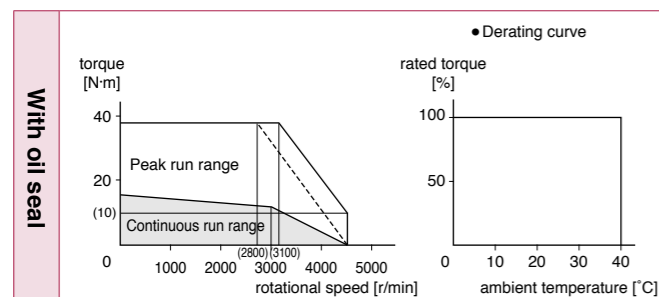
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.259		—	P.260	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>*1</sup>		MSMF502L1□□M
Applicable driver	Model No.	Multifunction type MFDLTB3SF
		RS485 communication type <sup>*2</sup> MFDLNB3SG
		Basic type <sup>*2</sup> MFDLNB3SE
Frame symbol		F-frame
Power supply capacity (kVA)		7.8
Rated output (W)		5000
Rated torque (N·m)		15.9
Continuous stall torque (N·m)		19.1
Momentary Max. peak torque (N·m)		47.7
Rated current (A(rms))		24.0
Max. current (A(o-p))		102
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x2	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		4500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	19.0
	With brake	20.2
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		15 times or less
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.59.

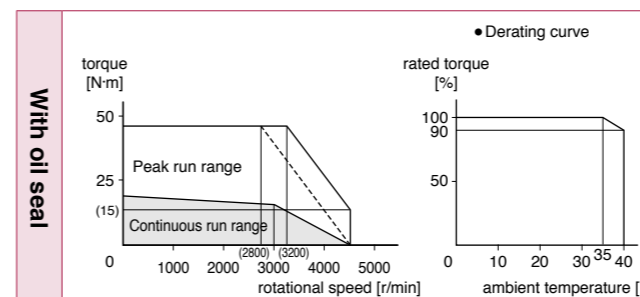
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.260		—	P.260	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
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Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.



Please contact us for more information.

Specifications

		AC200 V
Motor model *1		MQMF012L1□□M
Applicable driver	Model No.	Multifunction type RS485 communication type *2 Basic type *2
		MADLT05SF MADLN05SG MADLN05SE
	Frame symbol	A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	100
Rated torque	(N·m)	0.32
Continuous stall torque	(N·m)	0.33
Momentary Max. peak torque	(N·m)	1.11
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	5.5
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2
	DV0P4281	No limit Note)2
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.15
	With brake	0.18
Recommended moment of inertia ratio of the load and the rotor Note)3		20 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

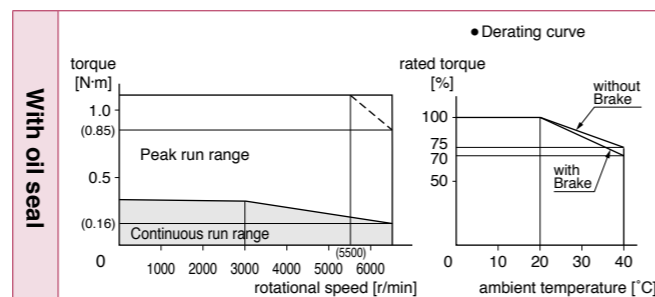
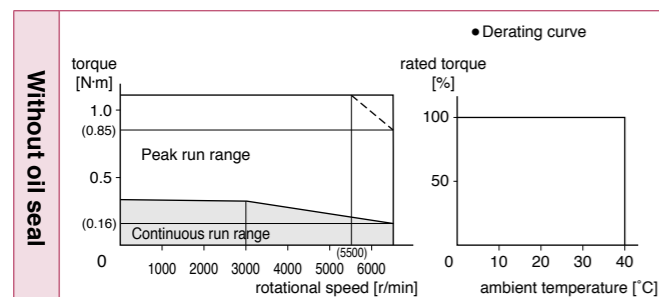
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.261	P.261	P.261	P.262	P.262	P.262

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Please contact us for more information.

Specifications

		AC200 V
Motor model *1		MQMF022L1□□M
Applicable driver	Model No.	Multifunction type RS485 communication type *2 Basic type *2
		MADLT15SF MADLN15SG MADLN15SE
	Frame symbol	A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	200
Rated torque	(N·m)	0.64
Continuous stall torque	(N·m)	0.76
Momentary Max. peak torque	(N·m)	2.23
Rated current	(A(rms))	1.4
Max. current	(A(o-p))	6.9
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2
	DV0P4283	No limit Note)2
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.50
	With brake	0.59
Recommended moment of inertia ratio of the load and the rotor Note)3		20 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

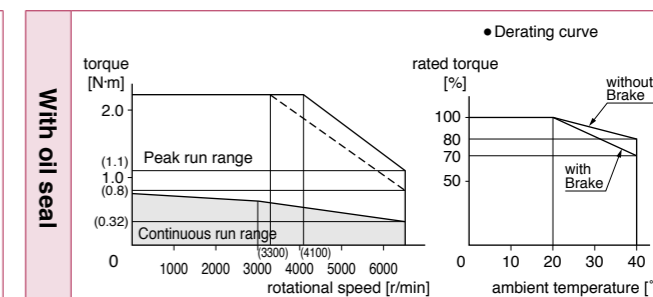
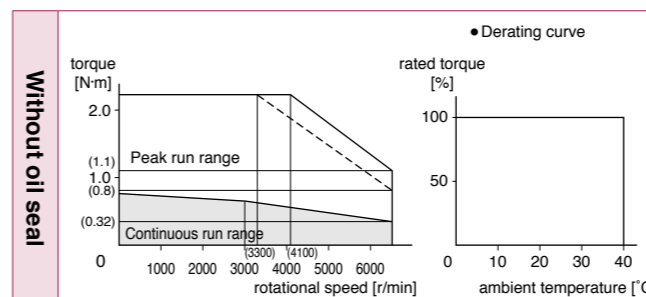
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.263	P.263	P.263	P.264	P.264	P.264

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MQMF042L1□□M
Applicable driver	Model No.	Multifunction type MBDLT25SF
		RS485 communication type <sup>2</sup> MBDLN25SG
		Basic type <sup>2</sup> MBDLN25SE
Frame symbol		B-frame
Power supply capacity (kVA)		0.9
Rated output (W)		400
Rated torque (N·m)		1.27
Continuous stall torque (N·m)		1.40
Momentary Max. peak torque (N·m)		4.46
Rated current (A(rms))		2.1
Max. current (A(o-p))		10.4
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.98
	With brake	1.06
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		20 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

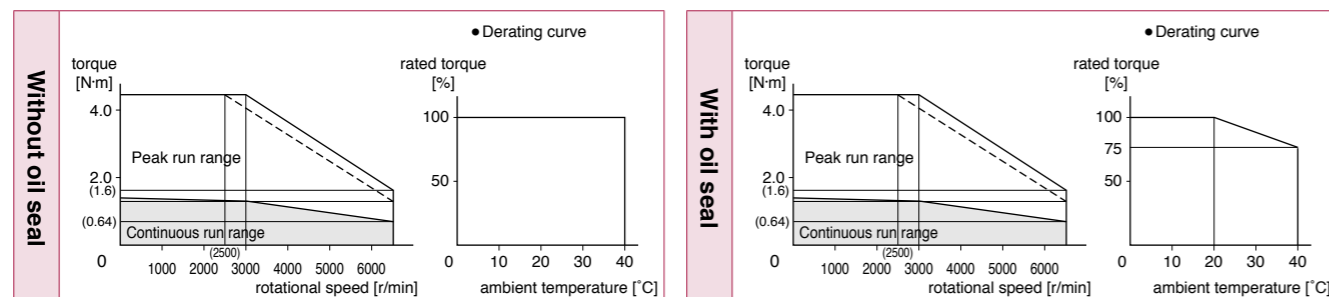
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.265	P.265	P.265	P.266	P.266	P.266

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF5AZL1□□M
Applicable driver	Model No.	Multifunction type MADLT05SF
		RS485 communication type <sup>2</sup> MADLN05SG
		Basic type <sup>2</sup> MADLN05SE
Frame symbol		A-frame
Power supply capacity (kVA)		0.5
Rated output (W)		50
Rated torque (N·m)		0.16
Continuous stall torque (N·m)		0.18
Momentary Max. peak torque (N·m)		0.56
Rated current (A(rms))		1.1
Max. current (A(o-p))		5.5
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4281	No limit <sup>Note)2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.038
	With brake	0.042
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	49

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.57.

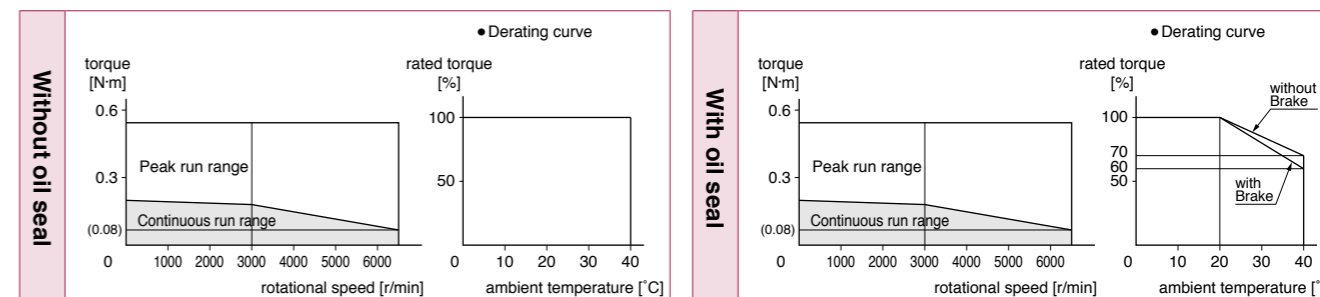
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.267	P.267	P.267	P.268	P.268	P.268

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF012L1□□M
Applicable driver	Model No.	Multifunction type MADLT05SF
	RS485 communication type <sup>2</sup>	MADLN05SG
	Basic type <sup>2</sup>	MADLN05SE
Frame symbol		A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	100
Rated torque	(N·m)	0.32
Continuous stall torque	(N·m)	0.33
Momentary Max. peak torque	(N·m)	1.11
Rated current	(A(rms))	1.1
Max. current	(A(o-p))	5.5
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4281	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.071
	With brake	0.074
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

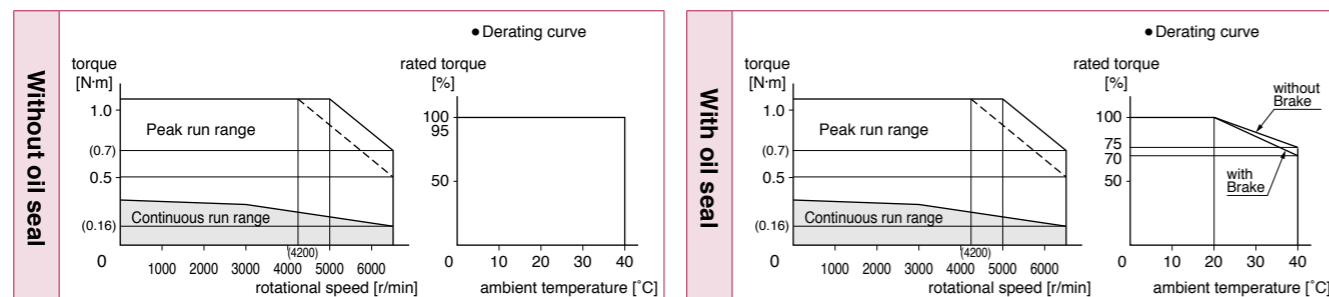
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

• For details of Note)1 to Note)4, refer to P.303.  
• Dimensions of Driver, refer to P.57.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.269	P.269	P.269	P.270	P.270	P.270

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF022L1□□M
Applicable driver	Model No.	Multifunction type MADLT15SF
	RS485 communication type <sup>2</sup>	MADLN15SG
	Basic type <sup>2</sup>	MADLN15SE
Frame symbol		A-frame
Power supply capacity	(kVA)	0.5
Rated output	(W)	200
Rated torque	(N·m)	0.64
Continuous stall torque	(N·m)	0.76
Momentary Max. peak torque	(N·m)	2.23
Rated current	(A(rms))	1.4
Max. current	(A(o-p))	6.9
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.29
	With brake	0.31
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

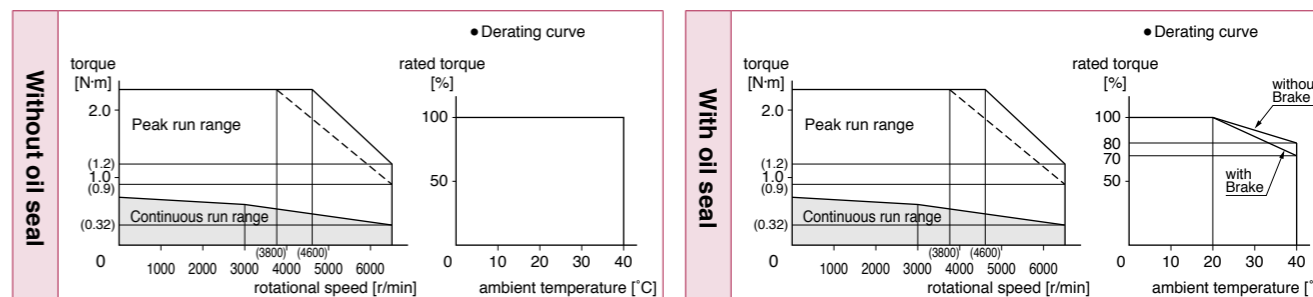
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

• For details of Note)1 to Note)4, refer to P.303.  
• Dimensions of Driver, refer to P.57.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.271	P.271	P.271	P.272	P.272	P.272

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
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Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF042L1□□M
Applicable driver	Model No.	Multifunction type MBDLT25SF
		RS485 communication type <sup>2</sup> MBDLN25SG
		Basic type <sup>2</sup> MBDLN25SE
Frame symbol		B-frame
Power supply capacity	(kVA)	0.9
Rated output	(W)	400
Rated torque	(N·m)	1.27
Continuous stall torque	(N·m)	1.40
Momentary Max. peak torque	(N·m)	4.46
Rated current	(A(rms))	2.1
Max. current	(A(o-p))	10.4
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6500
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.56
	With brake	0.58
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		30 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

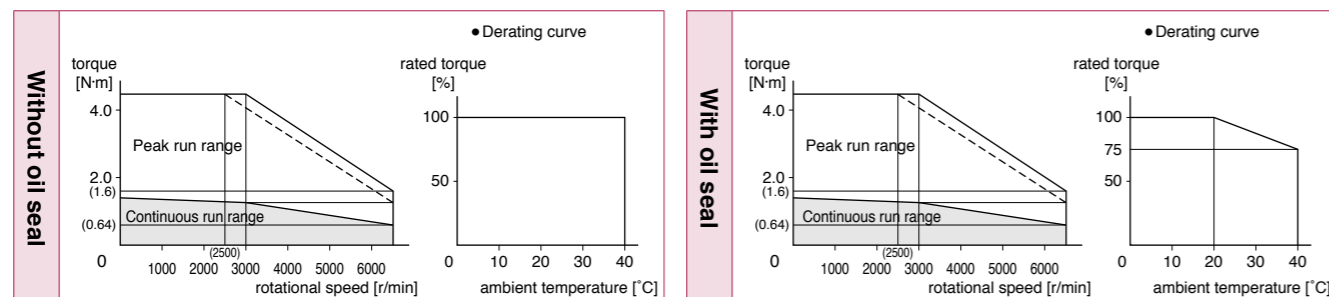
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

• For details of Note)1 to Note)4, refer to P.303.  
• Dimensions of Driver, refer to P.57.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.273	P.273	P.273	P.274	P.274	P.274

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF082L1□□M
Applicable driver	Model No.	Multifunction type MCDLT35SF
		RS485 communication type <sup>2</sup> MCDLN35SG
		Basic type <sup>2</sup> MCDLN35SE
Frame symbol		C-frame
Power supply capacity	(kVA)	1.8
Rated output	(W)	750
Rated torque	(N·m)	2.39
Continuous stall torque	(N·m)	2.86
Momentary Max. peak torque	(N·m)	8.36
Rated current	(A(rms))	3.8
Max. current	(A(o-p))	18.8
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4283	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	3000
Max. rotational speed	(r/min)	6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	1.56
	With brake	1.66
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		20 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note)4</sup>	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

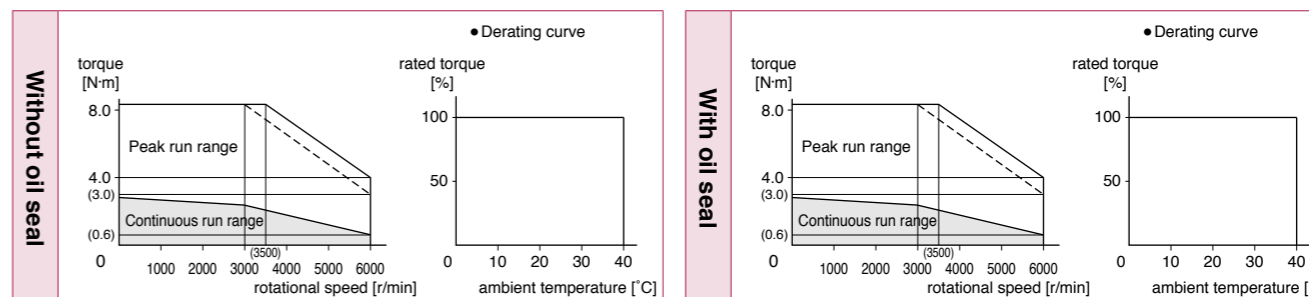
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

• For details of Note)1 to Note)4, refer to P.303.  
• Dimensions of Driver, refer to P.58.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.275	P.275	P.275	P.276	P.276	P.276

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF092L1□□M
Applicable driver	Model No.	Multifunction type MDDL55SF
	RS485 communication type <sup>2</sup>	MDDL55SG
	Basic type <sup>2</sup>	MDDL55SE
Frame symbol		D-frame
Power supply capacity (kVA)		2.4
Rated output (W)		1000
Rated torque (N·m)		3.18
Continuous stall torque (N·m)		3.34
Momentary Max. peak torque (N·m)		11.1
Rated current (A(rms))		5.7
Max. current (A(o-p))		28.2
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4284	No limit <sup>Note2</sup>
Rated rotational speed (r/min)		3000
Max. rotational speed (r/min)		6000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	2.03
	With brake	2.13
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		15 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) <sup>Note4</sup>	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

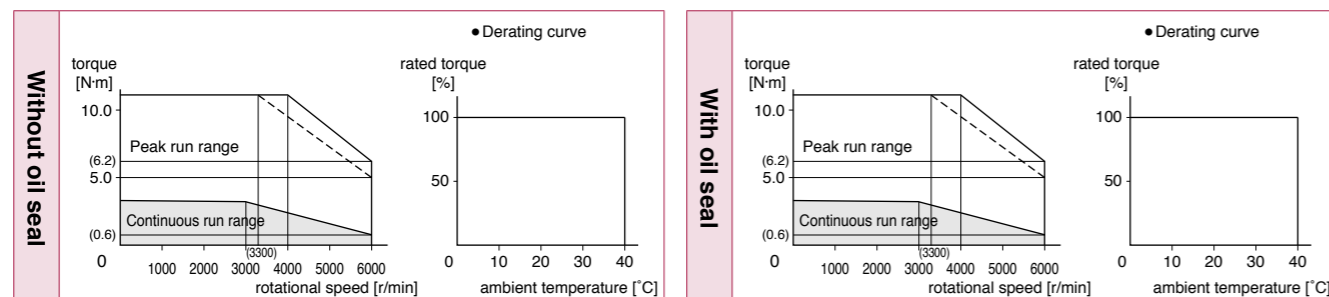
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

• For details of Note)1 to Note)4, refer to P.303.  
• Dimensions of Driver, refer to P.58.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.277	P.277	P.277	P.278	P.278	P.278

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF102L1□□M
Applicable driver	Model No.	Multifunction type MDDL45SF
	RS485 communication type <sup>2</sup>	MDDL45SG
	Basic type <sup>2</sup>	MDDL45SE
Frame symbol		D-frame
Power supply capacity (kVA)		2.4
Rated output (W)		1000
Rated torque (N·m)		4.77
Continuous stall torque (N·m)		5.25
Momentary Max. peak torque (N·m)		14.3
Rated current (A(rms))		5.2
Max. current (A(o-p))		22
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4284	No limit <sup>Note2</sup>
Rated rotational speed (r/min)		2000
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	22.9
	With brake	24.1
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)  
(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

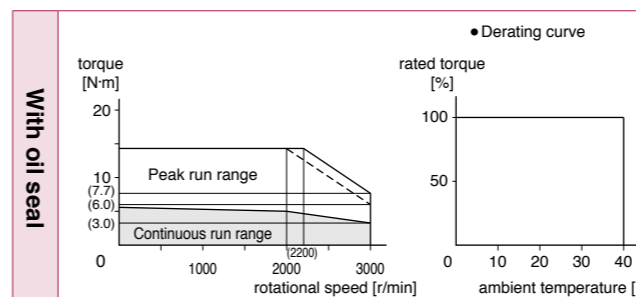
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note)1 to Note)4, refer to P.303.  
• Dimensions of Driver, refer to P.58.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.279		—	P.279	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
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Specifications

		AC200 V
Motor model *1		MHMF152L1□□M
Applicable driver	Model No.	MDDL55SF
	Multifunction type	MDDL55SG
	RS485 communication type *2	MDDL55SE
	Basic type *2	
	Frame symbol	D-frame
Power supply capacity	(kVA)	2.9
Rated output	(W)	1500
Rated torque	(N·m)	7.16
Continuous stall torque	(N·m)	7.52
Momentary Max. peak torque	(N·m)	21.5
Rated current	(A(rms))	8.0
Max. current	(A(o-p))	34
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4284	No limit Note2
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	33.4
	With brake	34.6
Recommended moment of inertia ratio of the load and the rotor Note3		5 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

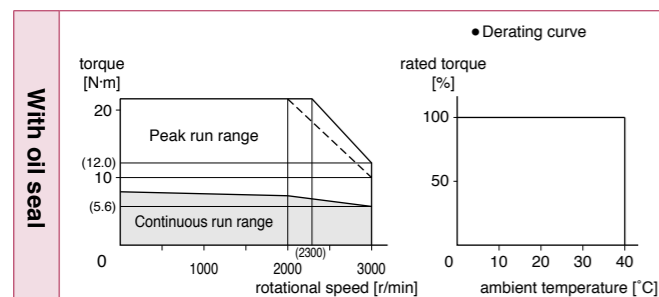
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.58.

\*1 □□ in the motor part number represents the motor specifications.  
 \*2 Basic type and RS485 communication type are "Position control type".  
 Detail of model designation, refer to P.204.  
 \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.279		—	P.280	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
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Specifications

		AC200 V
Motor model *1		MHMF202L1□□M
Applicable driver	Model No.	MEDLT83SF
	Multifunction type	MEDLN83SG
	RS485 communication type *2	MEDLN83SE
	Basic type *2	
	Frame symbol	E-frame
Power supply capacity	(kVA)	3.8
Rated output	(W)	2000
Rated torque	(N·m)	9.55
Continuous stall torque	(N·m)	11.5
Momentary Max. peak torque	(N·m)	28.6
Rated current	(A(rms))	12.5
Max. current	(A(o-p))	53
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285	No limit Note2
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	55.7
	With brake	61.0
Recommended moment of inertia ratio of the load and the rotor Note3		5 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

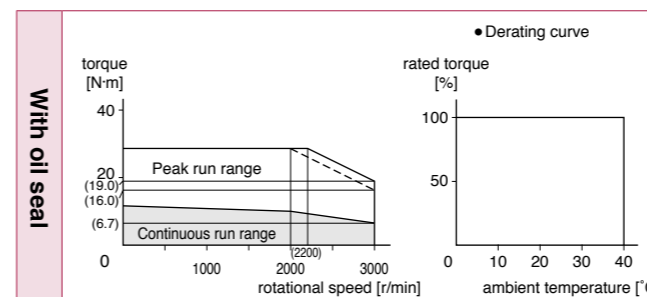
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.59.

\*1 □□ in the motor part number represents the motor specifications.  
 \*2 Basic type and RS485 communication type are "Position control type".  
 Detail of model designation, refer to P.204.  
 \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.280		—	P.280	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
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Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF302L1□□M
Applicable driver	Model No.	Multifunction type MFDLTA3SF
	RS485 communication type <sup>2</sup>	MFDLNA3SG
	Basic type <sup>2</sup>	MFDLNA3SE
Frame symbol		F-frame
Power supply capacity	(kVA)	5.2
Rated output	(W)	3000
Rated torque	(N·m)	14.3
Continuous stall torque	(N·m)	17.2
Momentary Max. peak torque	(N·m)	43.0
Rated current	(A(rms))	17.0
Max. current	(A(o-p))	72
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4285x2	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	85.3
	With brake	90.7
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) <sup>Note4</sup>	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note1 to Note4, refer to P.303.

• Dimensions of Driver, refer to P.59.

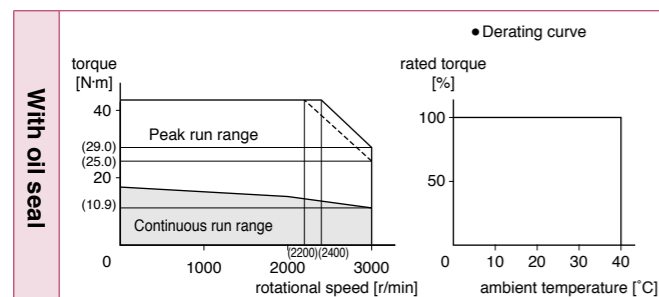
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.281		—	P.281	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF402L1□□M
Applicable driver	Model No.	Multifunction type MFDLTB3SF
	RS485 communication type <sup>2</sup>	MFDLNB3SG
	Basic type <sup>2</sup>	MFDLNB3SE
Frame symbol		F-frame
Power supply capacity	(kVA)	6.5
Rated output	(W)	4000
Rated torque	(N·m)	19.1
Continuous stall torque	(N·m)	22.0
Momentary Max. peak torque	(N·m)	57.3
Rated current	(A(rms))	20
Max. current	(A(o-p))	85
Regenerative brake frequency (times/min) <sup>Note1</sup>	Without option	No limit <sup>Note2</sup>
	DV0P4285x2	No limit <sup>Note2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	104
	With brake	110
Recommended moment of inertia ratio of the load and the rotor <sup>Note3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) <sup>Note4</sup>	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note1 to Note4, refer to P.303.

• Dimensions of Driver, refer to P.59.

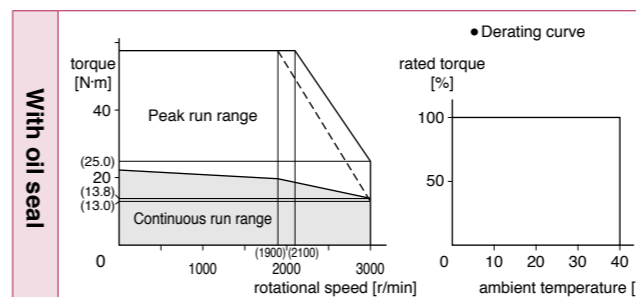
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.281		—	P.282	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF502L1□□M
Applicable driver	Model No.	Multifunction type MFDLTB3SF
	RS485 communication type <sup>2</sup>	MFDLNB3SG
	Basic type <sup>2</sup>	MFDLNB3SE
Frame symbol		F-frame
Power supply capacity	(kVA)	7.8
Rated output	(W)	5000
Rated torque	(N·m)	23.9
Continuous stall torque	(N·m)	26.3
Momentary Max. peak torque	(N·m)	71.6
Rated current	(A(rms))	23.3
Max. current	(A(o-p))	99
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x2	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	146
	With brake	151
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) <sup>Note)4</sup>	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.59.

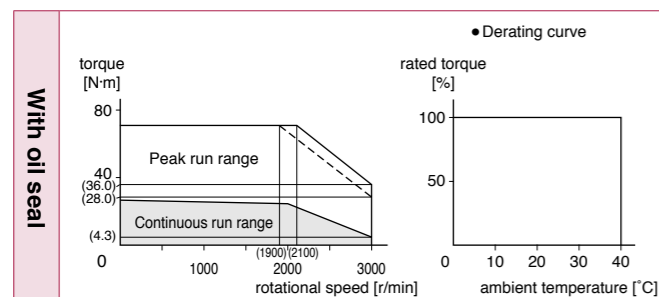
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.282	—	—	P.282	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
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Please contact us for more information.

Specifications

		AC200 V
Motor model <sup>1</sup>		MHMF752L1□□M
Applicable driver	Model No.	Multifunction type MGDLTC3SF
	RS485 communication type <sup>2</sup>	—
	Basic type <sup>2</sup>	—
Frame symbol		G-frame
Power supply capacity	(kVA)	11
Rated output	(W)	7500
Rated torque	(N·m)	47.8
Continuous stall torque	(N·m)	47.8
Momentary Max. peak torque	(N·m)	125
Rated current	(A(rms))	40.2
Max. current	(A(o-p))	154
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>
	DV0P4285x3	No limit <sup>Note)2</sup>
Rated rotational speed	(r/min)	1500
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	272
	With brake	279
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		5 times or less
Rotary encoder specifications <sup>3</sup>		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) <sup>Note)4</sup>	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.60.

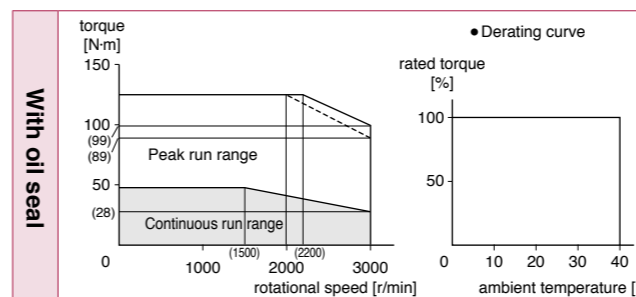
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.283	—	—	P.283	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
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• Please contact us for more information.

Specifications

		AC200 V	
Motor model <sup>1</sup>		MDMF102L1□□M	
Applicable driver	Model No.	Multifunction type	MDDL45SF
		RS485 communication type <sup>2</sup>	MDDL45SG
		Basic type <sup>2</sup>	MDDL45SE
Frame symbol		D-frame	
Power supply capacity (kVA)		2.4	
Rated output (W)		1000	
Rated torque (N·m)		4.77	
Continuous stall torque (N·m)		5.25	
Momentary Max. peak torque (N·m)		14.3	
Rated current (A(rms))		5.2	
Max. current (A(o-p))		22	
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>	
	DV0P4284	No limit <sup>Note)2</sup>	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	6.18	
	With brake	7.40	
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less	
Rotary encoder specifications <sup>3</sup>		23-bit Absolute	
Resolution per single turn		8388608	

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

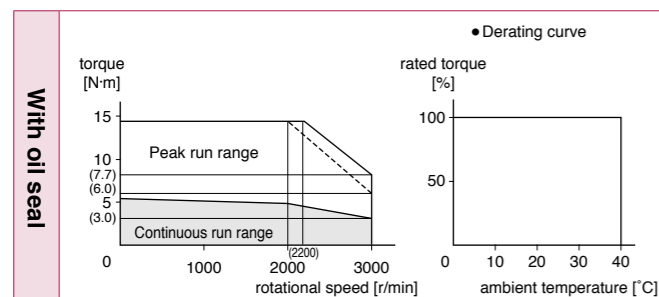
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.283		—	P.284	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
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• Please contact us for more information.

Specifications

		AC200 V	
Motor model <sup>1</sup>		MDMF152L1□□M	
Applicable driver	Model No.	Multifunction type	MDDL55SF
		RS485 communication type <sup>2</sup>	MDDL55SG
		Basic type <sup>2</sup>	MDDL55SE
Frame symbol		D-frame	
Power supply capacity (kVA)		2.9	
Rated output (W)		1500	
Rated torque (N·m)		7.16	
Continuous stall torque (N·m)		7.52	
Momentary Max. peak torque (N·m)		21.5	
Rated current (A(rms))		8.0	
Max. current (A(o-p))		34	
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>	
	DV0P4284	No limit <sup>Note)2</sup>	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	9.16	
	With brake	10.4	
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less	
Rotary encoder specifications <sup>3</sup>		23-bit Absolute	
Resolution per single turn		8388608	

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

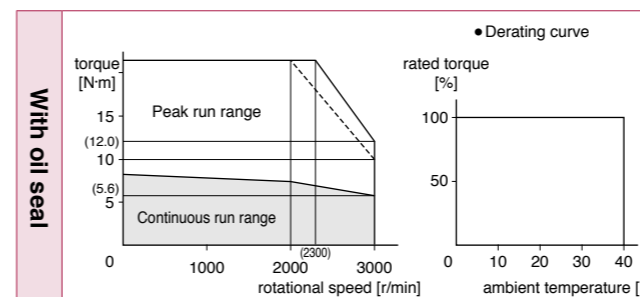
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.284		—	P.284	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
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Specifications

		AC200 V	
Motor model <sup>1</sup>		MDMF202L1□□M	
Applicable driver	Model No.	Multifunction type	MEDLT83SF
		RS485 communication type <sup>2</sup>	MEDLN83SG
		Basic type <sup>2</sup>	MEDLN83SE
	Frame symbol	E-frame	
Power supply capacity (kVA)		3.8	
Rated output (W)		2000	
Rated torque (N·m)		9.55	
Continuous stall torque (N·m)		10.0	
Momentary Max. peak torque (N·m)		28.6	
Rated current (A(rms))		9.9	
Max. current (A(o-p))		42	
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>	
	DV0P4285	No limit <sup>Note)2</sup>	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	12.1	
	With brake	13.3	
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less	
Rotary encoder specifications <sup>3</sup>		23-bit Absolute	
Resolution per single turn		8388608	

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

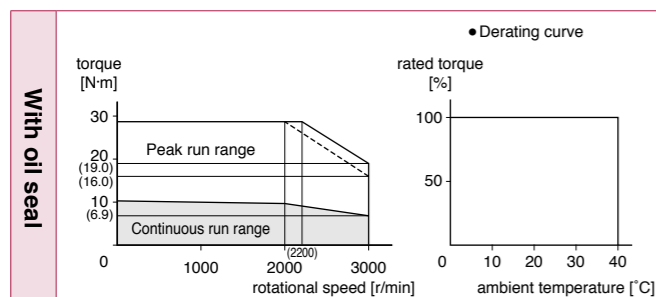
• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note)1 to Note)4, refer to P.303.  
 • Dimensions of Driver, refer to P.59.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.285		—	P.285	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
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• Please contact us for more information.

Specifications

		AC200 V	
Motor model <sup>1</sup>		MDMF302L1□□M	
Applicable driver	Model No.	Multifunction type	MFDLTA3SF
		RS485 communication type <sup>2</sup>	MFDLNA3SG
		Basic type <sup>2</sup>	MFDLNA3SE
	Frame symbol	F-frame	
Power supply capacity (kVA)		5.2	
Rated output (W)		3000	
Rated torque (N·m)		14.3	
Continuous stall torque (N·m)		15.0	
Momentary Max. peak torque (N·m)		43.0	
Rated current (A(rms))		16.4	
Max. current (A(o-p))		70	
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>	
	DV0P4285×2	No limit <sup>Note)2</sup>	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	18.6	
	With brake	19.6	
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less	
Rotary encoder specifications <sup>3</sup>		23-bit Absolute	
Resolution per single turn		8388608	

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) <sup>Note)4</sup>	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

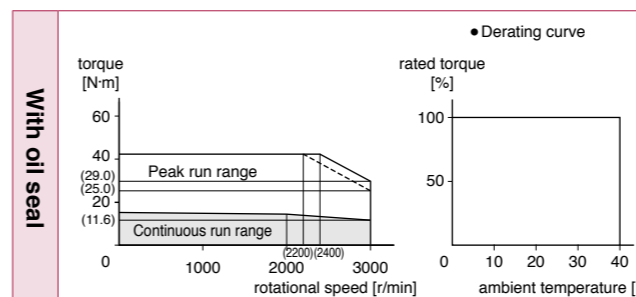
• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note)1 to Note)4, refer to P.303.  
 • Dimensions of Driver, refer to P.59.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.285		—	P.286	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
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• Please contact us for more information.

Specifications

		AC200 V
Motor model *1		MDMF402L1□□M
Applicable driver	Model No.	Multifunction type MFDLTB3SF
	RS485 communication type *2	MFDLNB3SG
	Basic type *2	MFDLNB3SE
Frame symbol		F-frame
Power supply capacity	(kVA)	6.5
Rated output	(W)	4000
Rated torque	(N·m)	19.1
Continuous stall torque	(N·m)	22.0
Momentary Max. peak torque	(N·m)	57.3
Rated current	(A(rms))	20.0
Max. current	(A(o-p))	85
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285x2	No limit Note2
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	46.9
	With brake	52.3
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

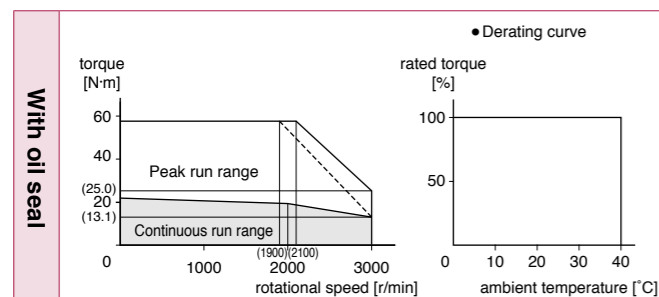
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.59.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.286		—	P.286	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model *1		MDMF502L1□□M
Applicable driver	Model No.	Multifunction type MFDLTB3SF
	RS485 communication type *2	MFDLNB3SG
	Basic type *2	MFDLNB3SE
Frame symbol		F-frame
Power supply capacity	(kVA)	7.8
Rated output	(W)	5000
Rated torque	(N·m)	23.9
Continuous stall torque	(N·m)	26.3
Momentary Max. peak torque	(N·m)	71.6
Rated current	(A(rms))	23.3
Max. current	(A(o-p))	99
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285x2	No limit Note2
Rated rotational speed	(r/min)	2000
Max. rotational speed	(r/min)	3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	58.2
	With brake	63.0
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
	Resolution per single turn	8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note4	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

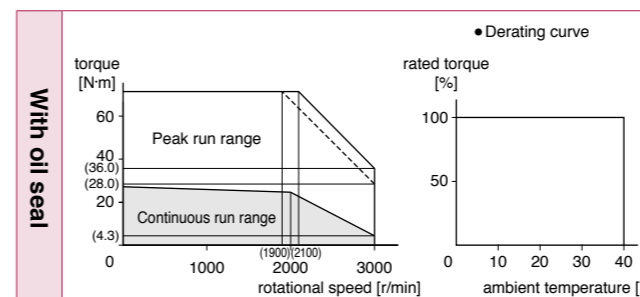
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.59.

- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".  
Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.287		—	P.287	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model *1		MDMF752L1□□M
Applicable driver	Model No.	Multifunction type
		RS485 communication type *2
		Basic type *2
Frame symbol		G-frame
Power supply capacity (kVA)		11
Rated output (W)		7500
Rated torque (N·m)		47.8
Continuous stall torque (N·m)		47.8
Momentary Max. peak torque (N·m)		125
Rated current (A(rms))		40.2
Max. current (A(o-p))		154
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285x3	No limit Note2
Rated rotational speed (r/min)		1500
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	122
	With brake	127
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) Note4	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

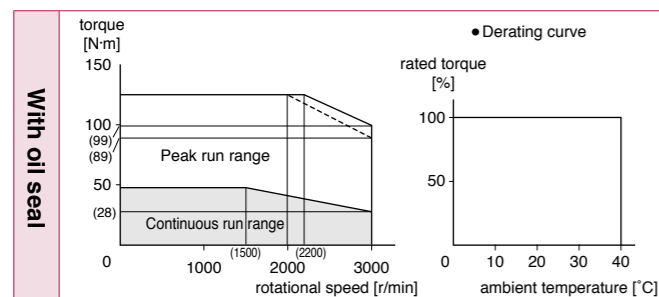
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.60.

\*1 □□ in the motor part number represents the motor specifications.  
 \*2 Basic type and RS485 communication type are "Position control type".  
 Detail of model designation, refer to P.204.  
 \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.287	—	—	P.288	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
 Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Specifications

		AC200 V
Motor model *1		MGMF092L1□□M
Applicable driver	Model No.	Multifunction type
		RS485 communication type *2
		Basic type *2
Frame symbol		D-frame
Power supply capacity (kVA)		2.0
Rated output (W)		850
Rated torque (N·m)		5.41
Continuous stall torque (N·m)		5.41
Momentary Max. peak torque (N·m)		14.3
Rated current (A(rms))		5.9
Max. current (A(o-p))		22
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4284	No limit Note2
Rated rotational speed (r/min)		1500
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	6.18
	With brake	7.40
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

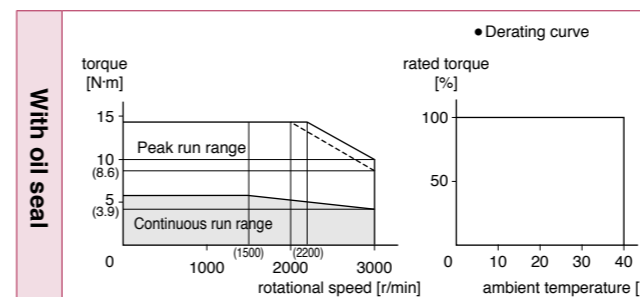
• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.58.

\*1 □□ in the motor part number represents the motor specifications.  
 \*2 Basic type and RS485 communication type are "Position control type".  
 Detail of model designation, refer to P.204.  
 \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.288	—	—	P.288	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
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• Please contact us for more information.

Specifications

		AC200 V
Motor model *1		<b>MGMF132L1□□M</b>
Applicable driver	Model No.	Multifunction type <b>MDDL55SF</b>
		RS485 communication type *2 <b>MDDL55SG</b>
		Basic type *2 <b>MDDL55SE</b>
Frame symbol		D-frame
Power supply capacity (kVA)		2.6
Rated output (W)		1300
Rated torque (N·m)		8.28
Continuous stall torque (N·m)		8.28
Momentary Max. peak torque (N·m)		23.3
Rated current (A(rms))		9.3
Max. current (A(o-p))		37
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4284	No limit Note2
Rated rotational speed (r/min)		1500
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	9.16
	With brake	10.4
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.58.

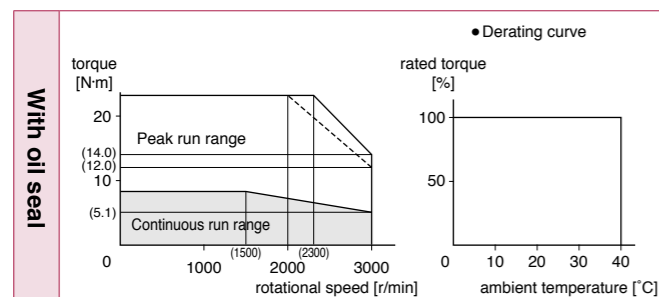
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.289		—	P.289	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

		AC200 V
Motor model *1		<b>MGMF182L1□□M</b>
Applicable driver	Model No.	Multifunction type <b>MEDLT83SF</b>
		RS485 communication type *2 <b>MEDLN83SG</b>
		Basic type *2 <b>MEDLN83SE</b>
Frame symbol		E-frame
Power supply capacity (kVA)		3.4
Rated output (W)		1800
Rated torque (N·m)		11.5
Continuous stall torque (N·m)		11.5
Momentary Max. peak torque (N·m)		28.7
Rated current (A(rms))		11.8
Max. current (A(o-p))		42
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2
	DV0P4285×2	No limit Note2
Rated rotational speed (r/min)		1500
Max. rotational speed (r/min)		3000
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	12.1
	With brake	13.3
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less
Rotary encoder specifications *3		23-bit Absolute
Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note1 to Note4, refer to P.303.
- Dimensions of Driver, refer to P.59.

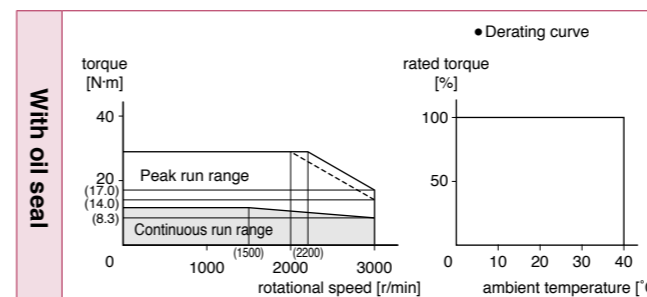
\*1 □□ in the motor part number represents the motor specifications.

\*2 Basic type and RS485 communication type are "Position control type".

Detail of model designation, refer to P.204.

\*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.289		—	P.290	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

**Specifications**

		<b>AC200 V</b>	
Motor model *1		<b>MGMF242L1□□M</b>	
Applicable driver	Model No.	Multifunction type	<b>MEDLT93SF</b>
		RS485 communication type *2	<b>MEDLN93SG</b>
		Basic type *2	<b>MEDLN93SE</b>
	Frame symbol	E-frame	
Power supply capacity (kVA)		4.5	
Rated output (W)		2400	
Rated torque (N·m)		15.3	
Continuous stall torque (N·m)		15.3	
Momentary Max. peak torque (N·m)		45.2	
Rated current (A(rms))		16.0	
Max. current (A(o-p))		67	
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2	
	DV0P4285x2	No limit Note2	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	46.9	
	With brake	52.3	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications *3		23-bit Absolute	
Resolution per single turn		8388608	

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

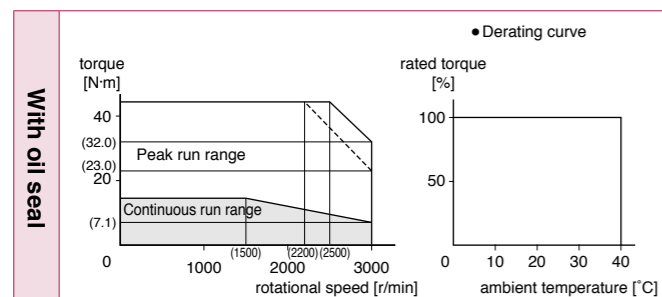
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	
	1666	784
During operation	Radial load P-direction (N)	
	1176	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

**Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)**



**Dimensions**

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.290		—	P.290	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
 Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

**Specifications**

		<b>AC200 V</b>	
Motor model *1		<b>MGMF292L1□□M</b>	
Applicable driver	Model No.	Multifunction type	<b>MFDLTB3SF</b>
		RS485 communication type *2	<b>MFDLNB3SG</b>
		Basic type *2	<b>MFDLNB3SE</b>
	Frame symbol	F-frame	
Power supply capacity (kVA)		5.0	
Rated output (W)		2900	
Rated torque (N·m)		18.5	
Continuous stall torque (N·m)		18.5	
Momentary Max. peak torque (N·m)		45.2	
Rated current (A(rms))		19.3	
Max. current (A(o-p))		67	
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2	
	DV0P4285x2	No limit Note2	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	46.9	
	With brake	52.3	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications *3		23-bit Absolute	
Resolution per single turn		8388608	

• **Brake specifications** (For details, refer to P.305)  
 (This brake will be released when it is energized.)  
 (Do not use this for braking the motor in motion.)

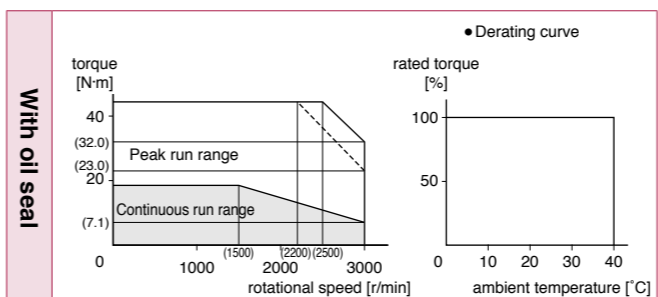
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	
	1666	784
During operation	Radial load P-direction (N)	
	1176	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

**Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)**



**Dimensions**

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.291		—	P.291	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
 Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
 Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Specifications

		AC200 V	
Motor model <sup>*1</sup>		MGMF442L1□□M	
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type <sup>*2</sup>	MFDLNB3SG
		Basic type <sup>*2</sup>	MFDLNB3SE
		Frame symbol	F-frame
Power supply capacity (kVA)		7.0	
Rated output (W)		4400	
Rated torque (N·m)		28.0	
Continuous stall torque (N·m)		28.0	
Momentary Max. peak torque (N·m)		70.0	
Rated current (A(rms))		27.2	
Max. current (A(o-p))		96	
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>	
	DV0P4285x2	No limit <sup>Note)2</sup>	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	58.2	
	With brake	63.0	
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less	
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute	
Resolution per single turn		8388608	

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

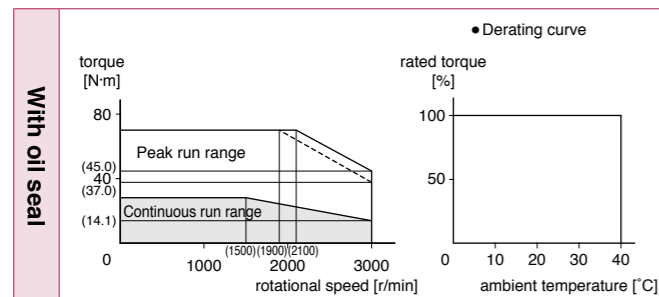
Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) <sup>Note)4</sup>	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.291		—	P.292	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Specifications

		AC200 V	
Motor model <sup>*1</sup>		MGMF552L1□□M	
Applicable driver	Model No.	Multifunction type	MGDLTC3SF
		RS485 communication type <sup>*2</sup>	—
		Basic type <sup>*2</sup>	—
		Frame symbol	G-frame
Power supply capacity (kVA)		8.5	
Rated output (W)		5500	
Rated torque (N·m)		35.0	
Continuous stall torque (N·m)		35.0	
Momentary Max. peak torque (N·m)		102	
Rated current (A(rms))		39.8	
Max. current (A(o-p))		164	
Regenerative brake frequency (times/min) <sup>Note)1</sup>	Without option	No limit <sup>Note)2</sup>	
	DV0P4285x3	No limit <sup>Note)2</sup>	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	83.0	
	With brake	88.0	
Recommended moment of inertia ratio of the load and the rotor <sup>Note)3</sup>		10 times or less	
Rotary encoder specifications <sup>*3</sup>		23-bit Absolute	
Resolution per single turn		8388608	

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)  
(Do not use this for braking the motor in motion.)

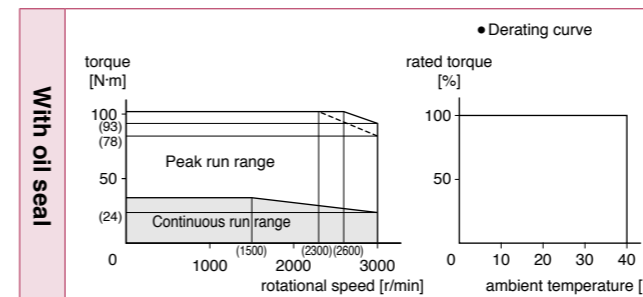
Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) <sup>Note)4</sup>	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.60.
- \*1 □□ in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



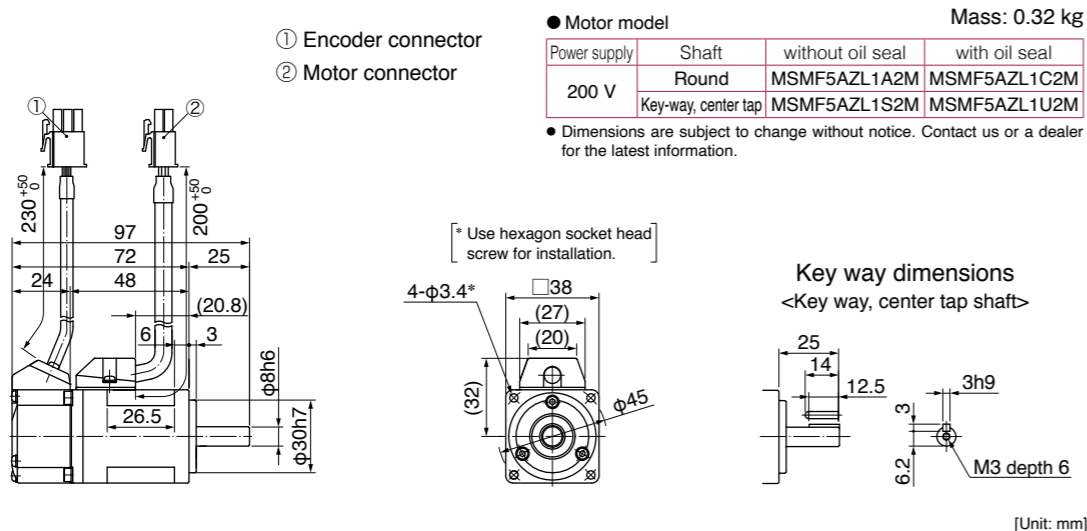
Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.292	—	—	P.292	—

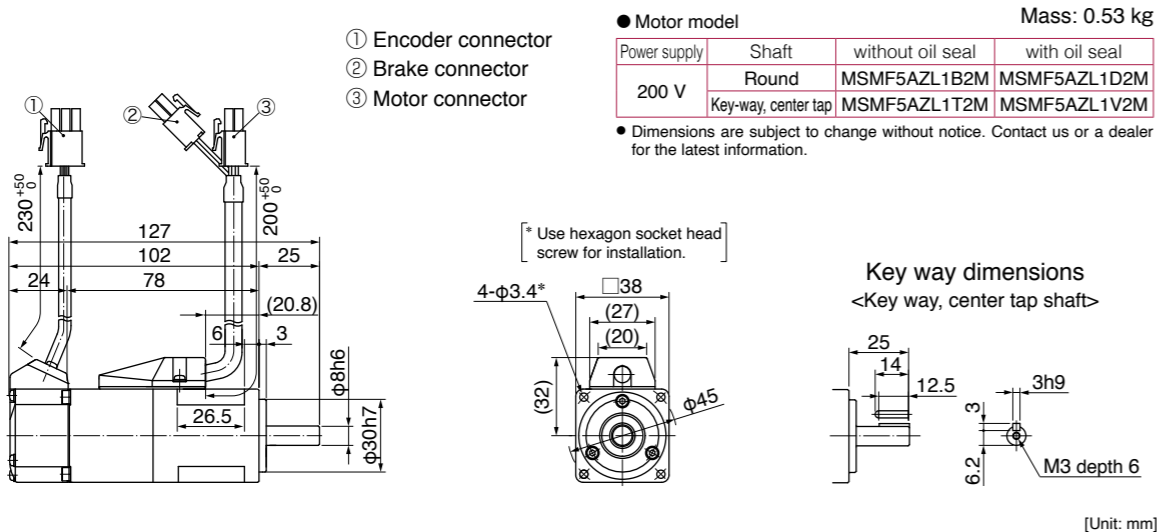
<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.  
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.  
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.  
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

MSMF 50 W

Leadwire type (IP65) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft

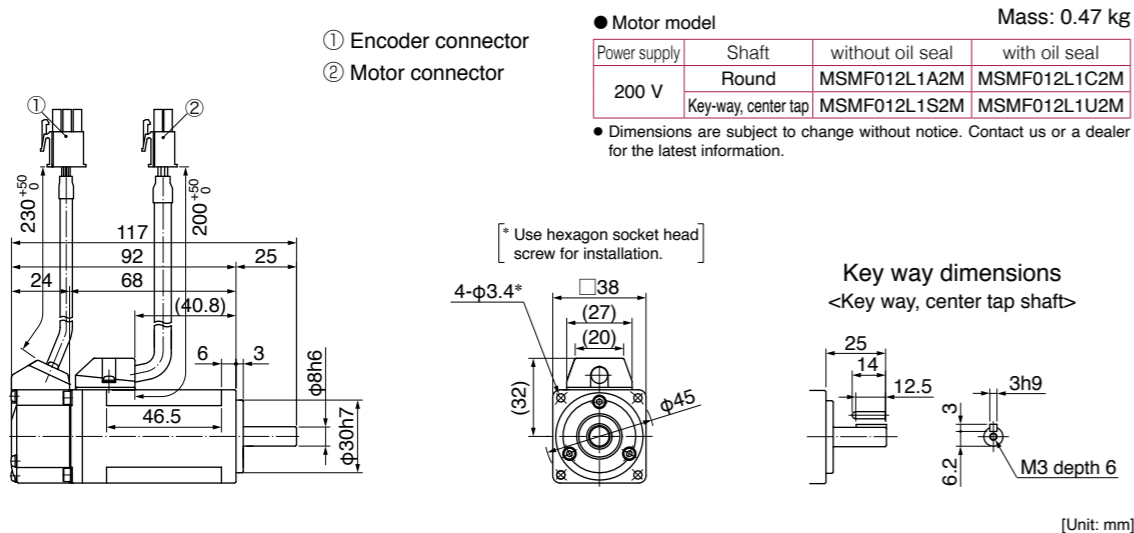


Leadwire type (IP65) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft



MSMF 100 W

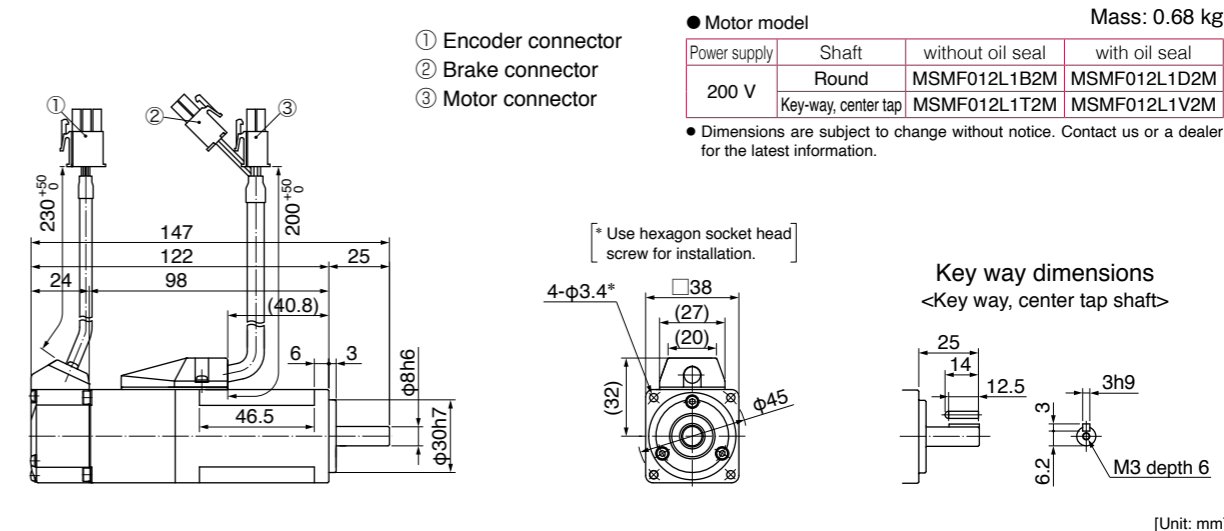
Leadwire type (IP65) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft



\* For motors specifications, refer to P.211, P.212.

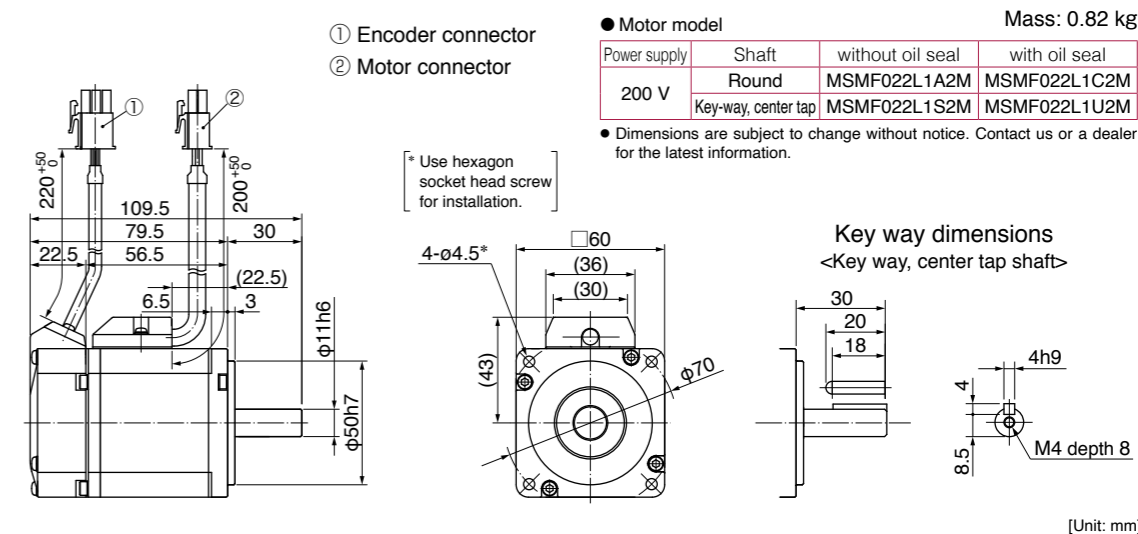
MSMF 100 W

Leadwire type (IP65) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft

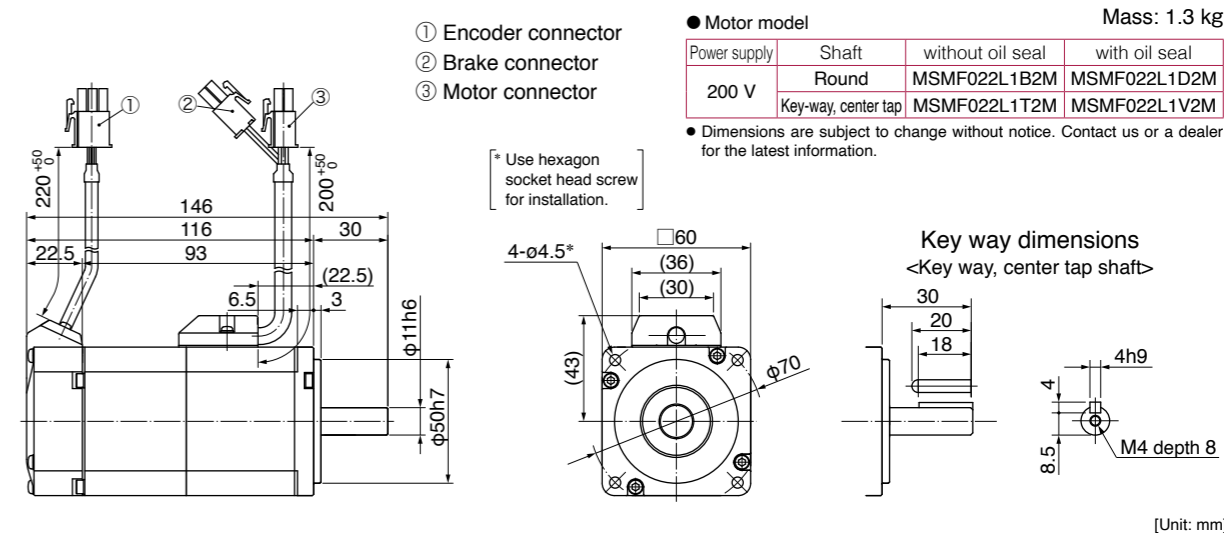


MSMF 200 W

Leadwire type (IP65) • without brake • without/with oil seal • Round shaft/ Key way, center tap shaft



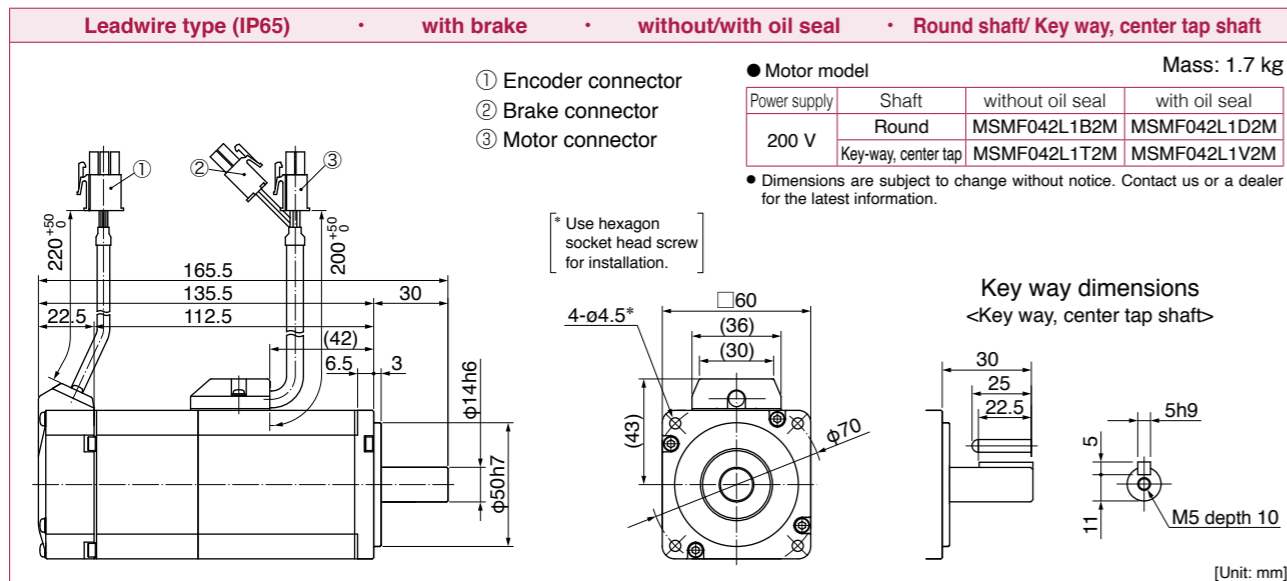
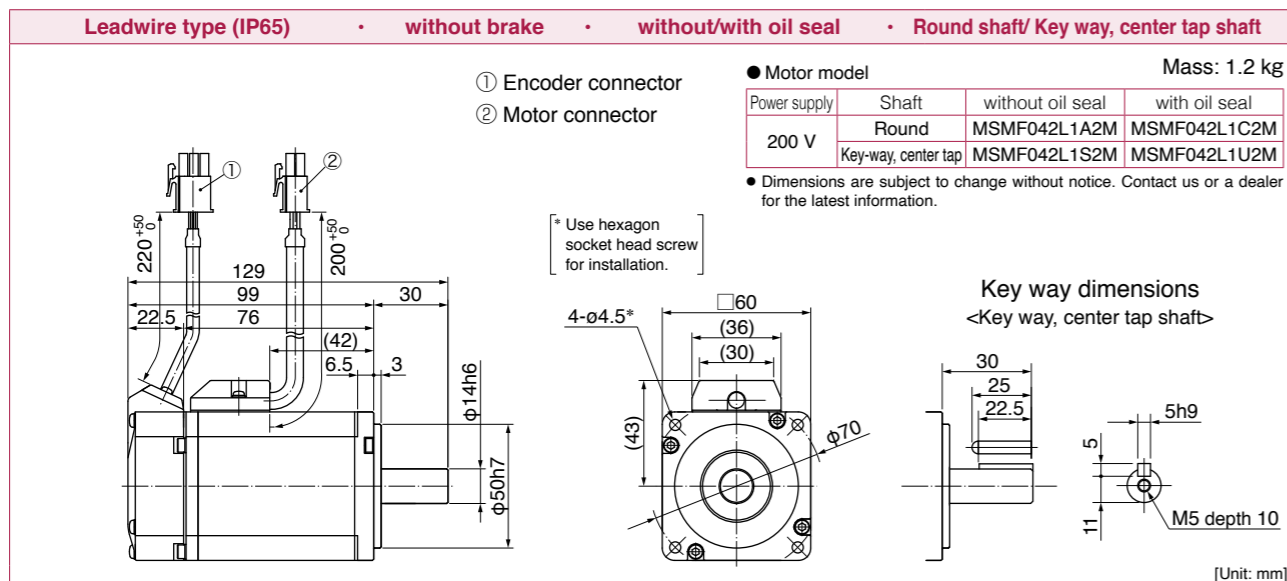
Leadwire type (IP65) • with brake • without/with oil seal • Round shaft/ Key way, center tap shaft



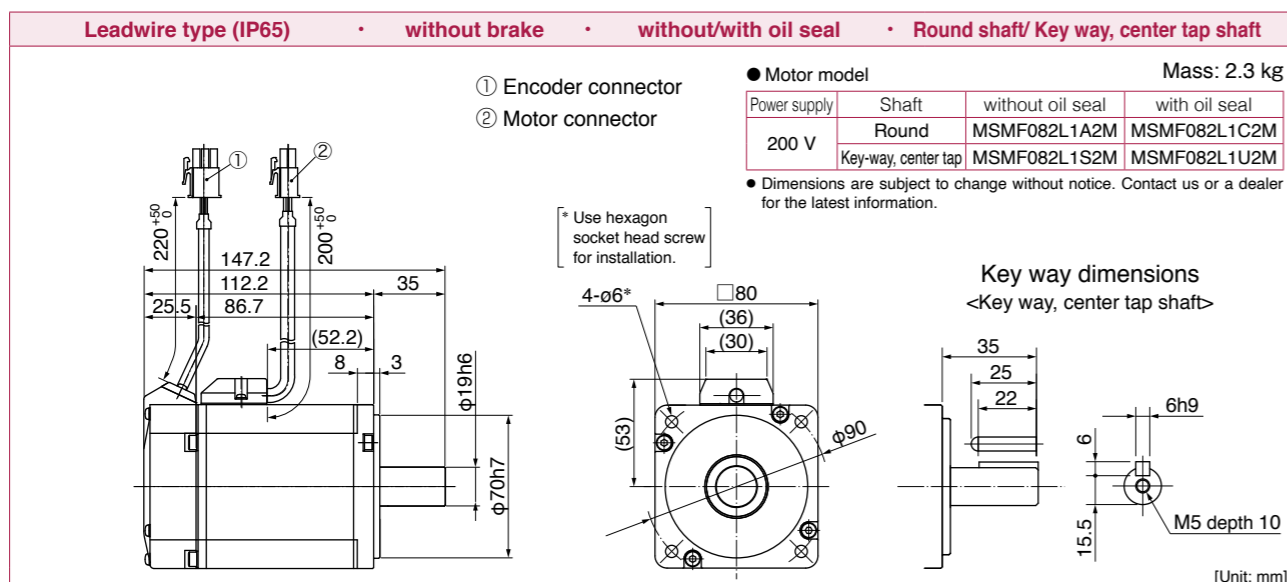
\* For motors specifications, refer to P.212, P.213.



**MSMF 400 W**

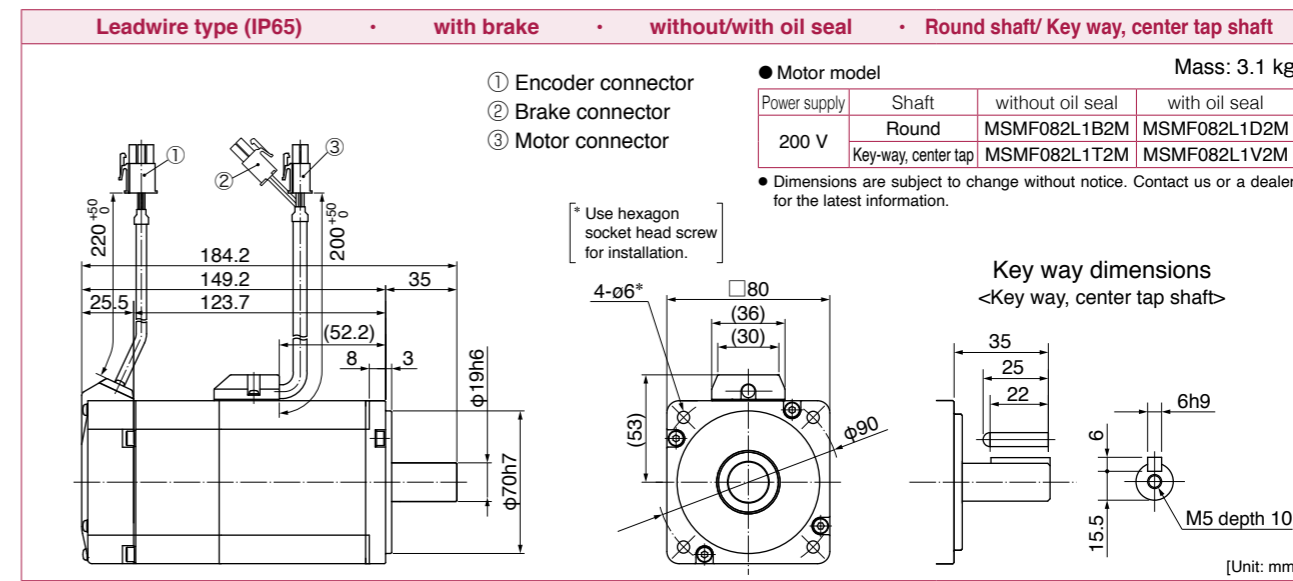


**MSMF 750 W**

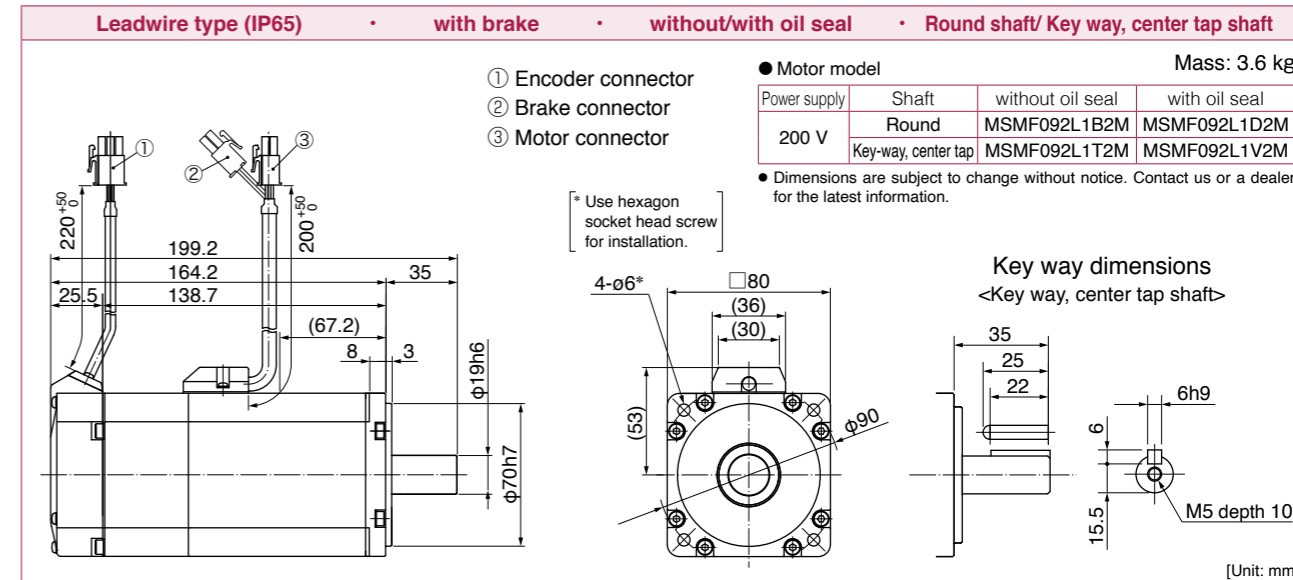
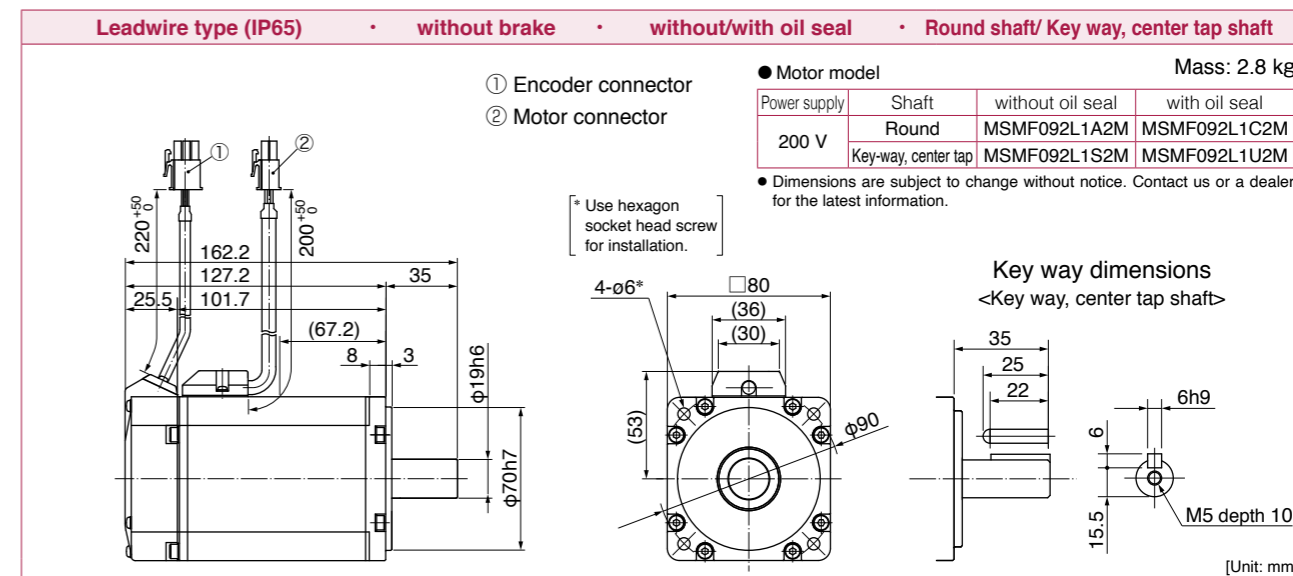


\* For motors specifications, refer to P.214, P.215.

**MSMF 750 W**



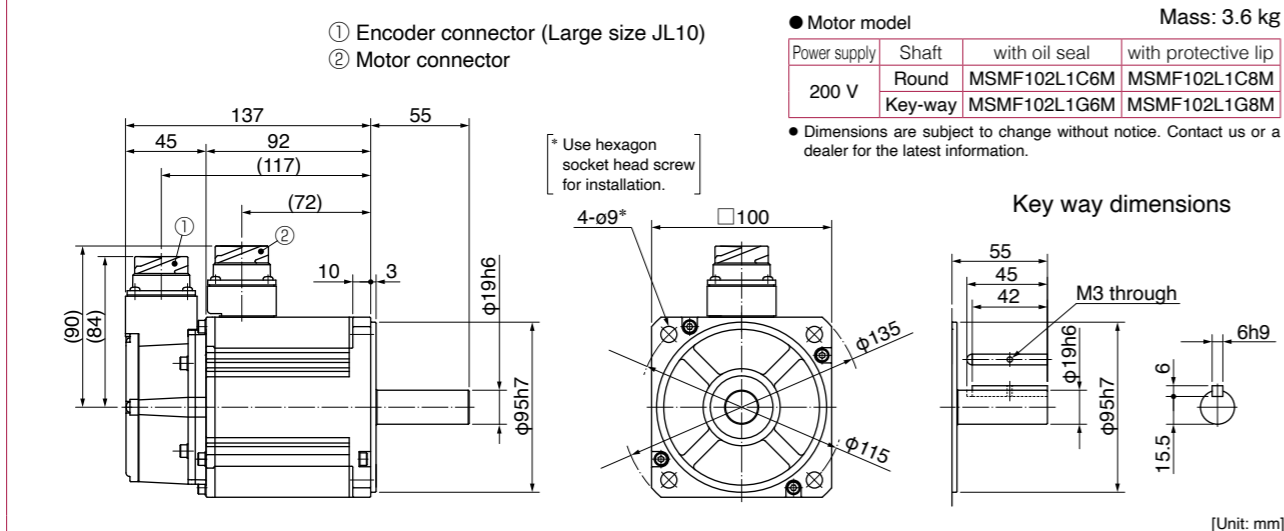
**MSMF 1000 W**



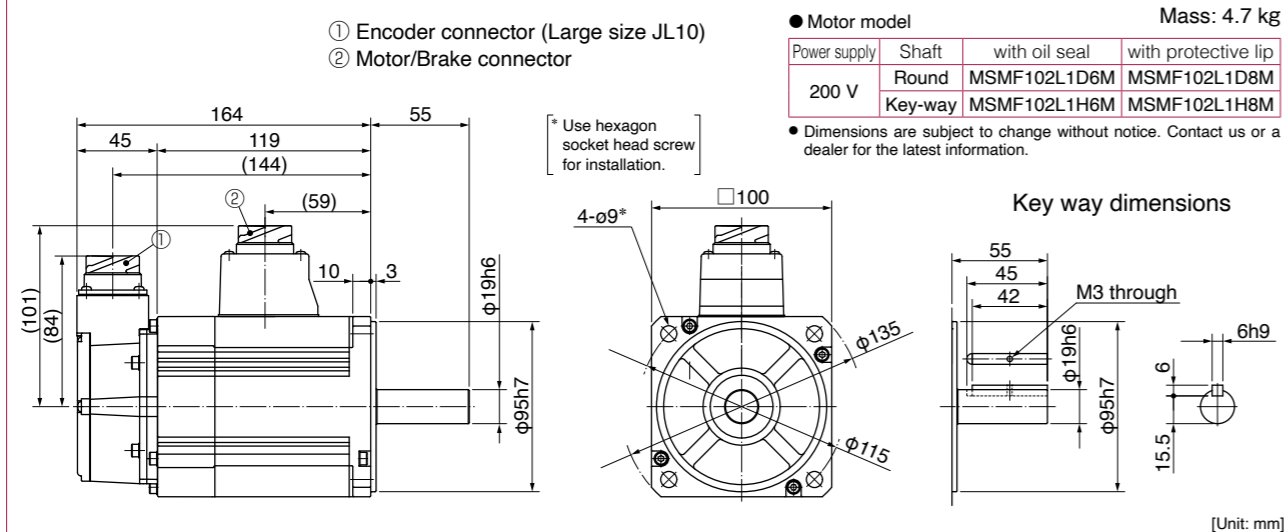
\* For motors specifications, refer to P.215, P.216.

MSMF 1.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

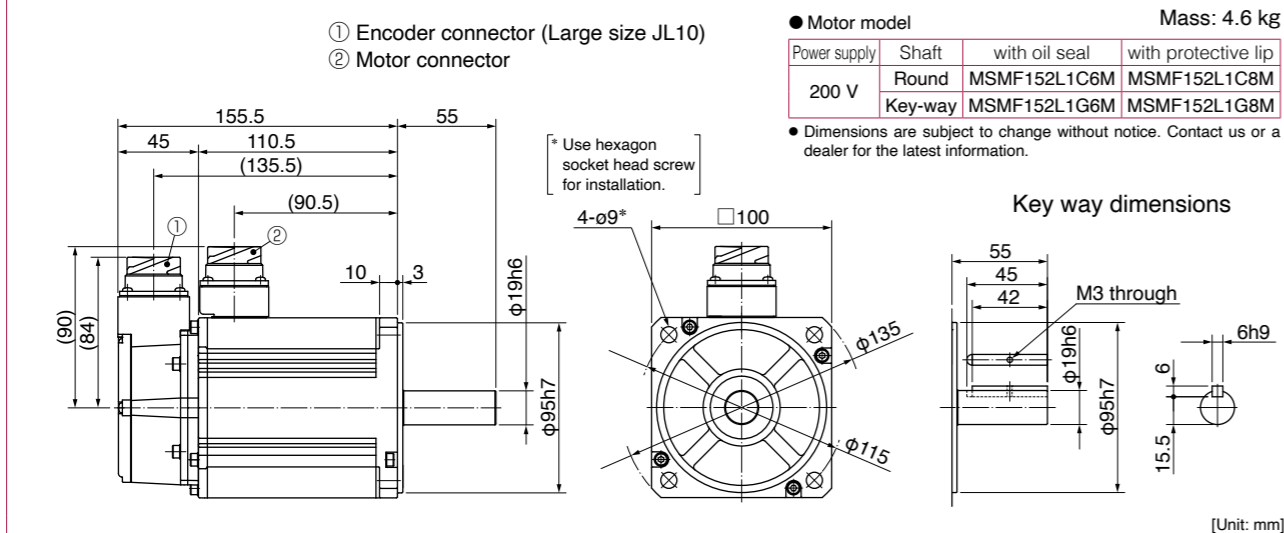


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MSMF 1.5 kW

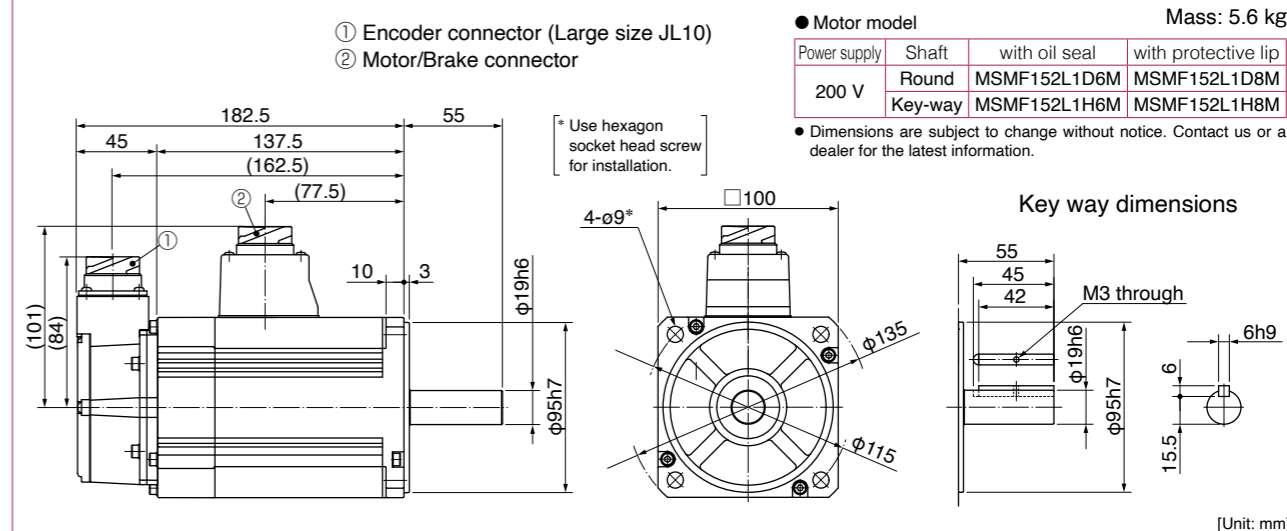
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.217, P.218.

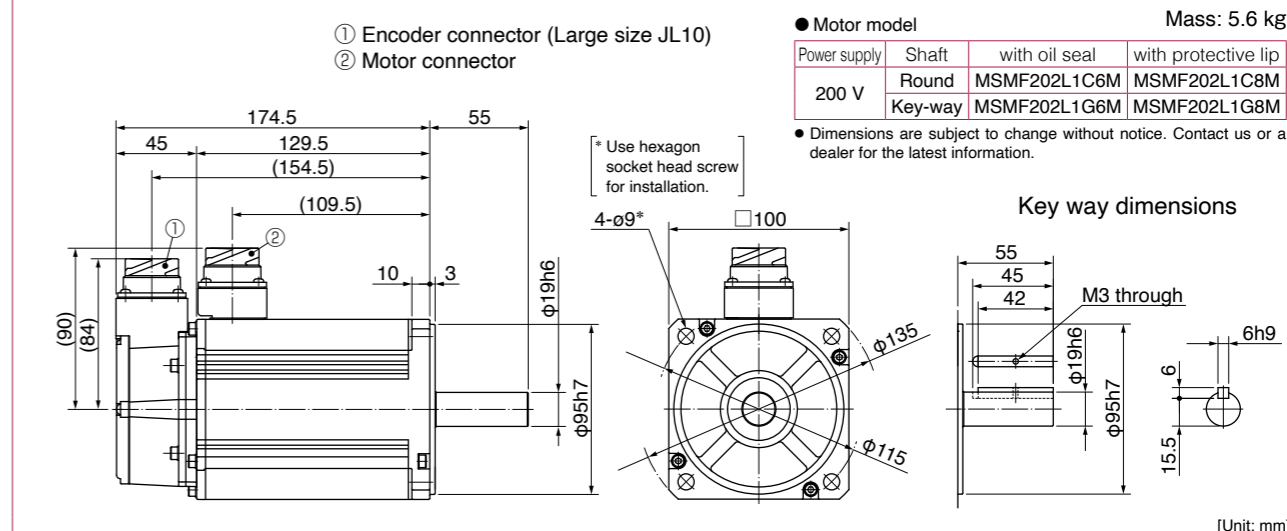
MSMF 1.5 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

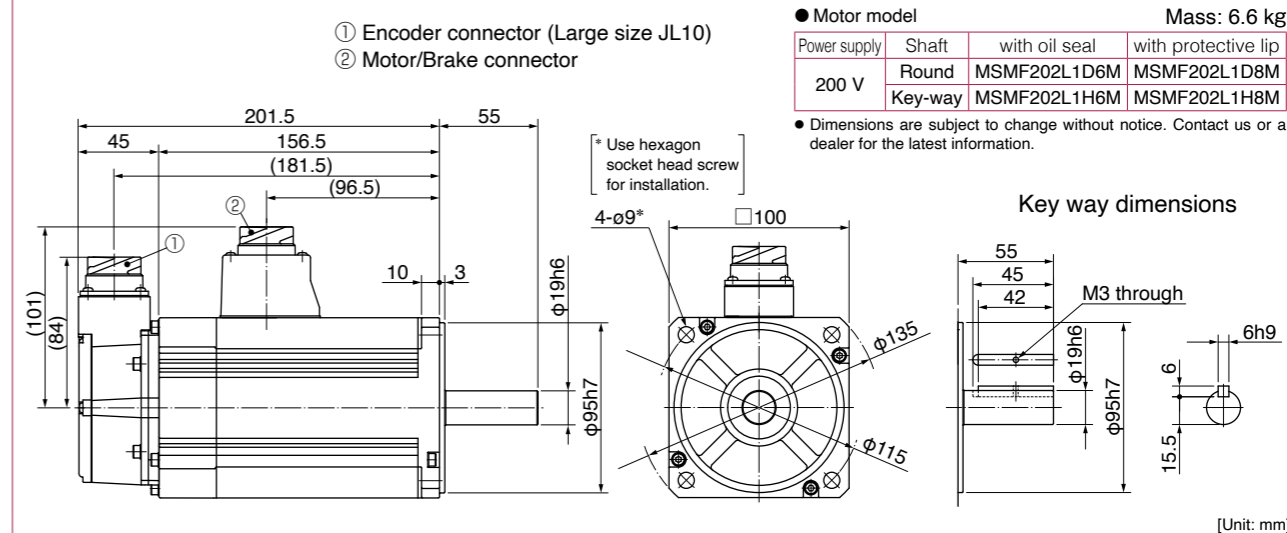


MSMF 2.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



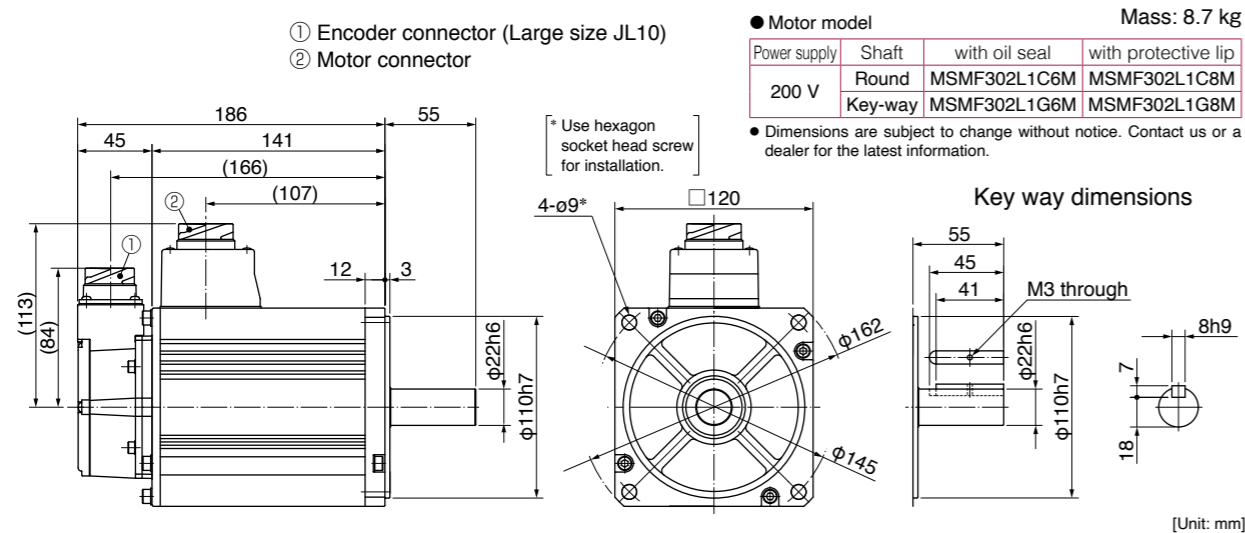
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



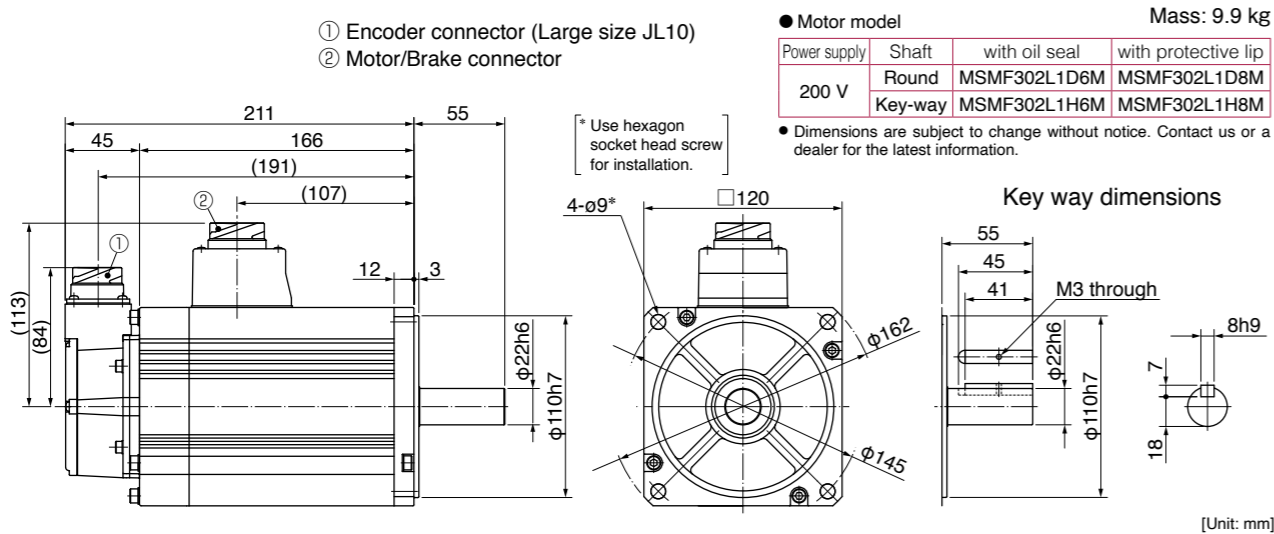
\* For motors specifications, refer to P.218, P.219.

MSMF 3.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

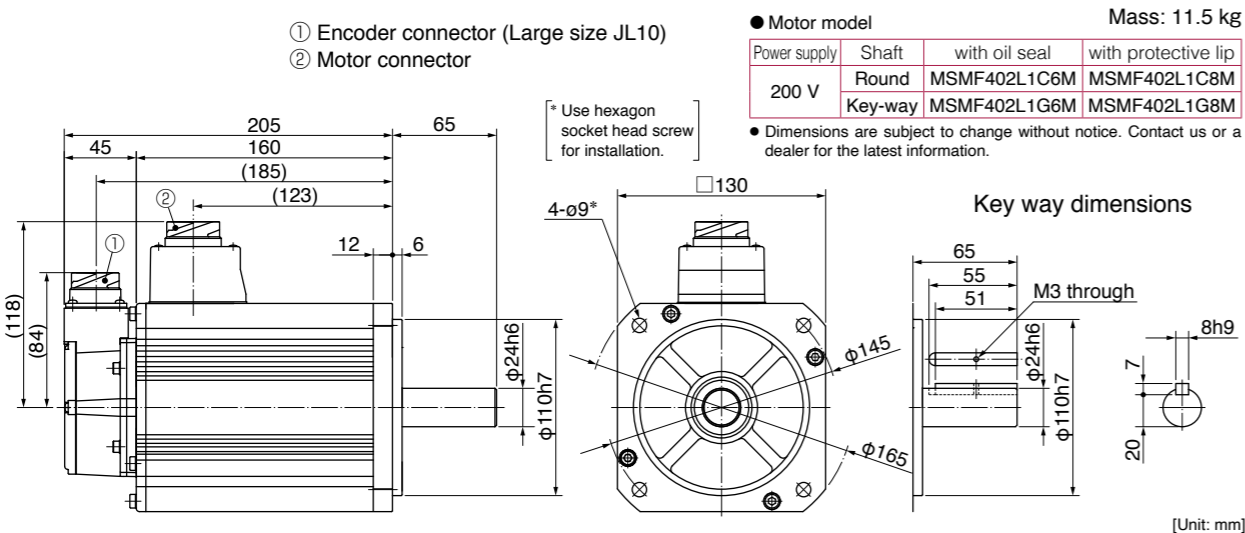


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MSMF 4.0 kW

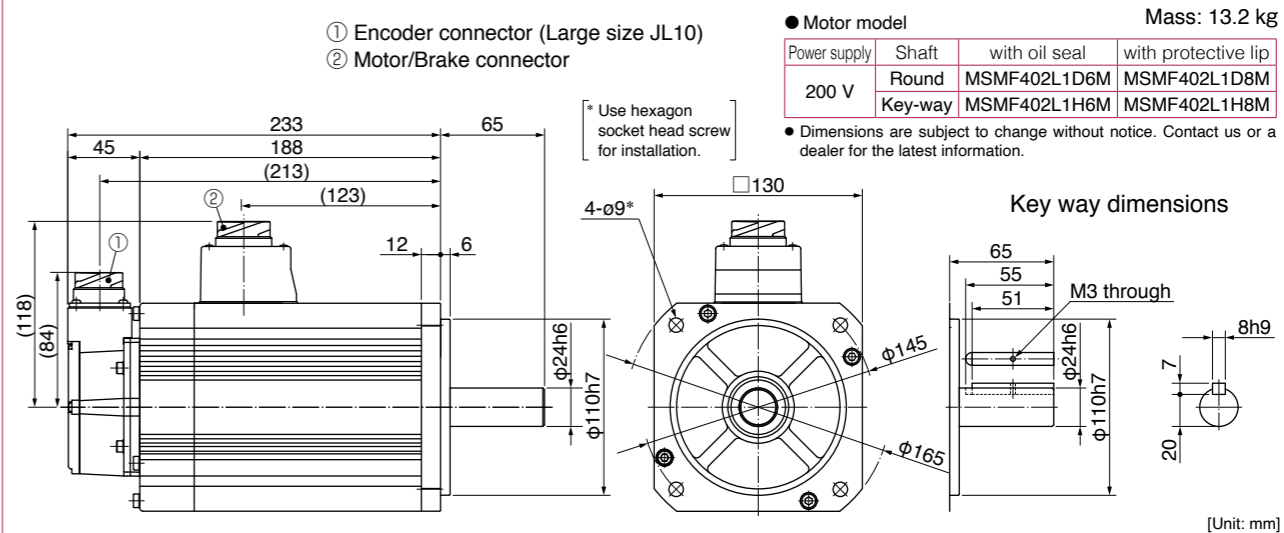
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.220, P.221.

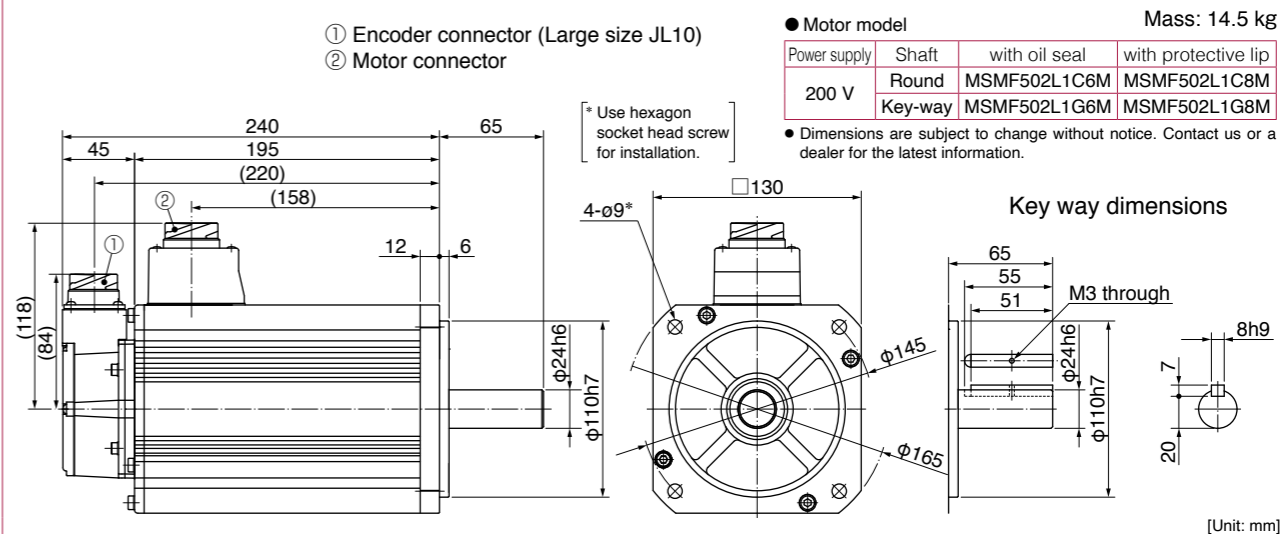
MSMF 4.0 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

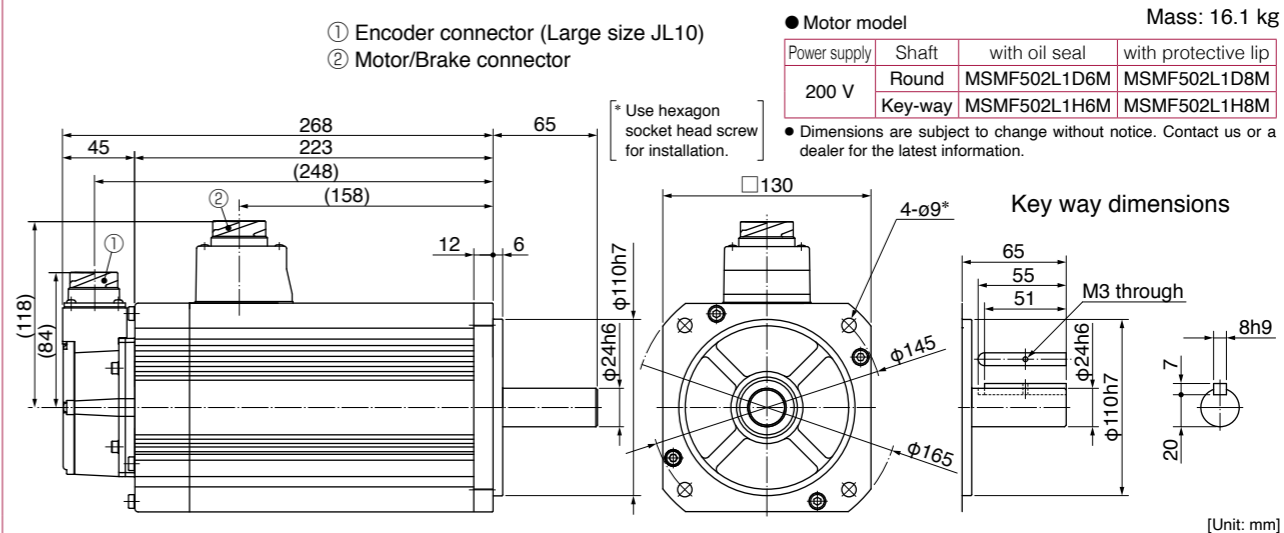


MSMF 5.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



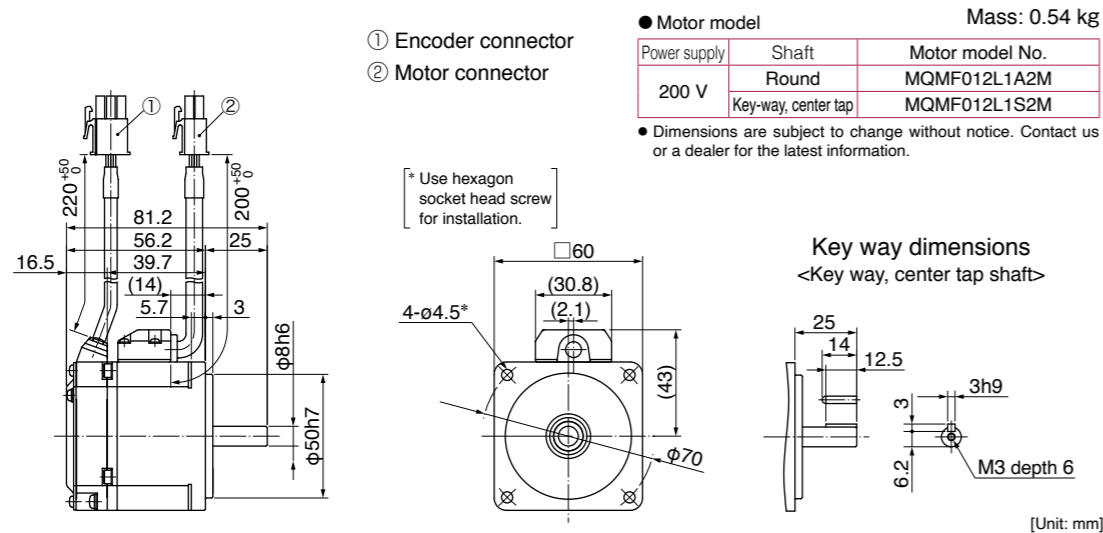
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



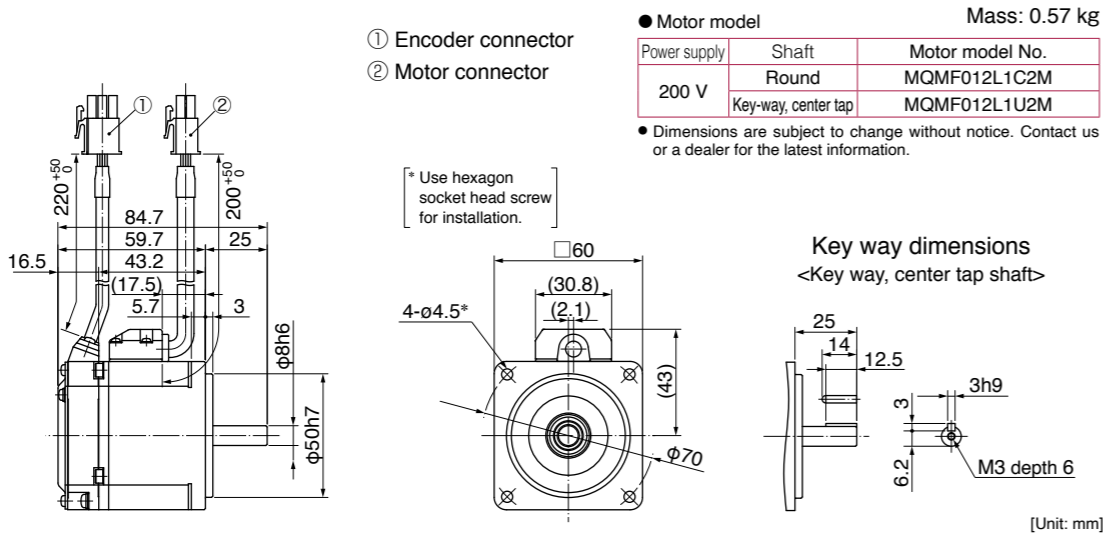
\* For motors specifications, refer to P.221, P.222.

**MQMF 100 W**

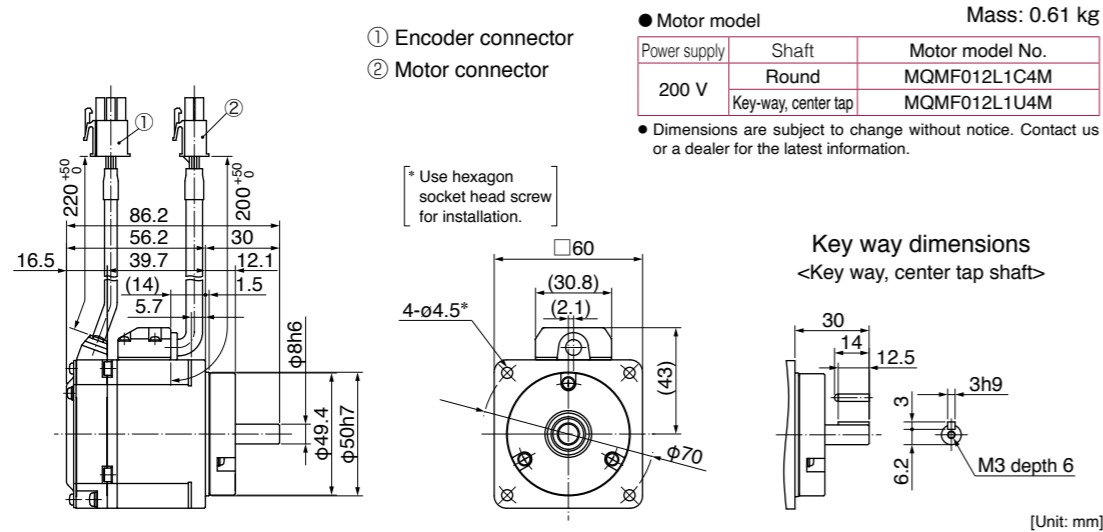
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



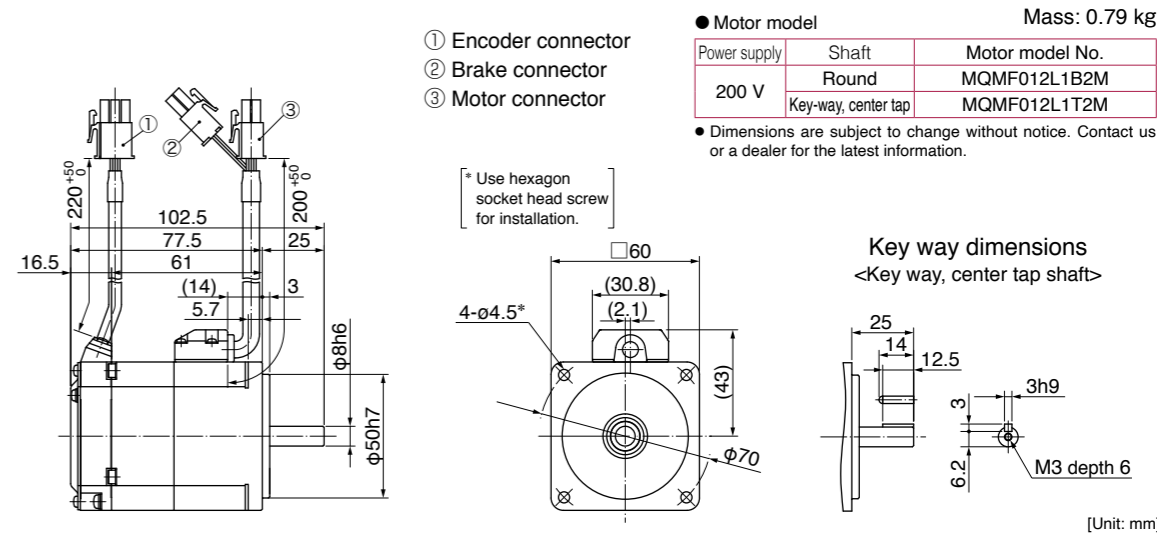
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



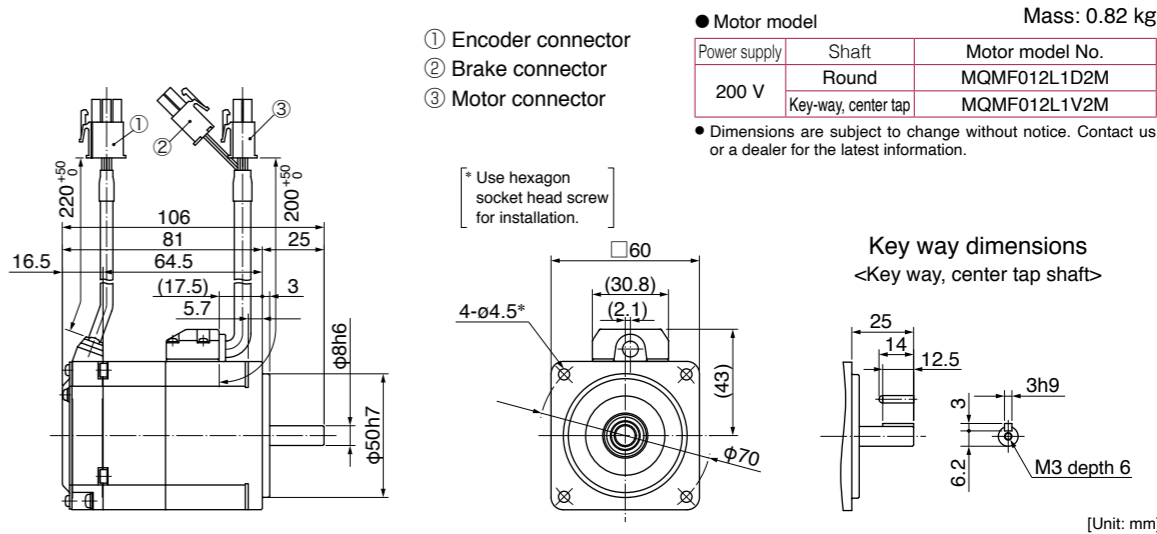
\* For motors specifications, refer to P.223.

**MQMF 100 W**

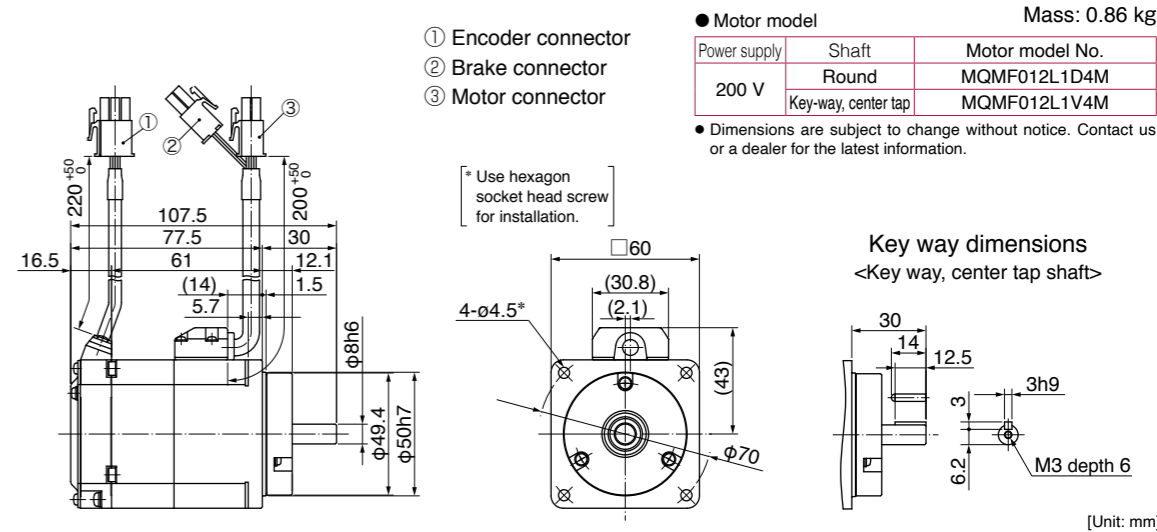
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



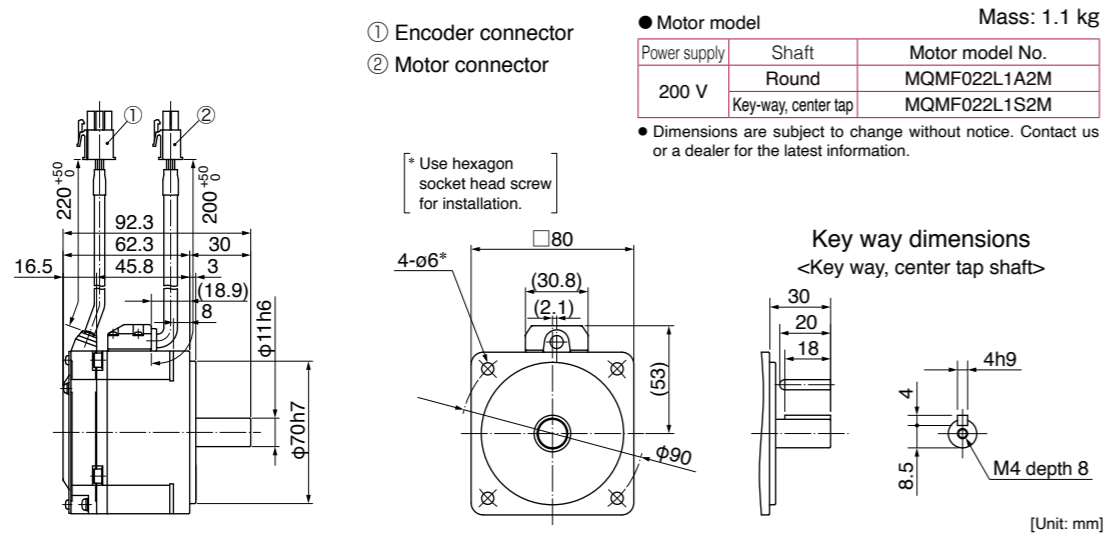
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



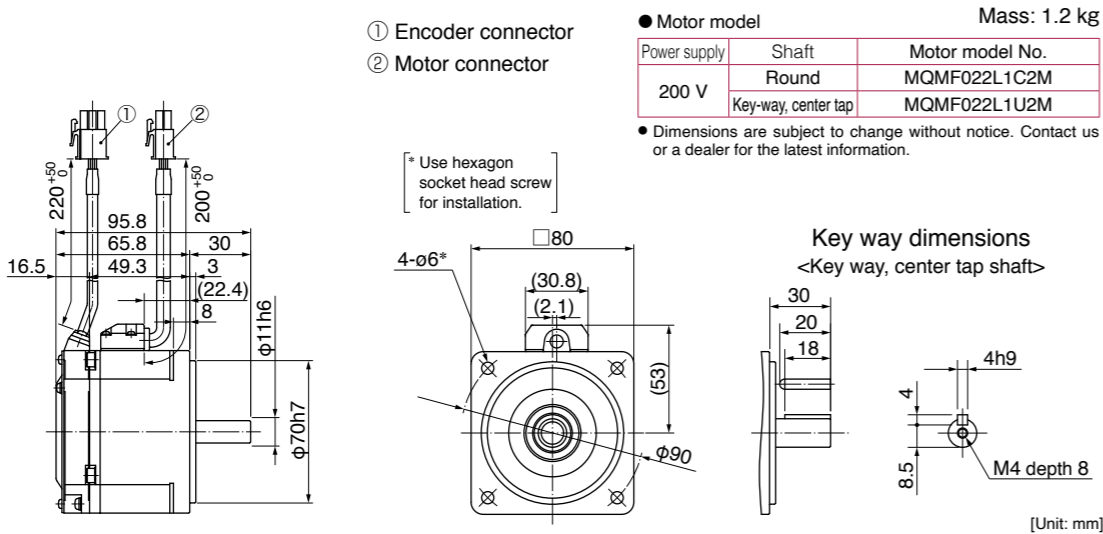
\* For motors specifications, refer to P.223.

MQMF 200 W

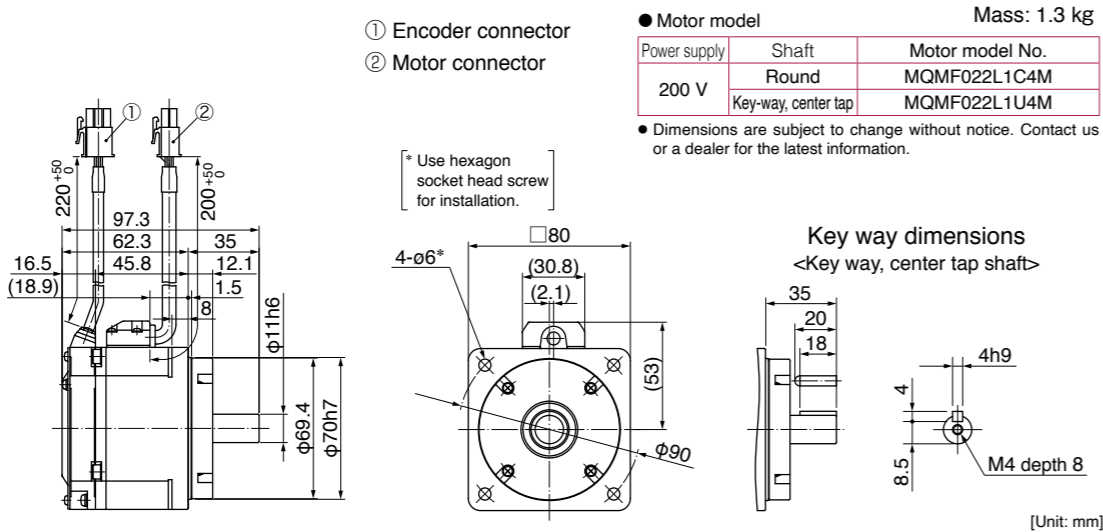
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



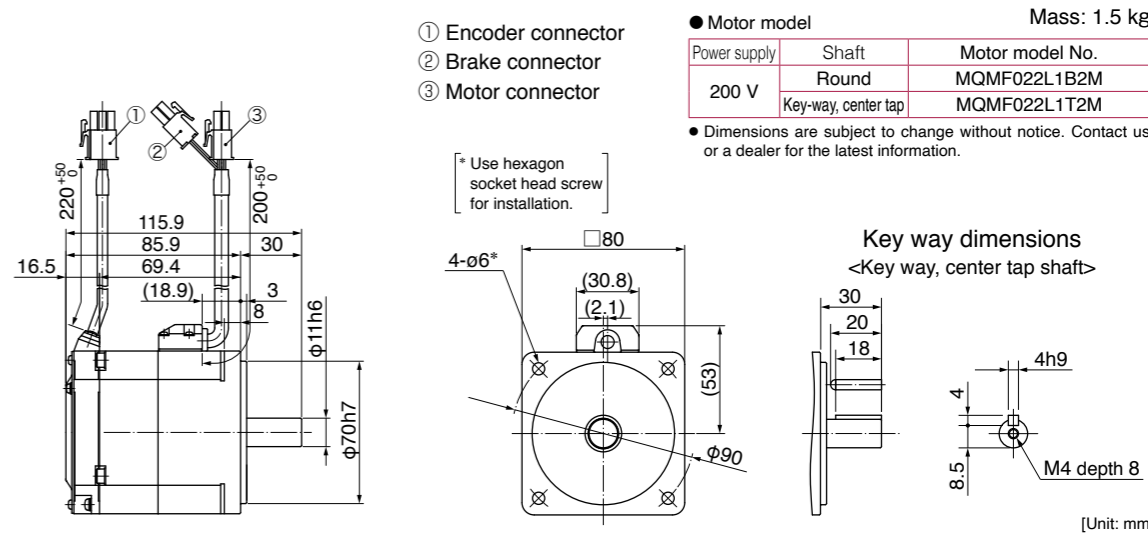
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



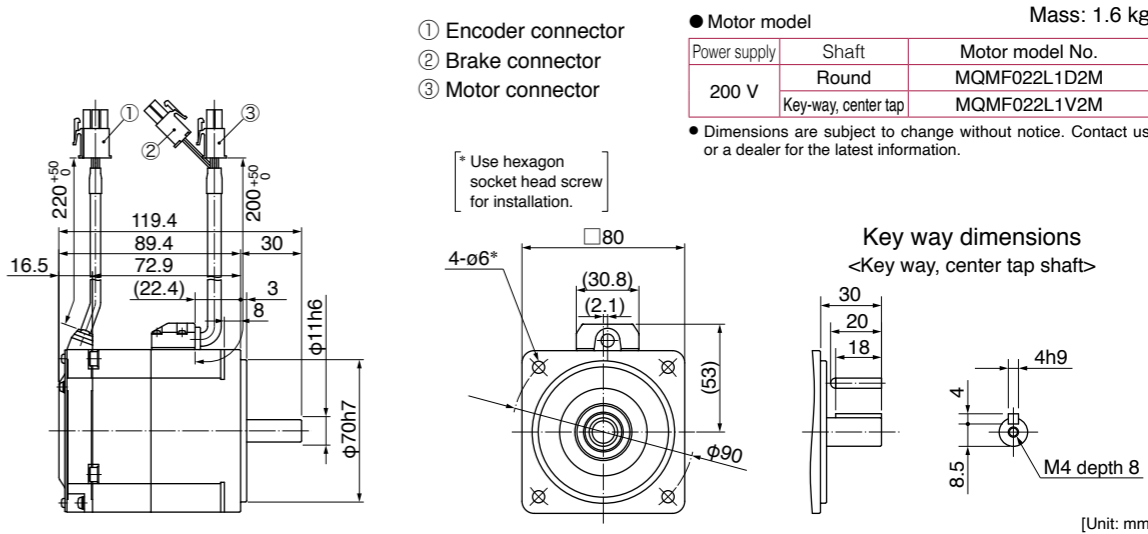
\* For motors specifications, refer to P.224.

MQMF 200 W

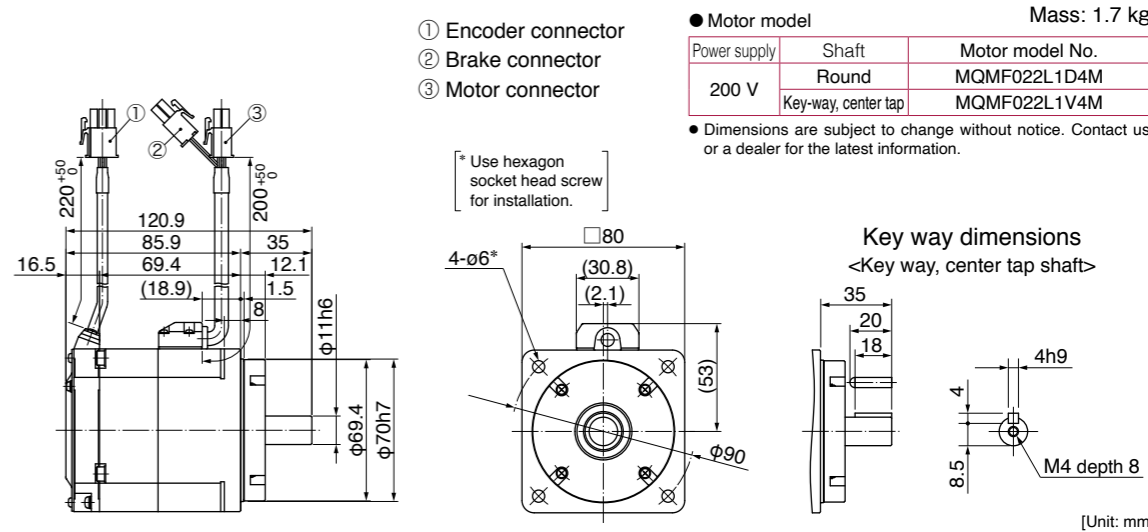
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



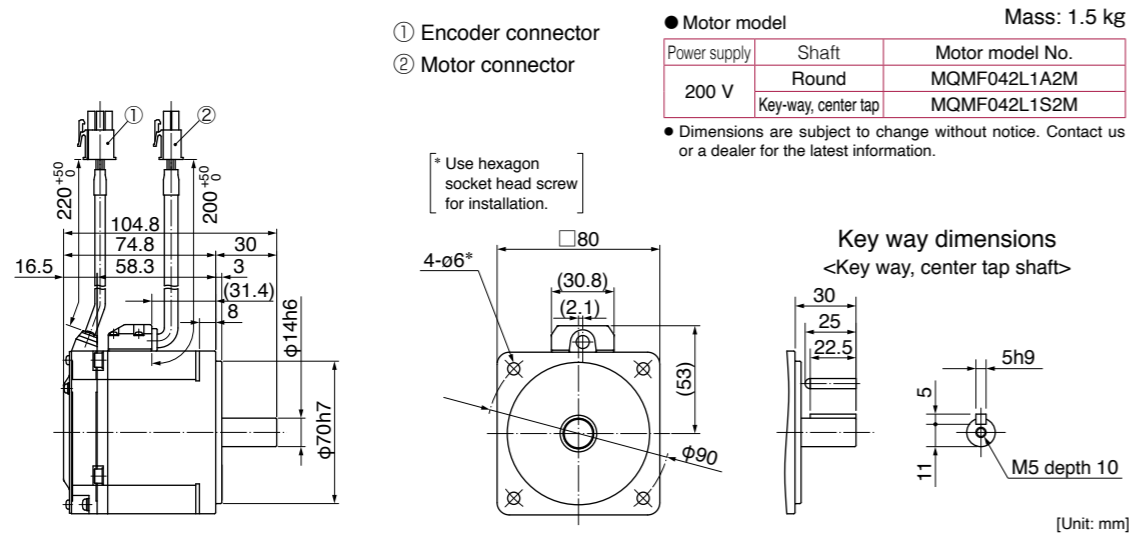
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



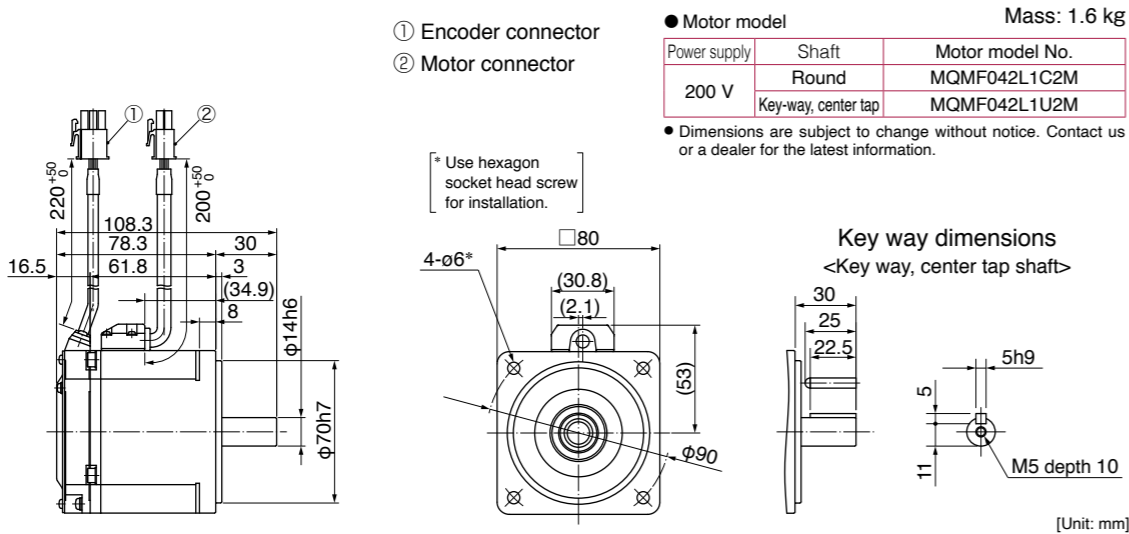
\* For motors specifications, refer to P.224.

**MQMF 400 W**

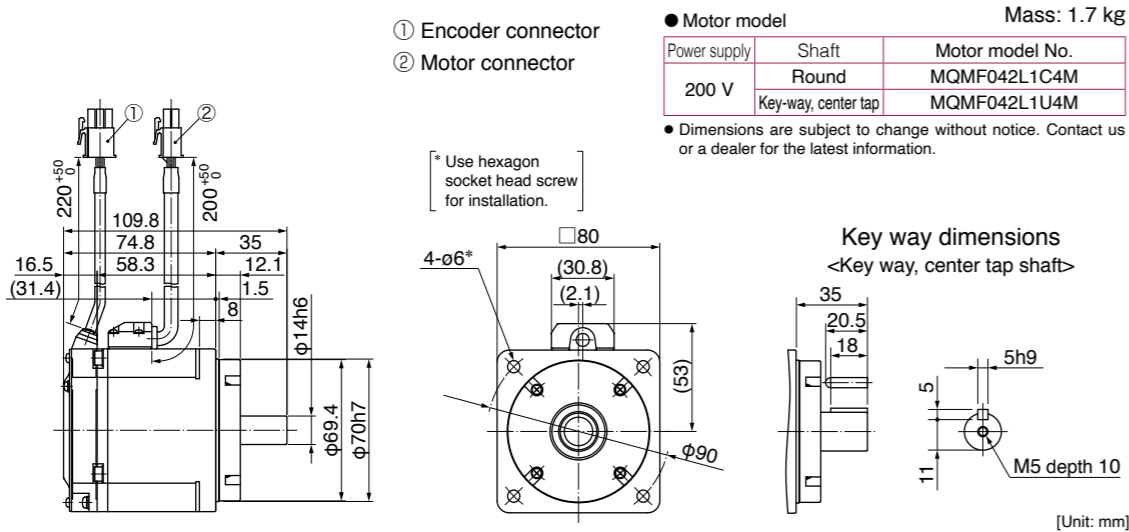
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



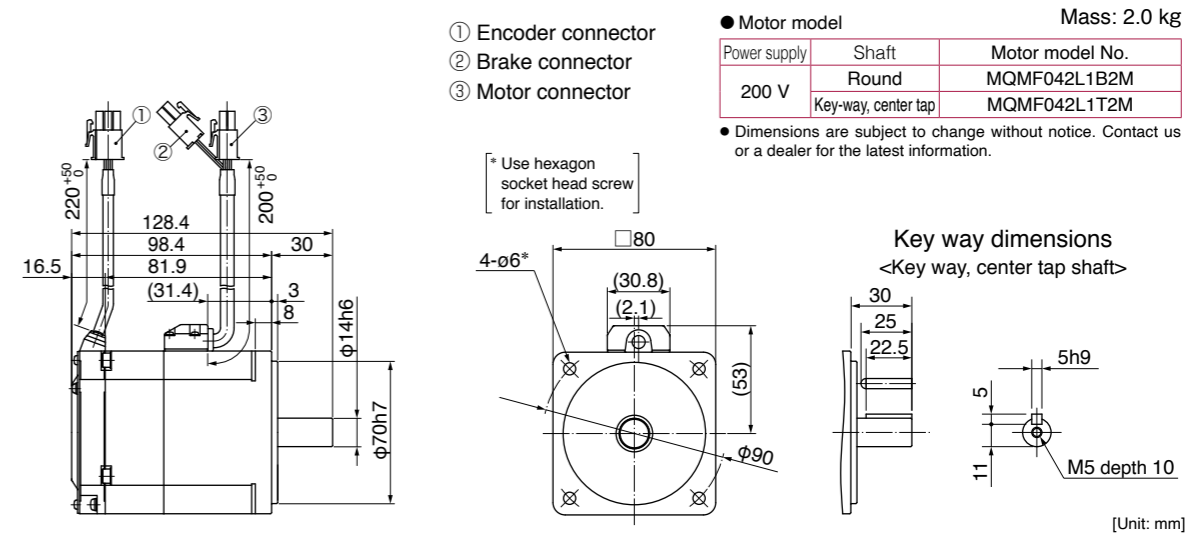
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



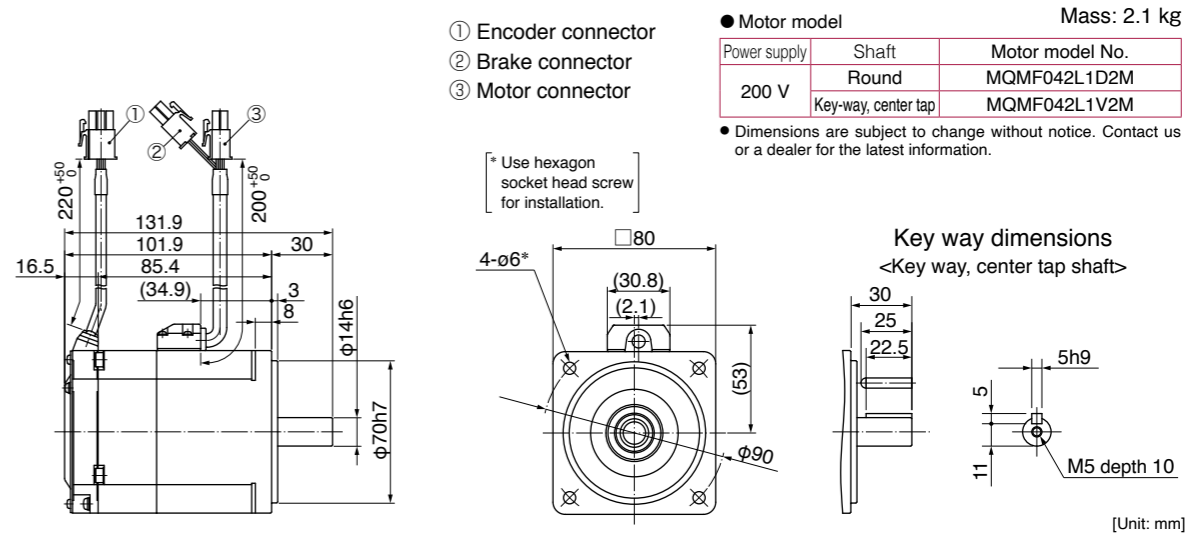
\* For motors specifications, refer to P.225.

**MQMF 400 W**

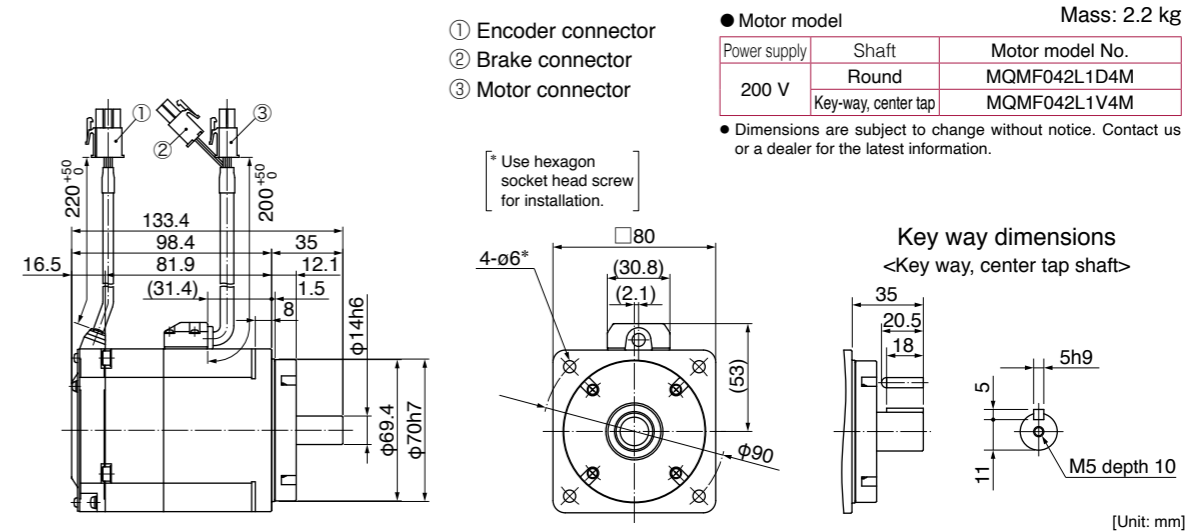
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



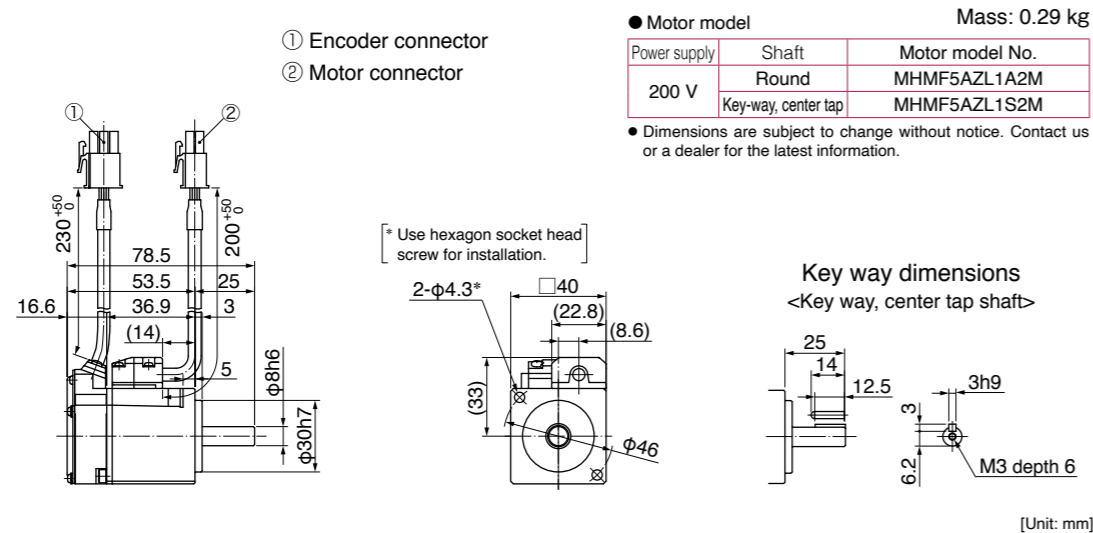
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



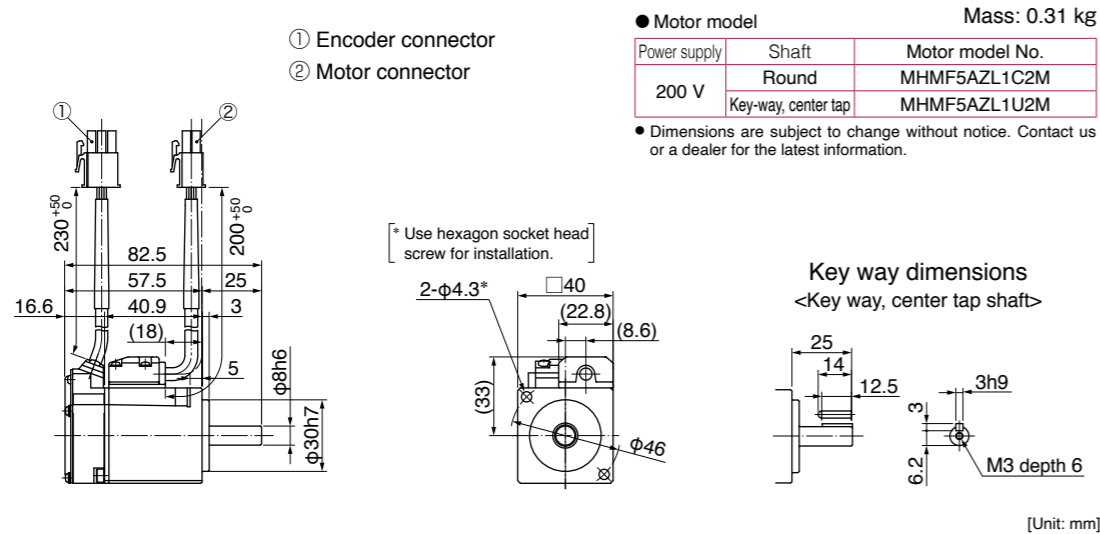
\* For motors specifications, refer to P.225.

**MHMF 50 W**

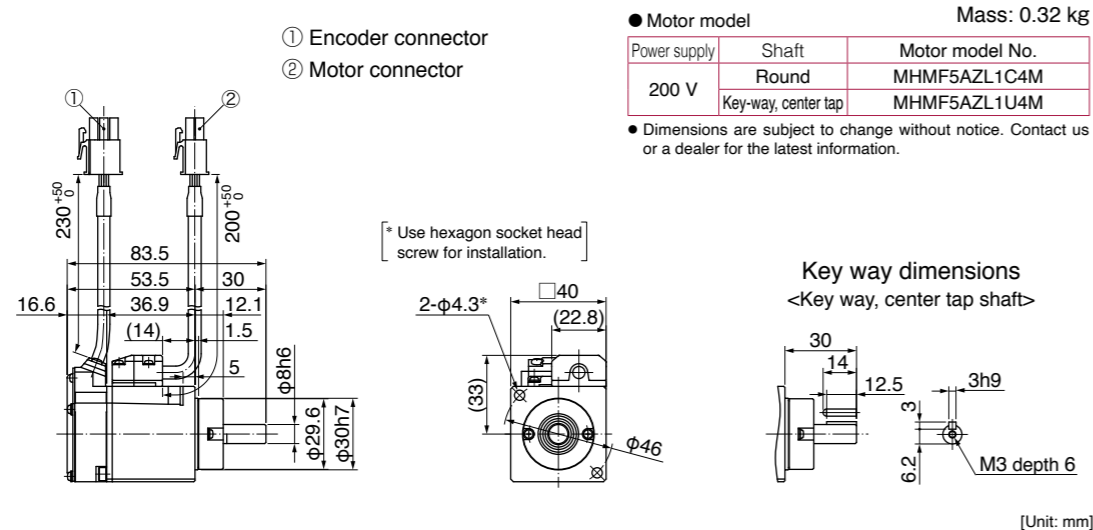
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



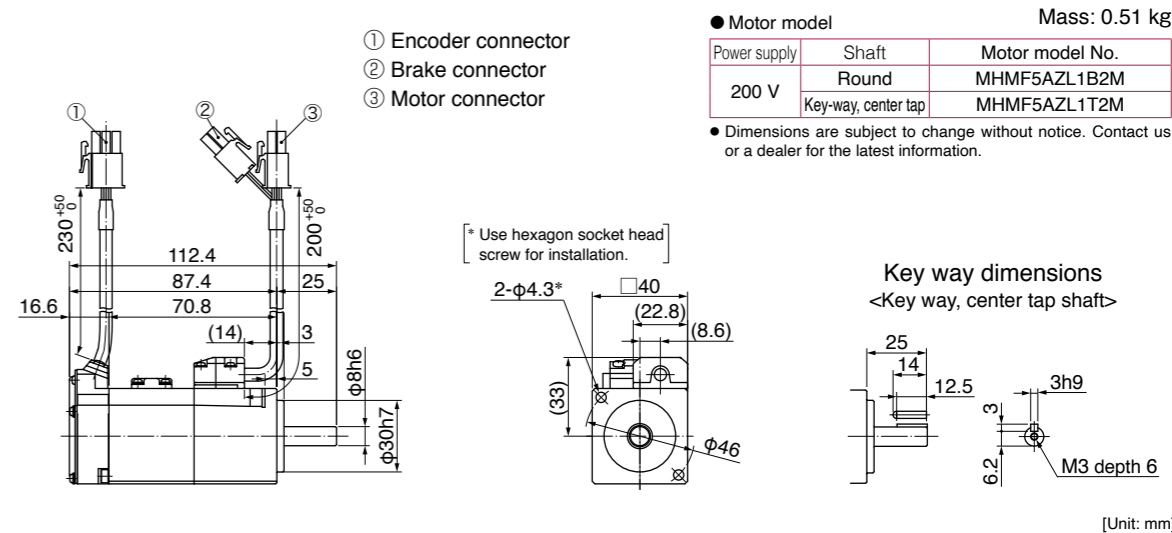
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



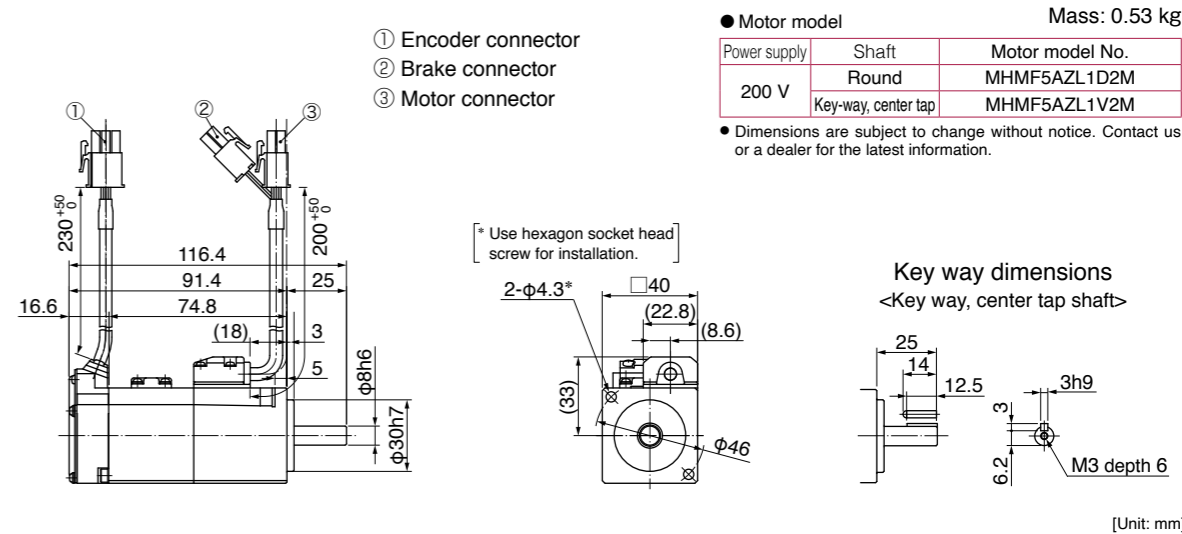
\* For motors specifications, refer to P.226.

**MHMF 50 W**

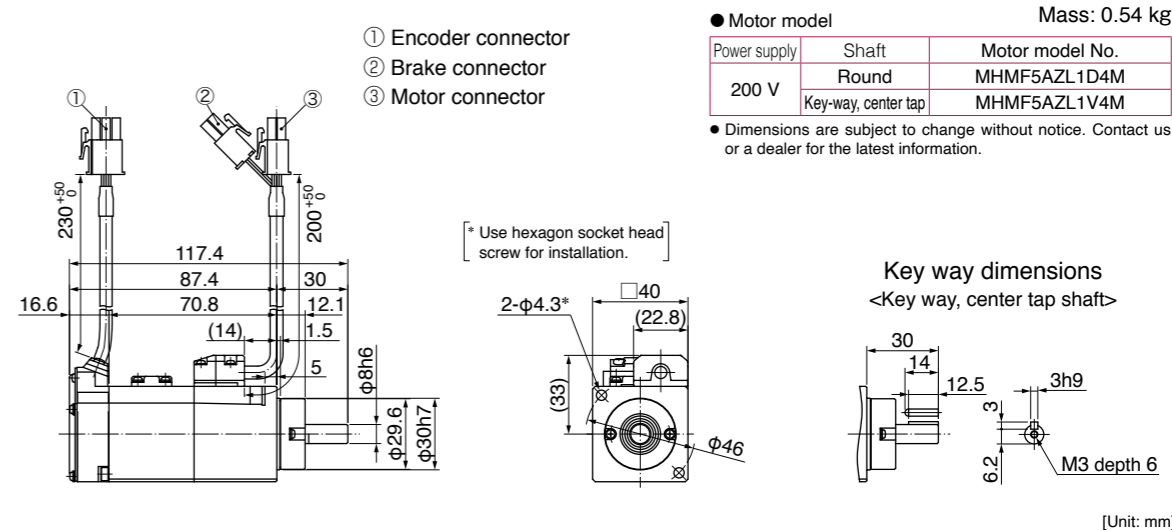
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



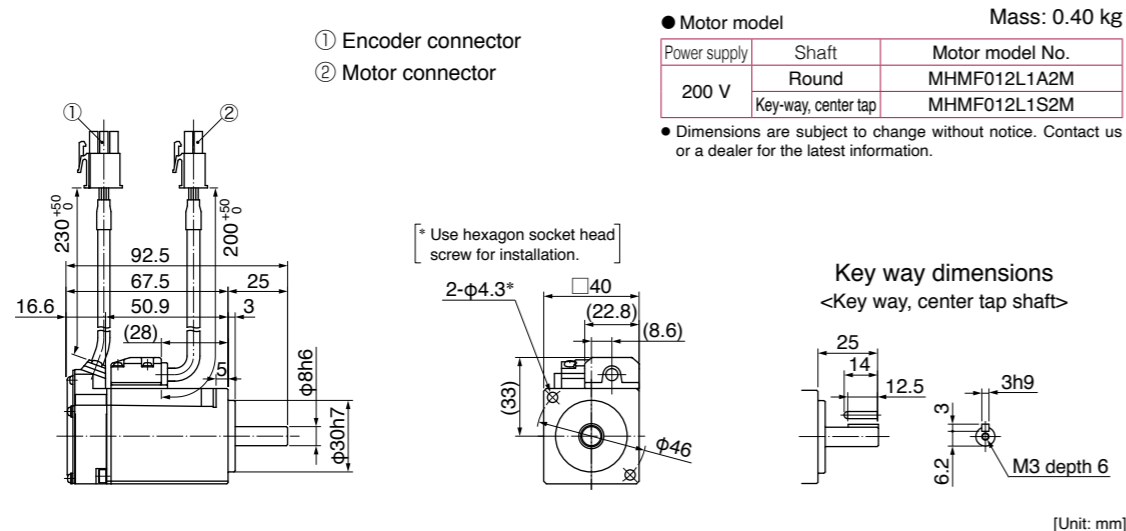
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



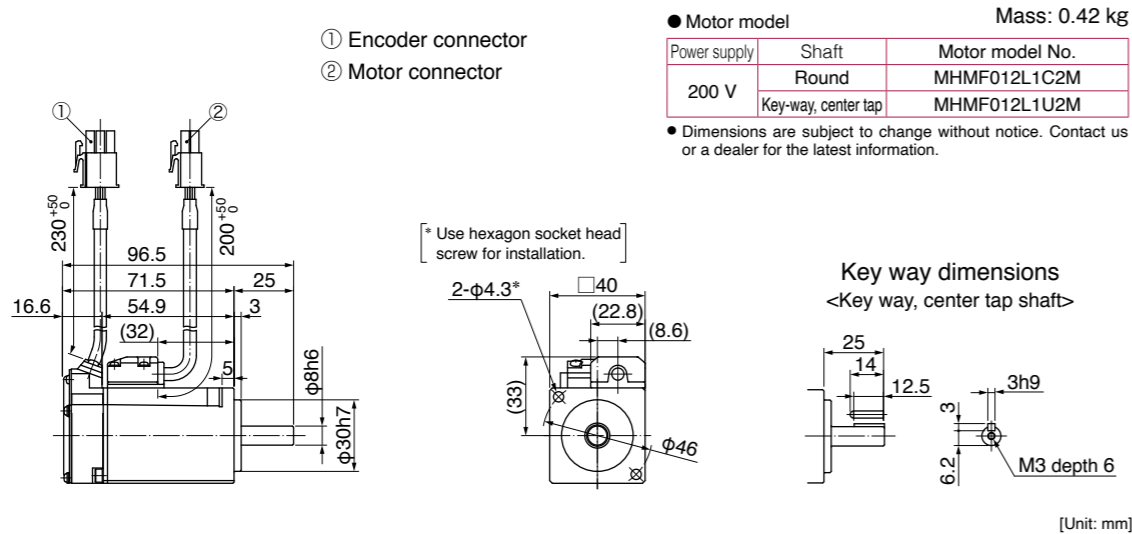
\* For motors specifications, refer to P.226.

**MHMF 100 W**

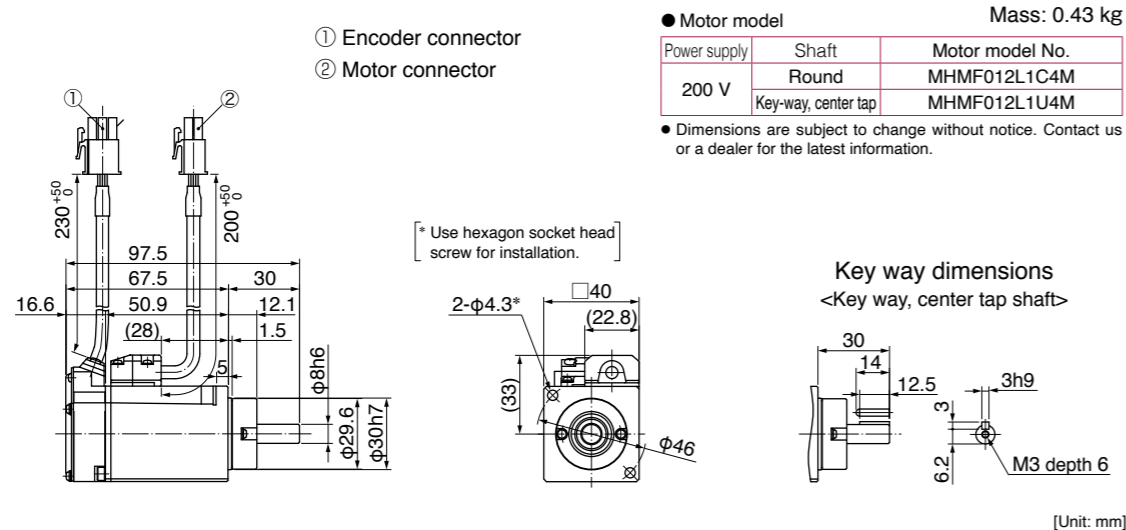
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



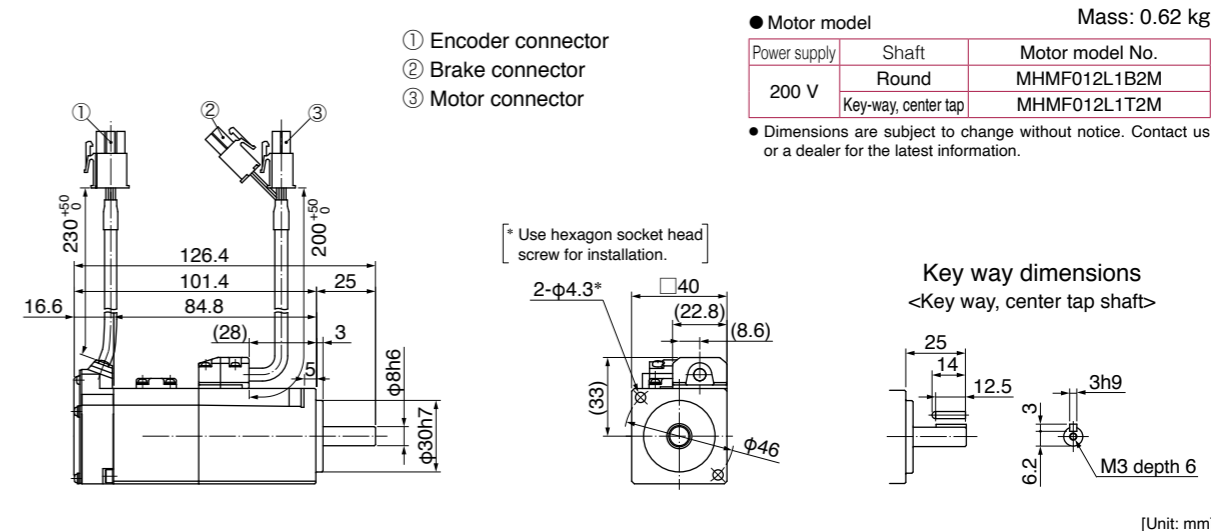
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



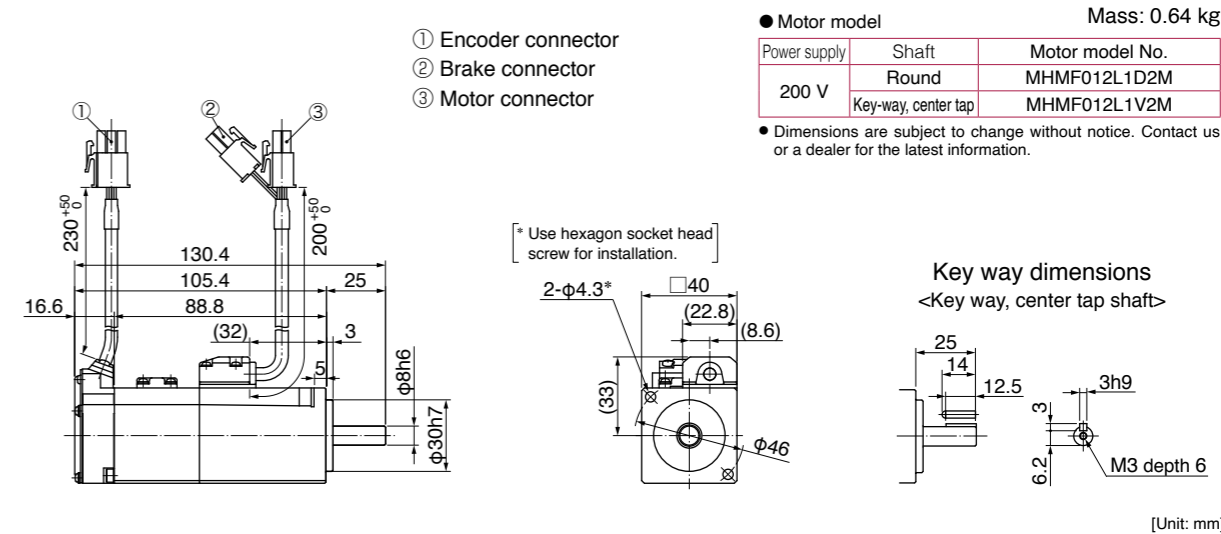
\* For motors specifications, refer to P.227.

**MHMF 100 W**

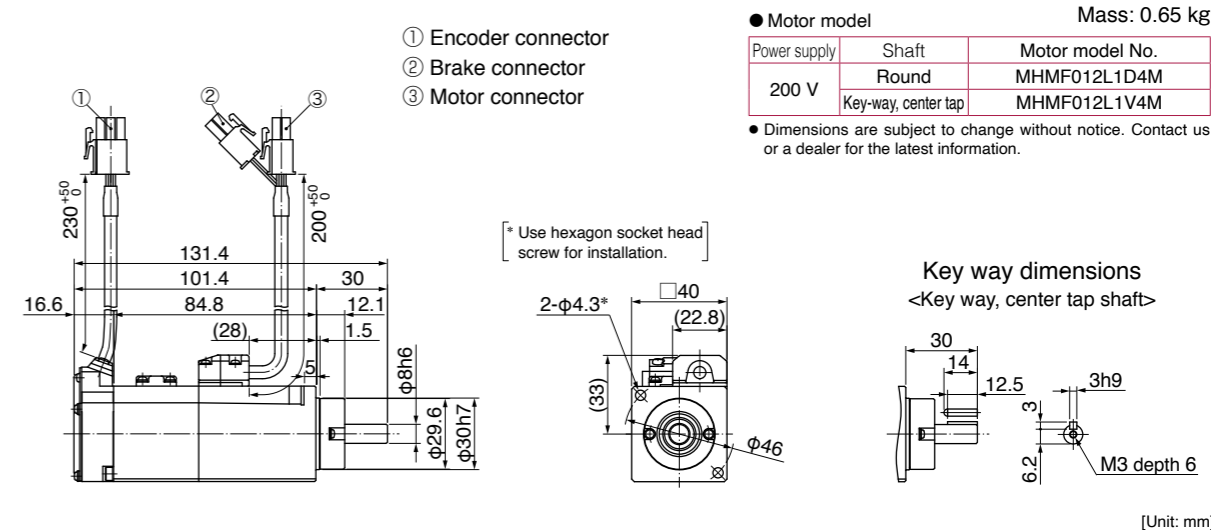
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft

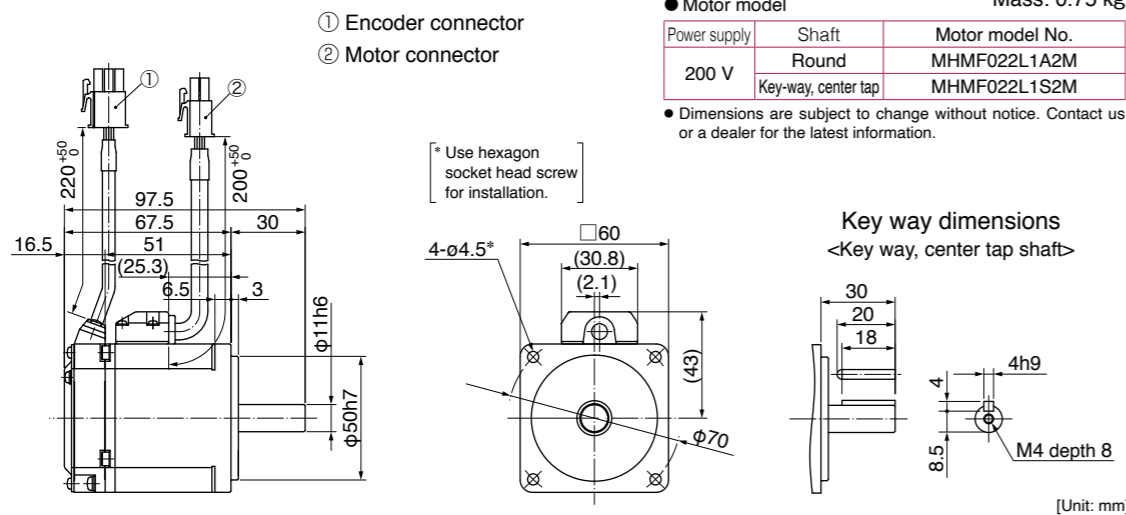


\* For motors specifications, refer to P.227.

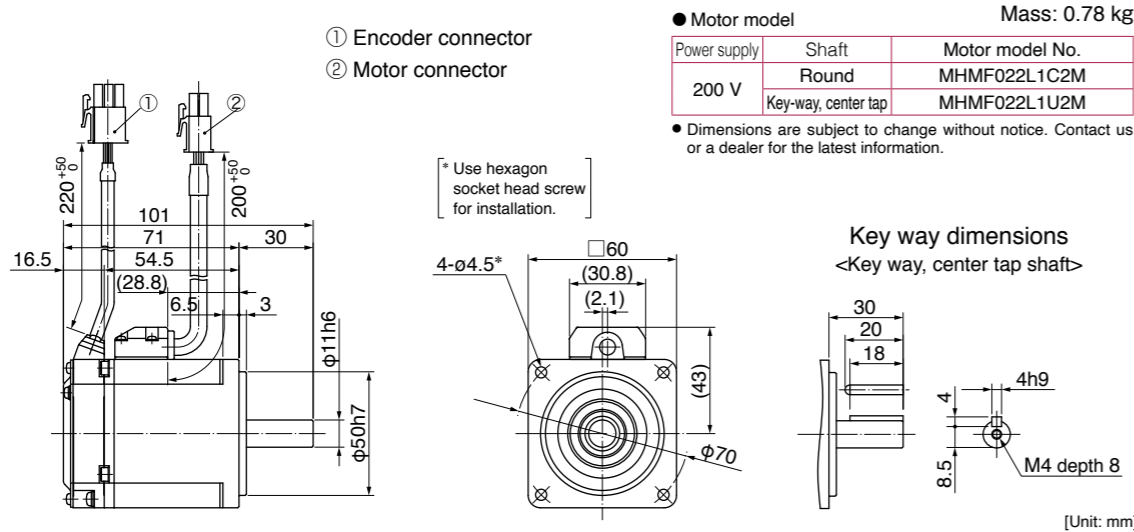


MHMF 200 W

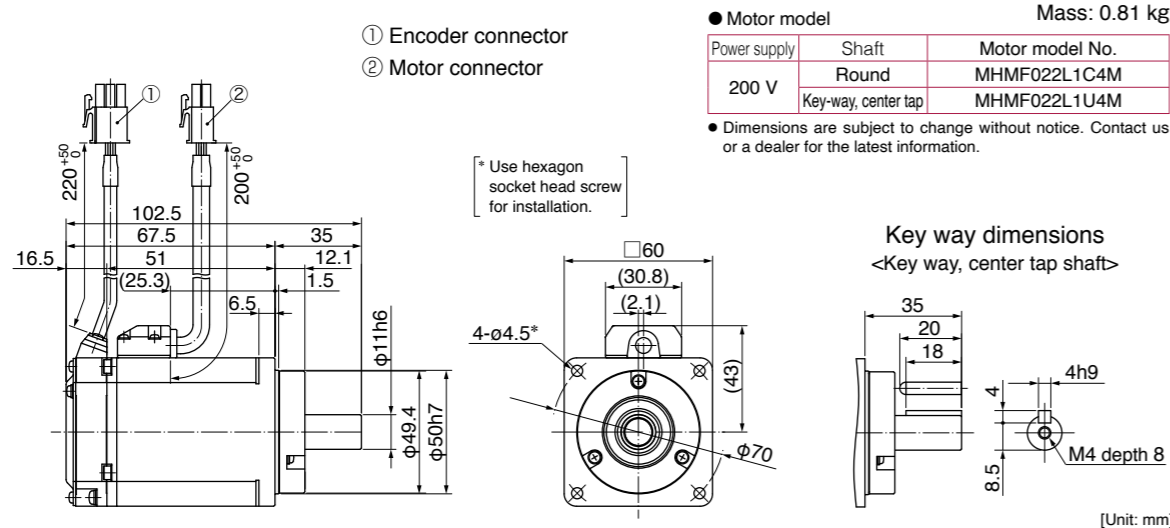
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



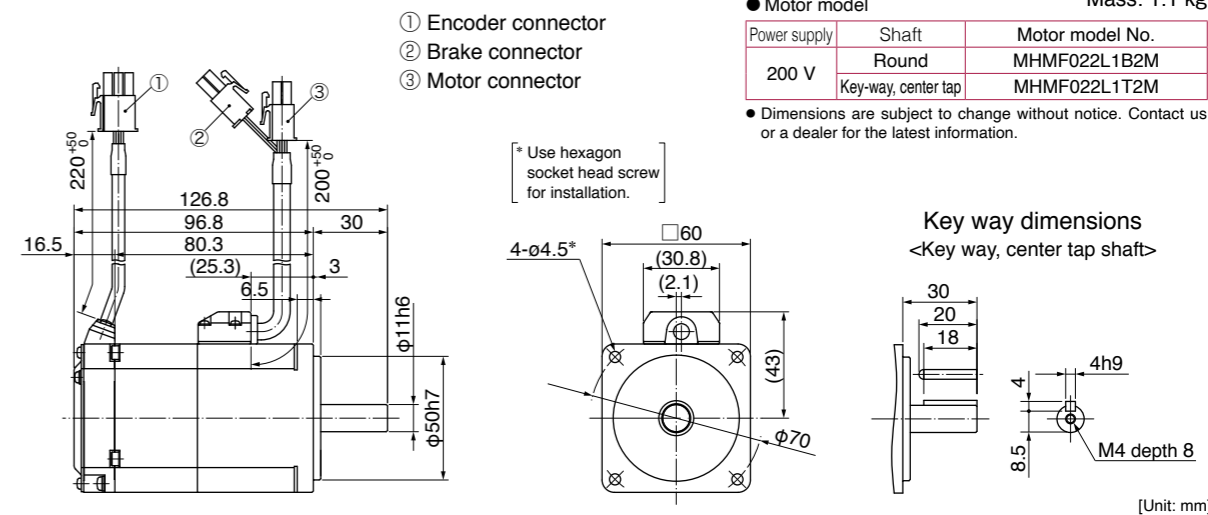
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



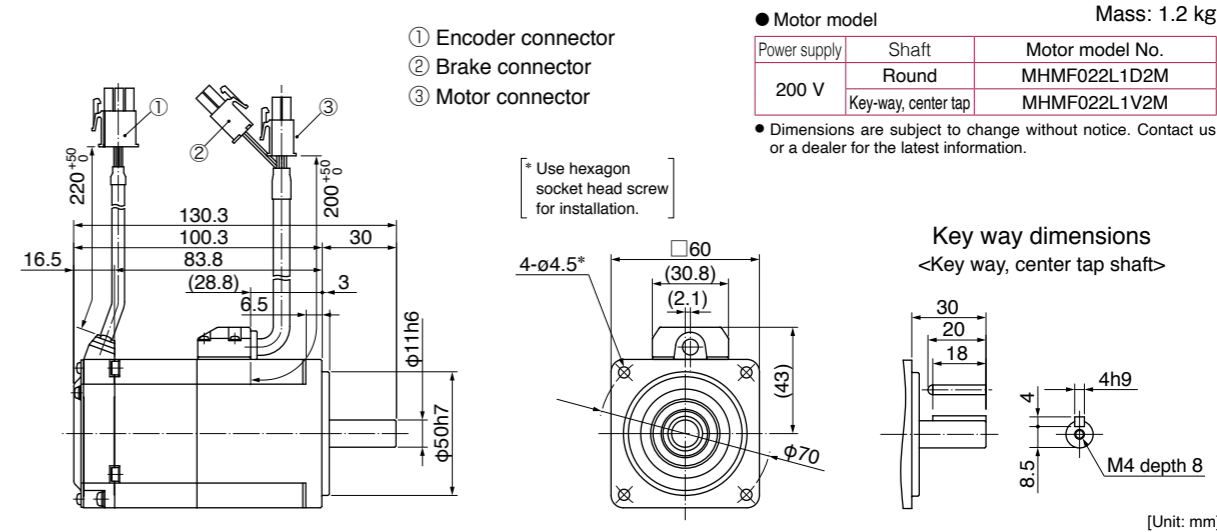
\* For motors specifications, refer to P.228.

MHMF 200 W

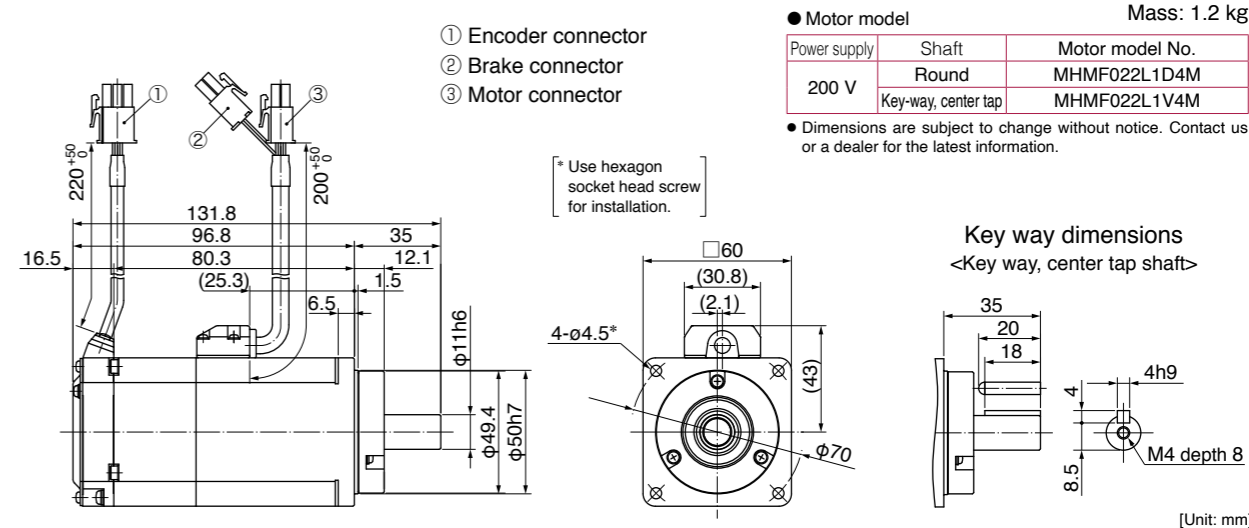
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



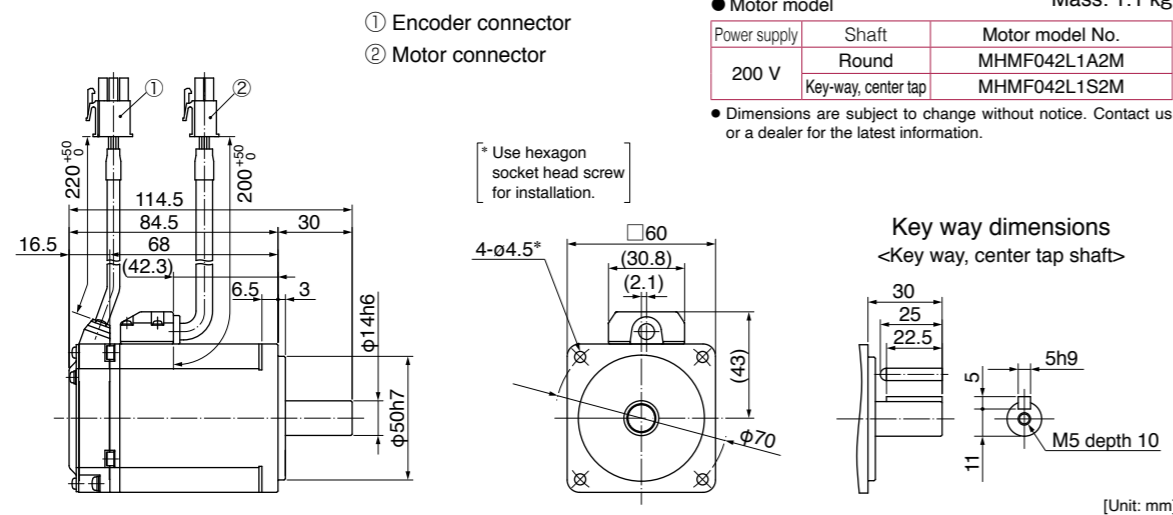
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



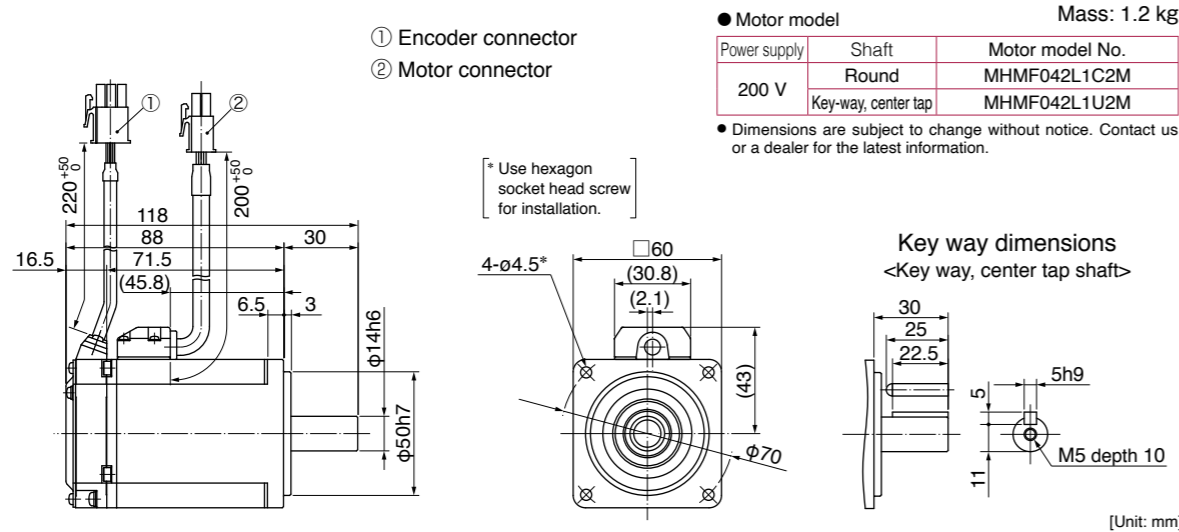
\* For motors specifications, refer to P.228.

MHMF 400 W

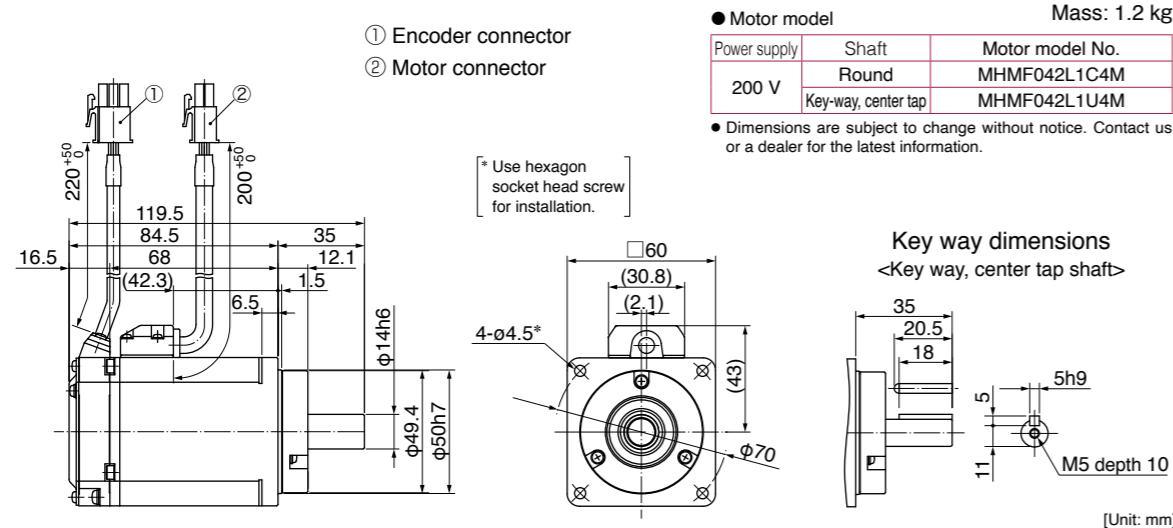
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



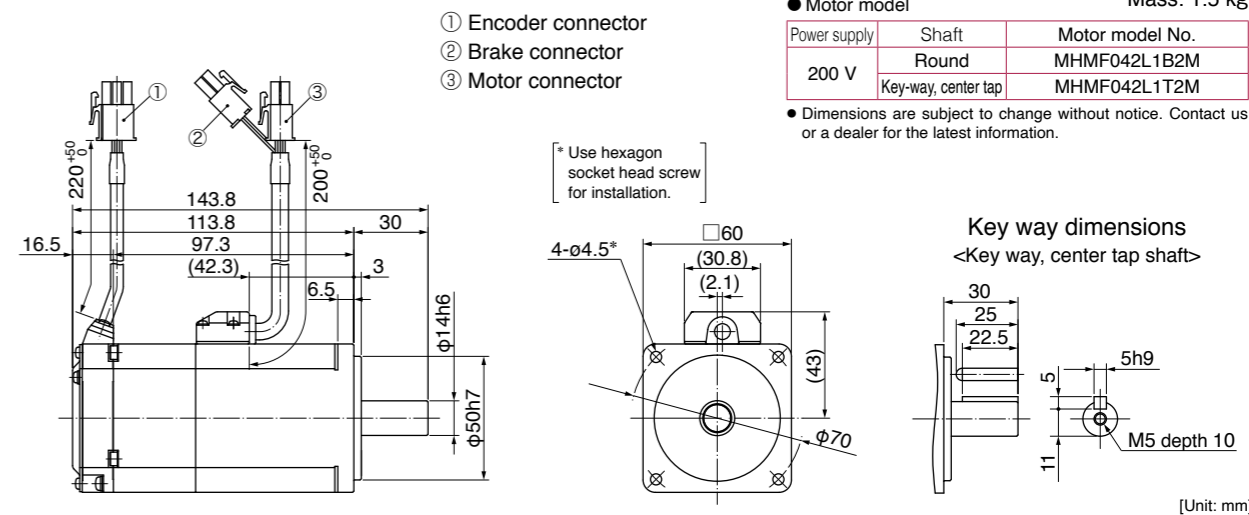
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



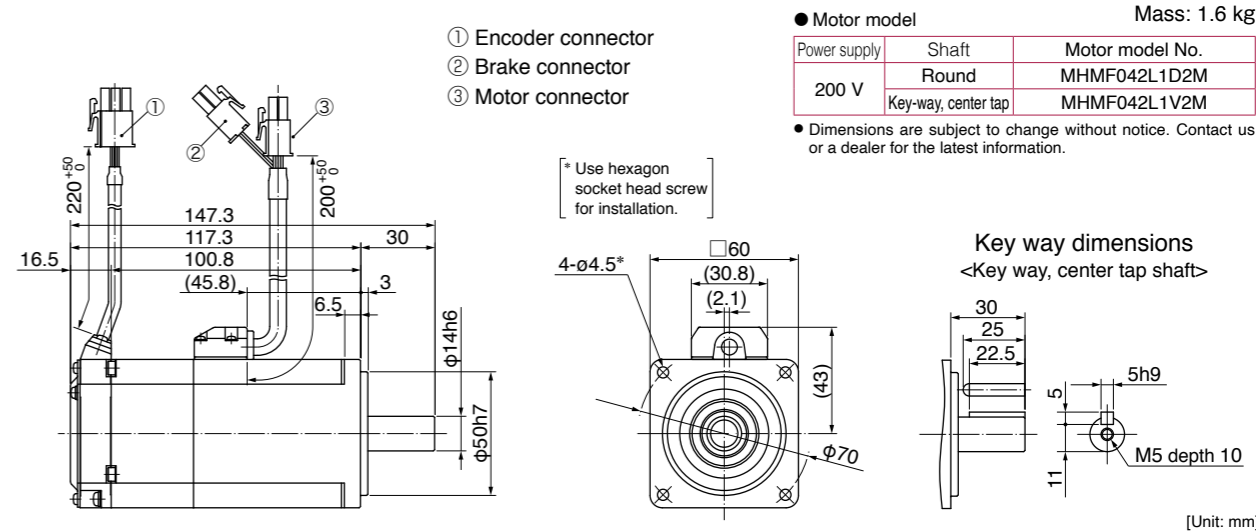
\* For motors specifications, refer to P.229.

MHMF 400 W

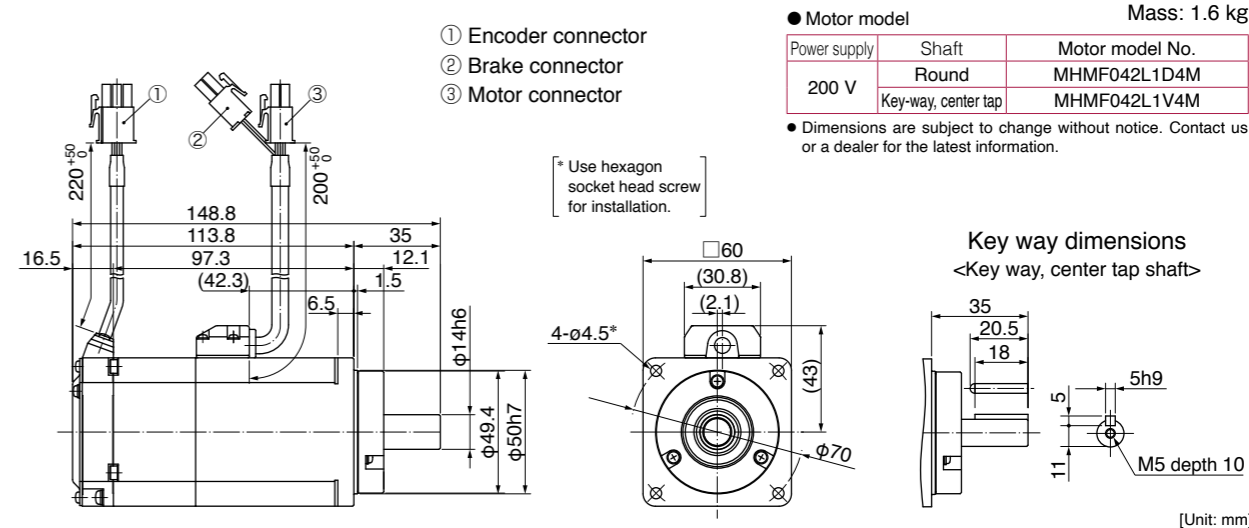
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



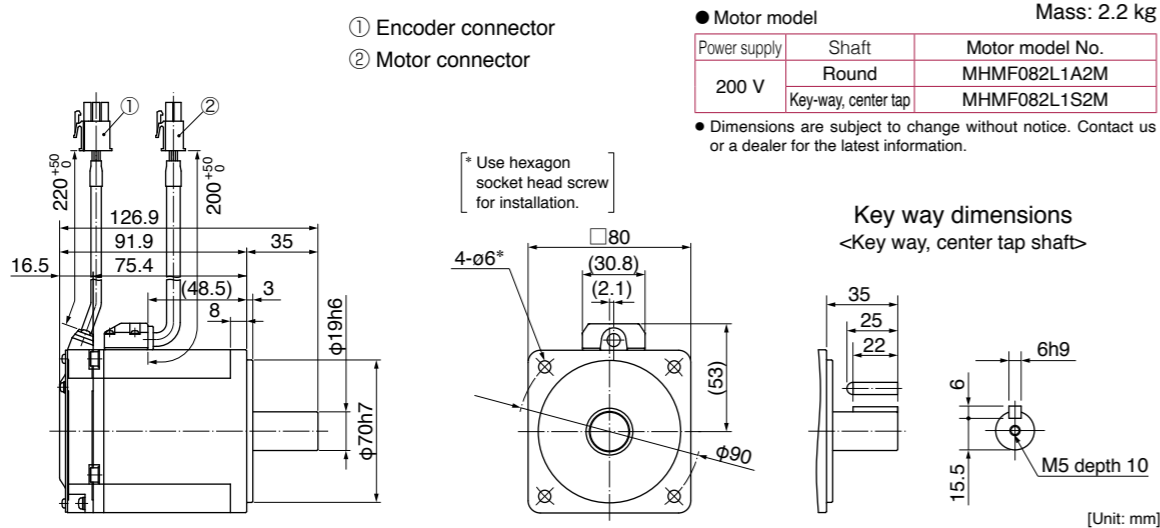
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



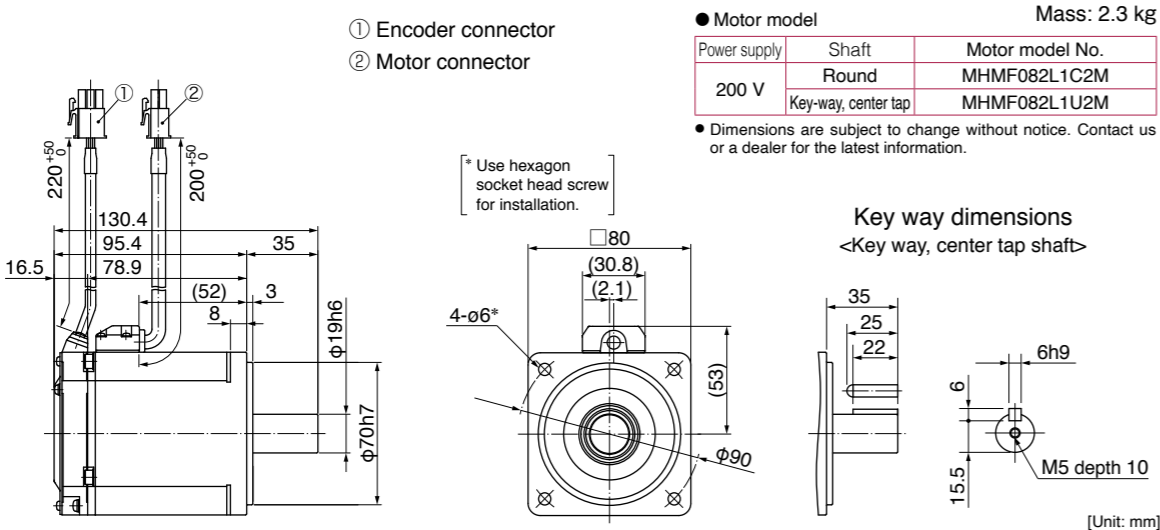
\* For motors specifications, refer to P.229.

**MHMF 750 W**

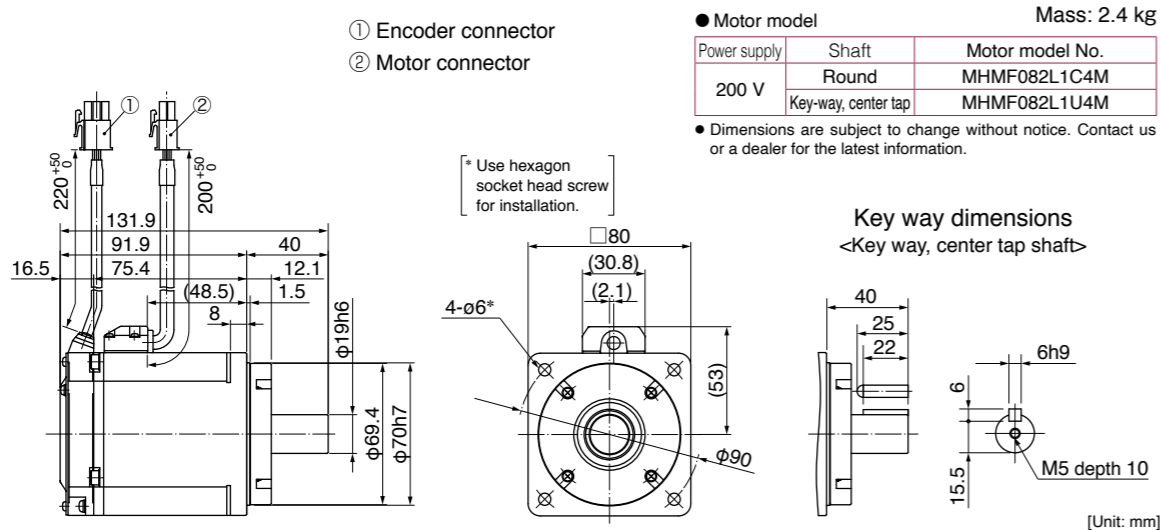
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



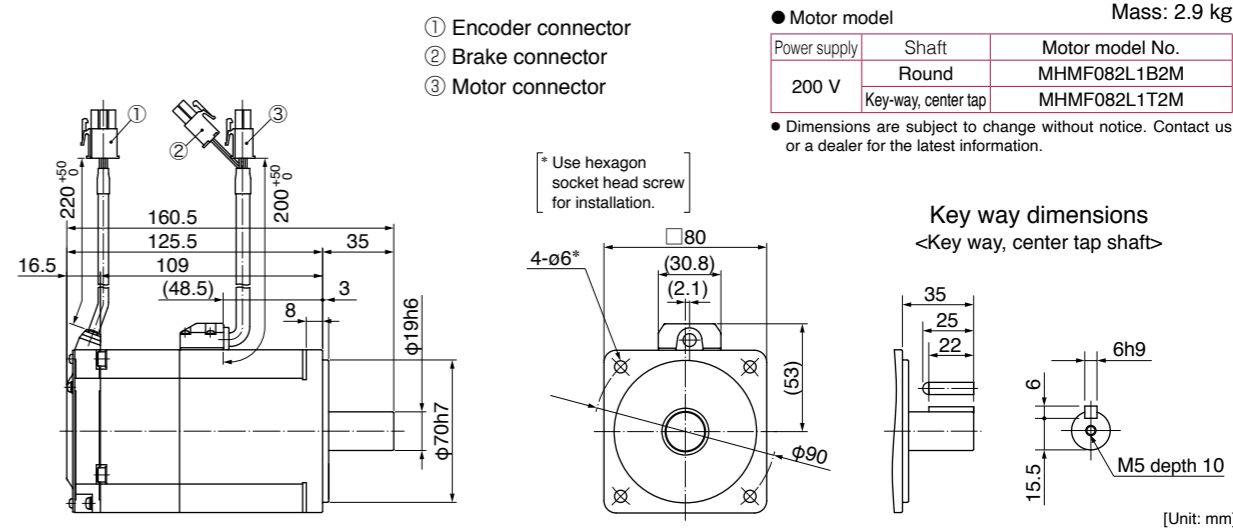
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



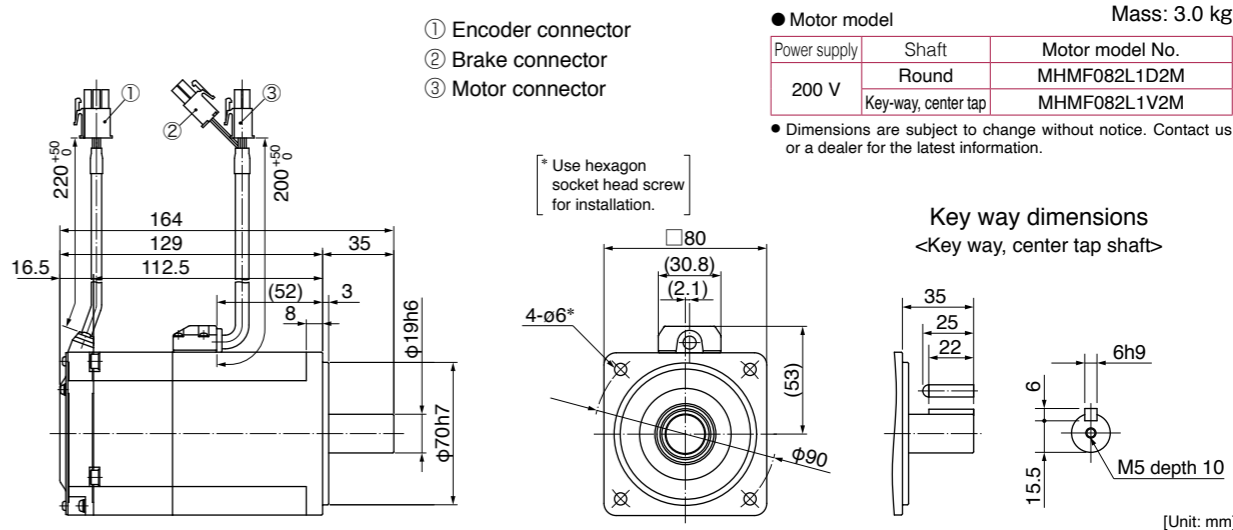
\* For motors specifications, refer to P.230.

**MHMF 750 W**

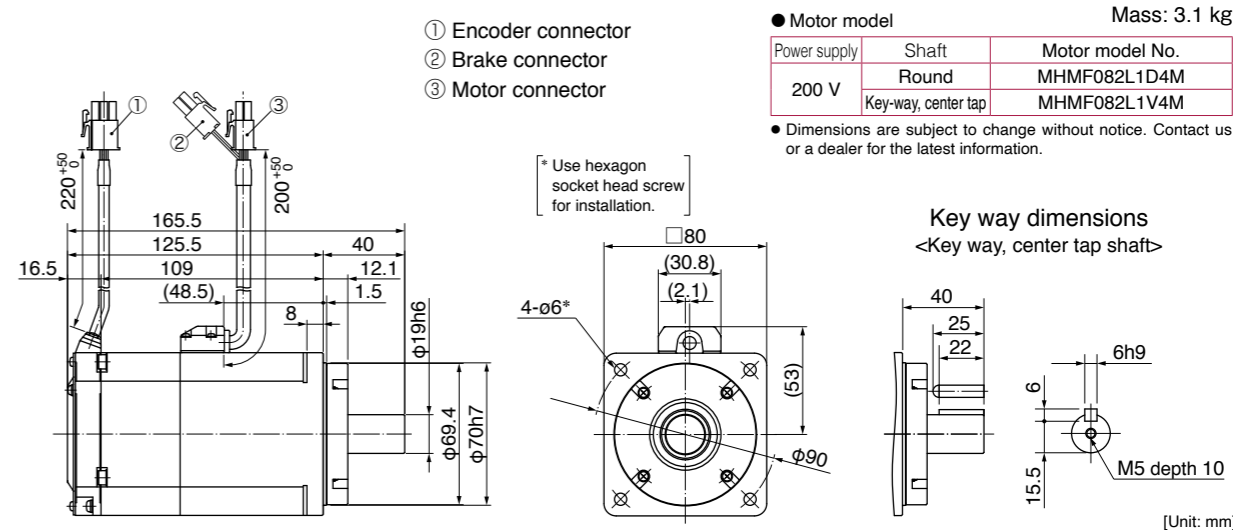
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



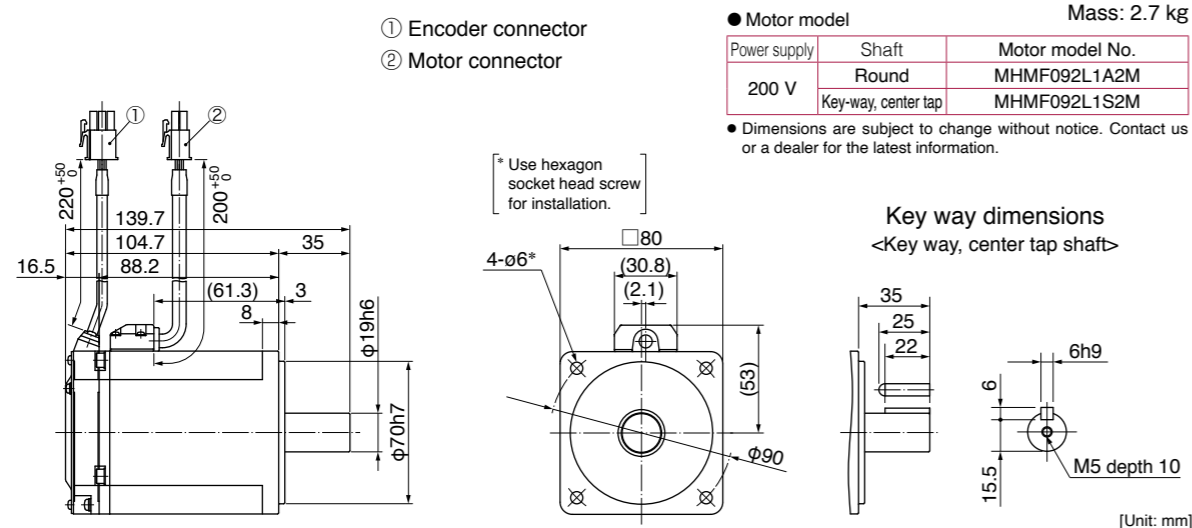
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



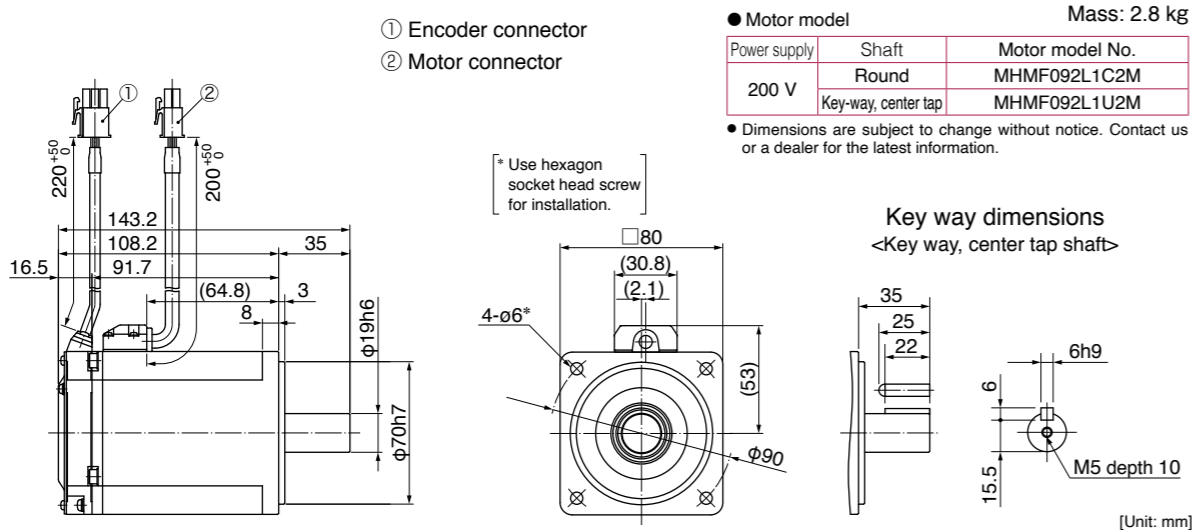
\* For motors specifications, refer to P.230.

**MHMF 1000 W**

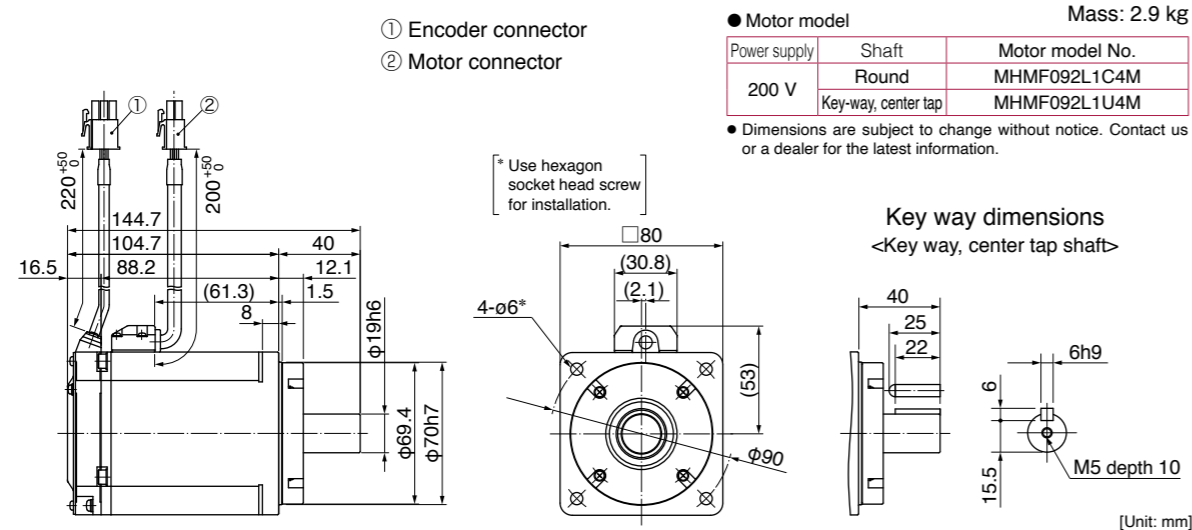
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



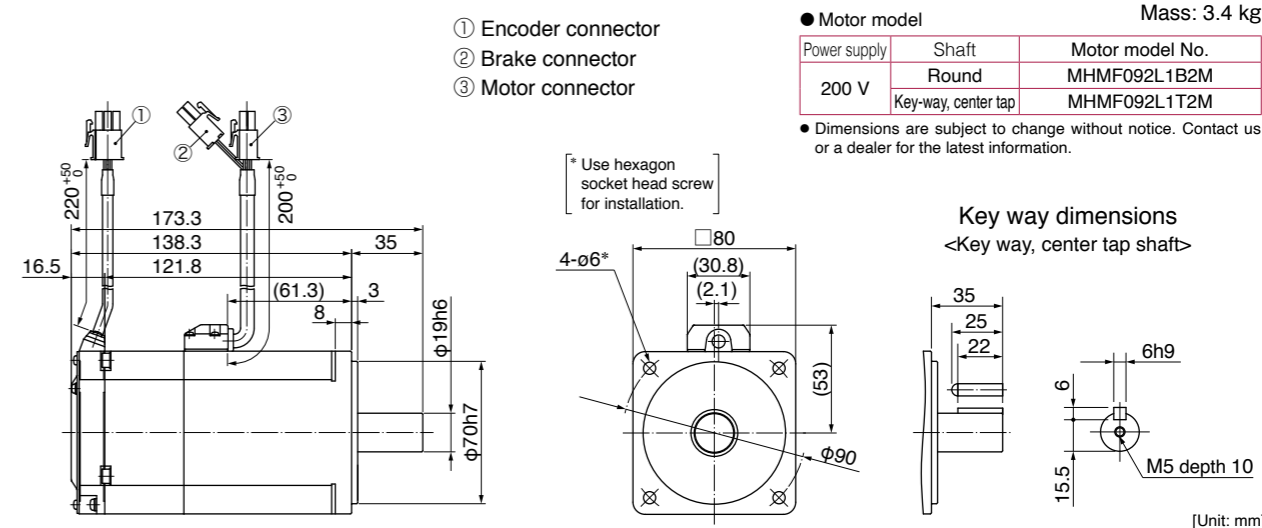
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



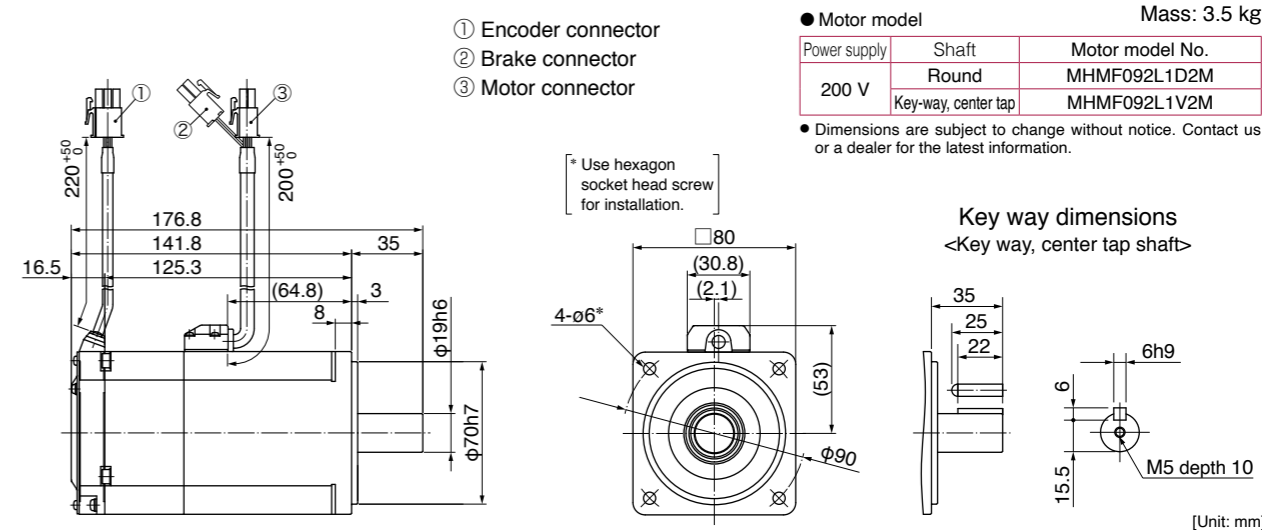
\* For motors specifications, refer to P.231.

**MHMF 1000 W**

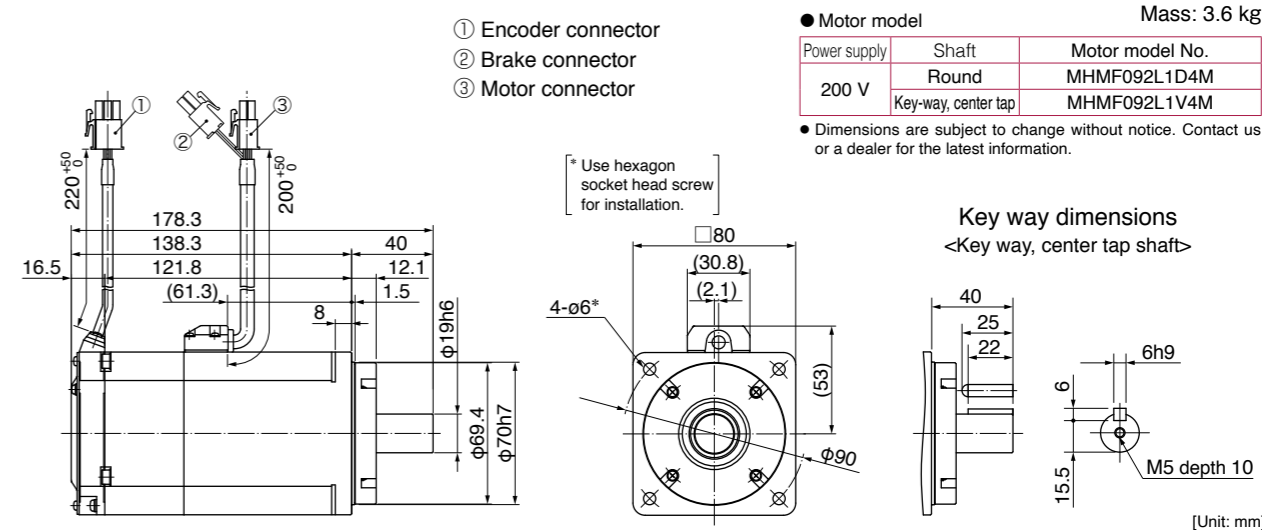
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



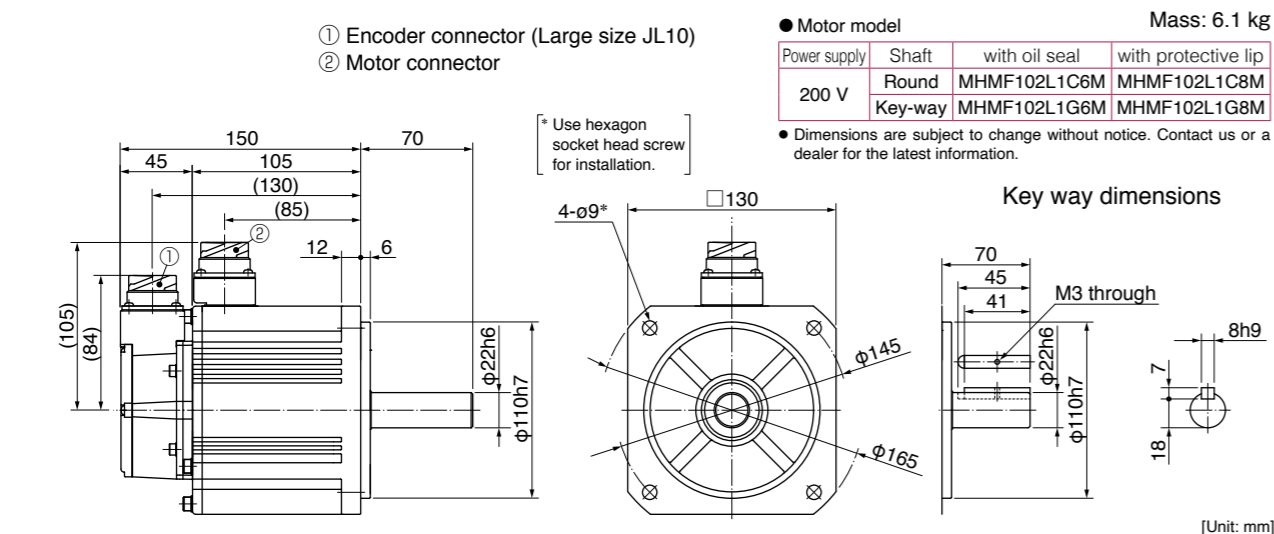
Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



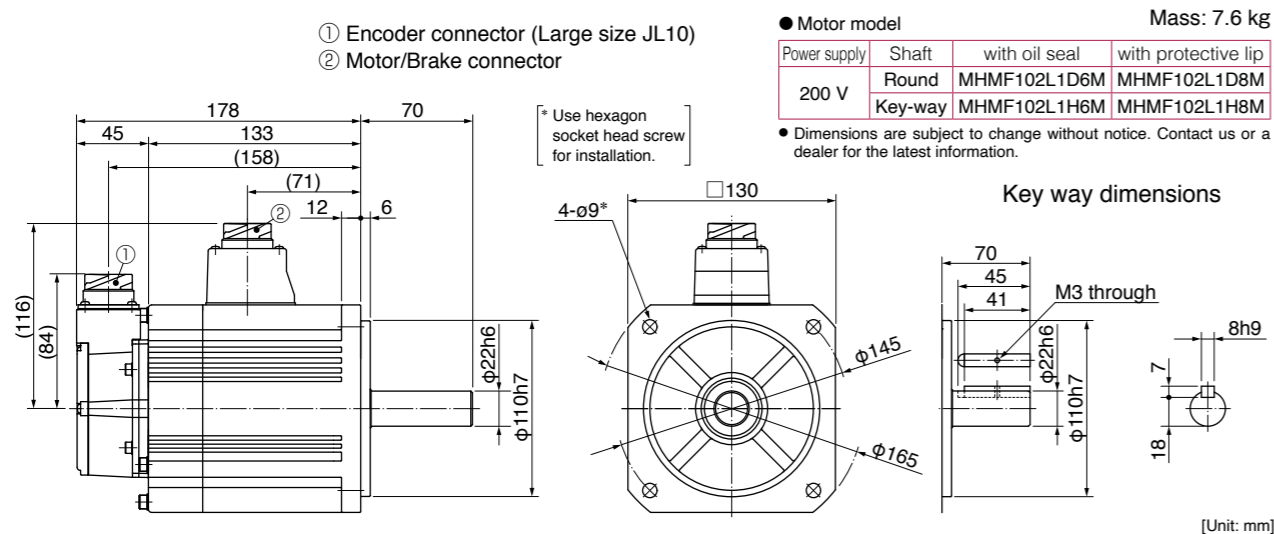
\* For motors specifications, refer to P.231.

MHMF 1.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

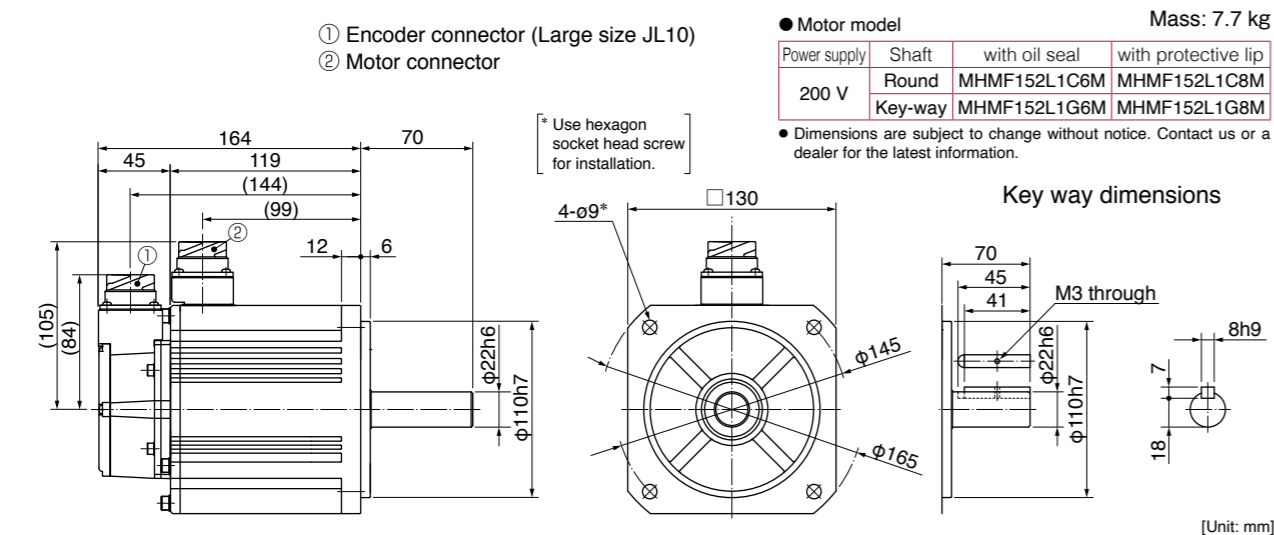


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MHMF 1.5 kW

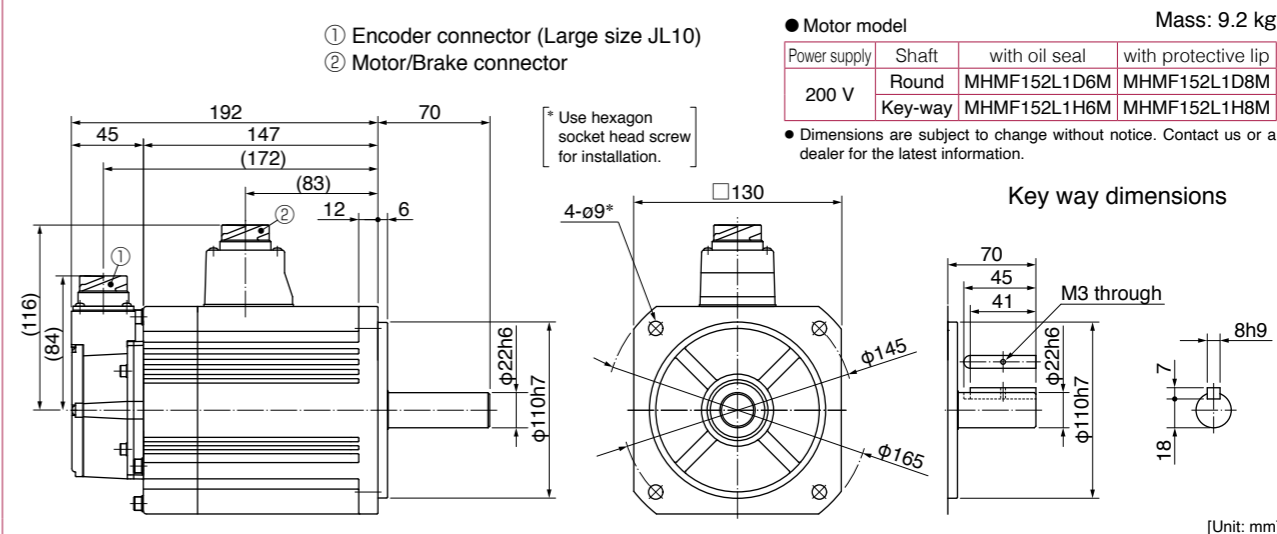
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P232, P233.

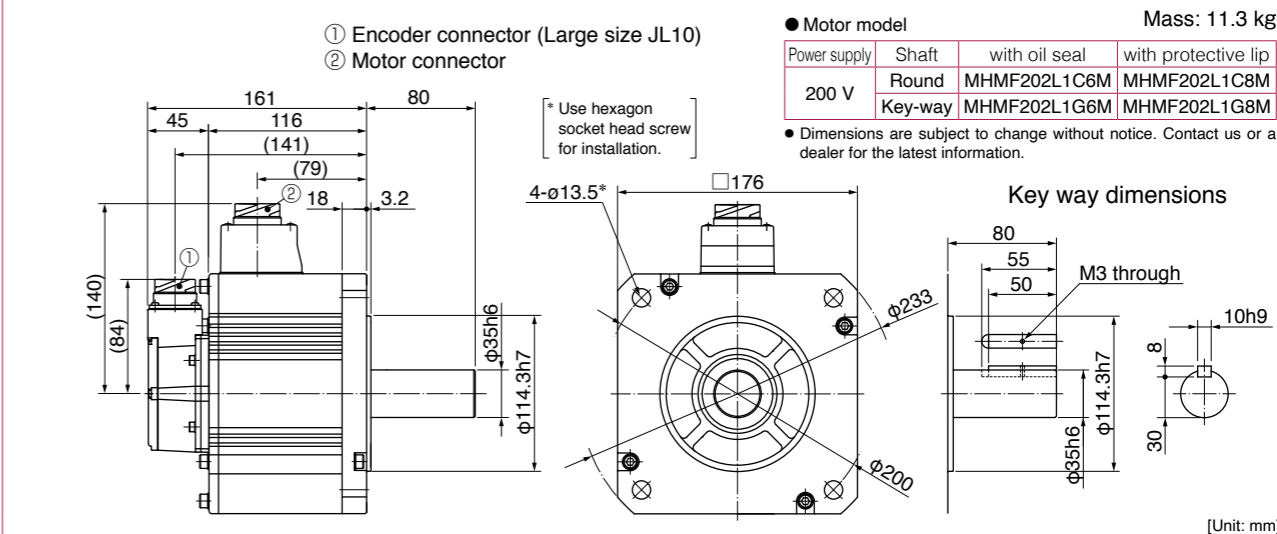
MHMF 1.5 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

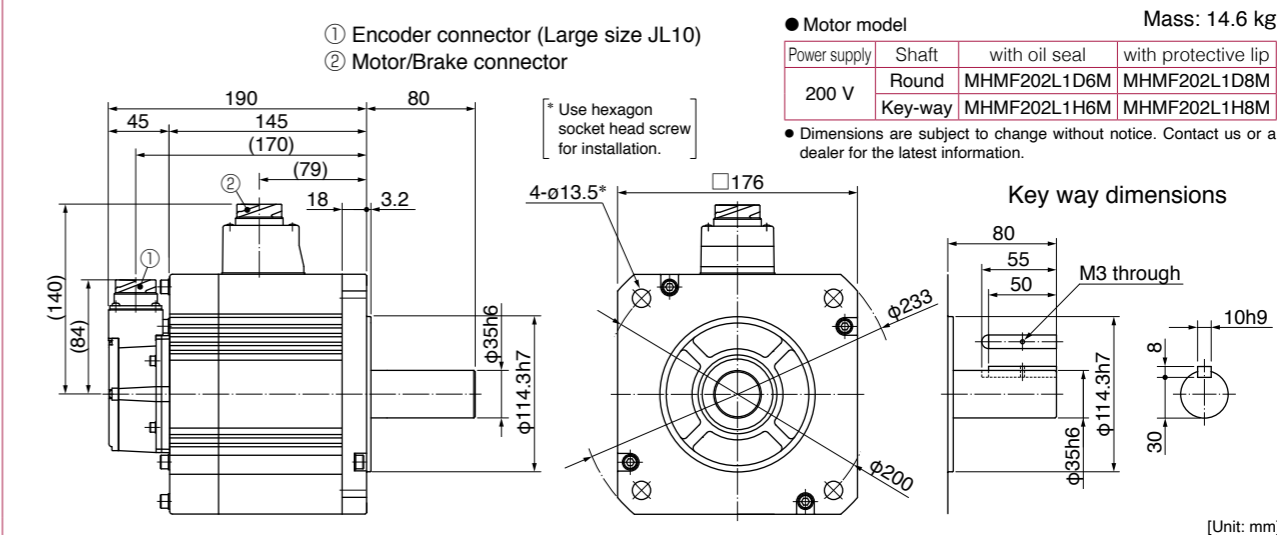


MHMF 2.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



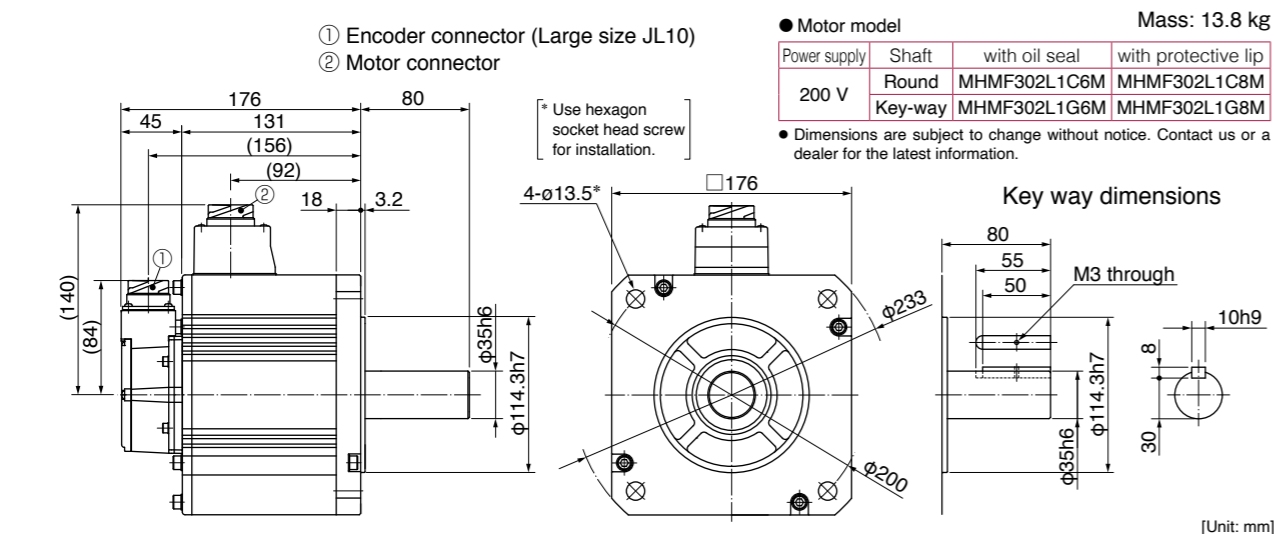
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



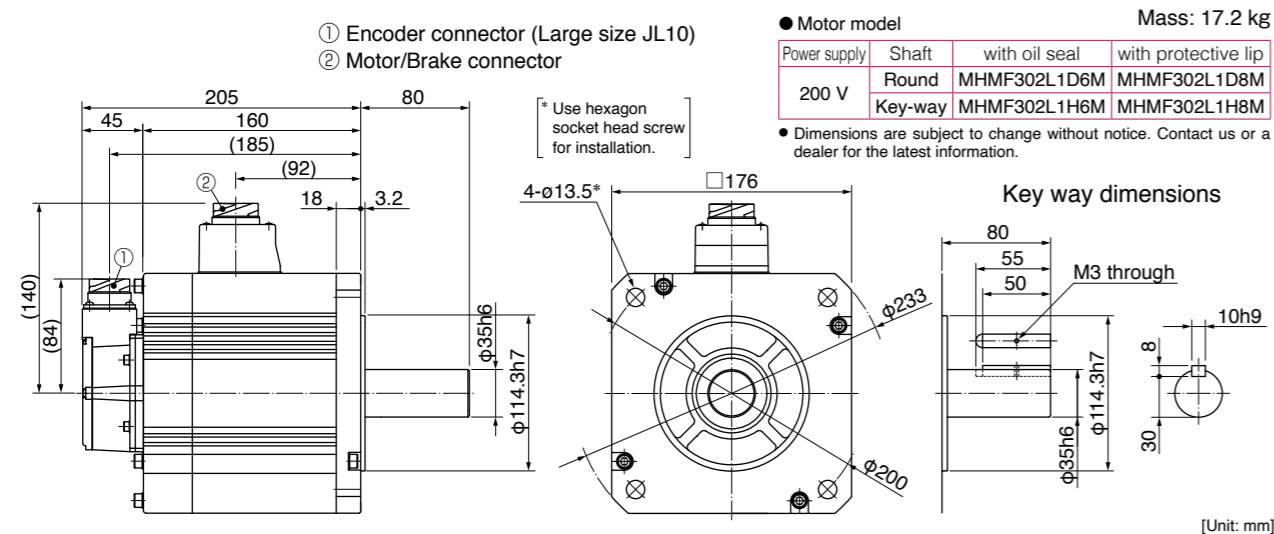
\* For motors specifications, refer to P233, P234.

MHMF 3.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

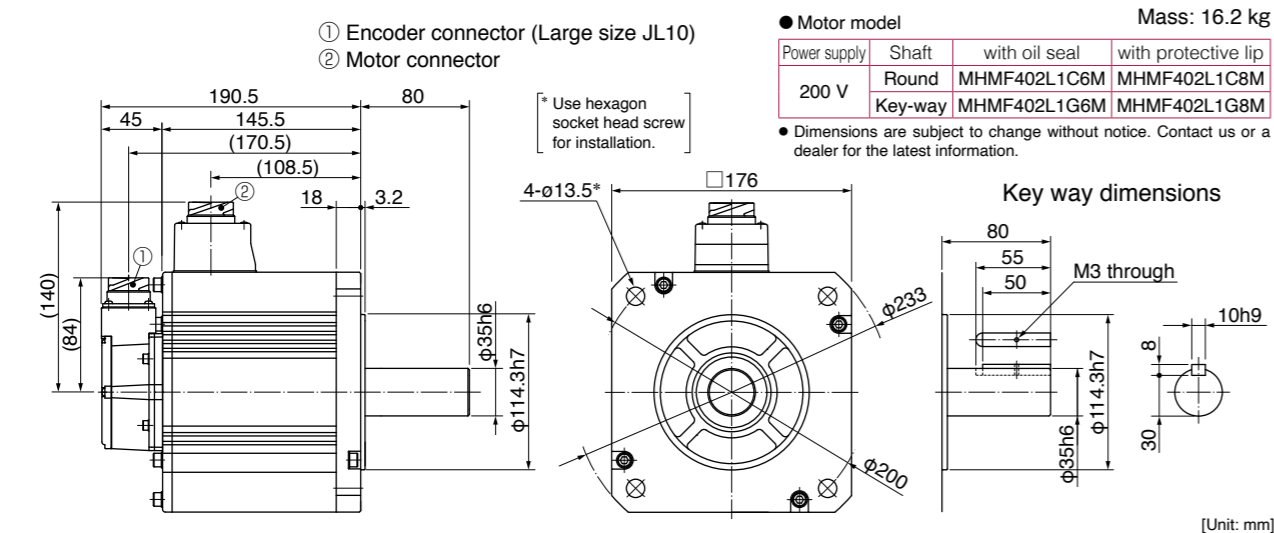


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MHMF 4.0 kW

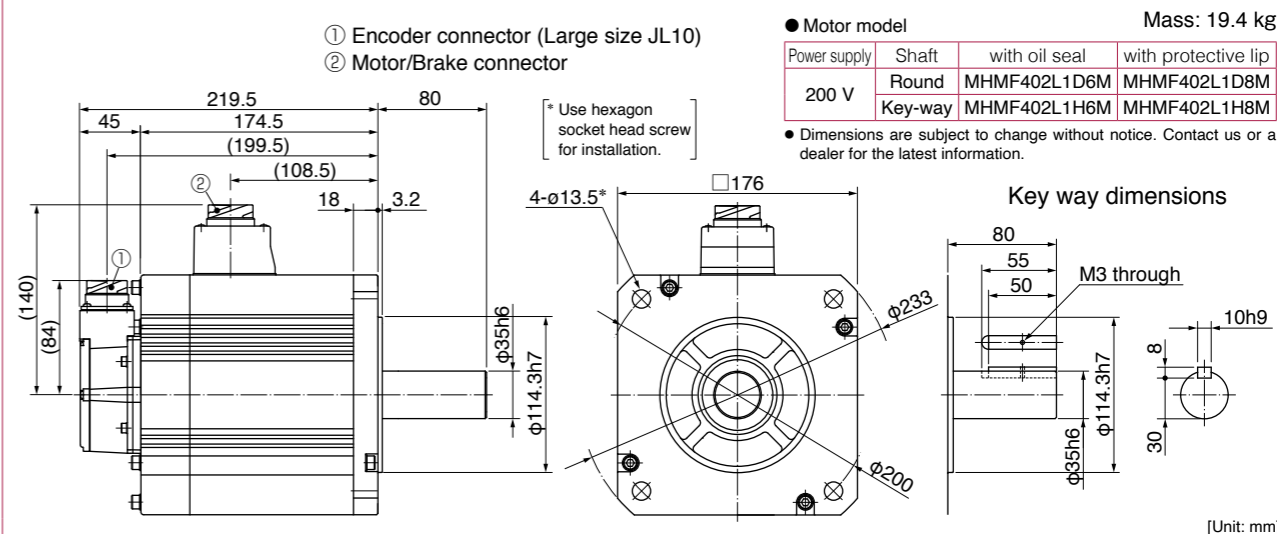
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.235, P.236.

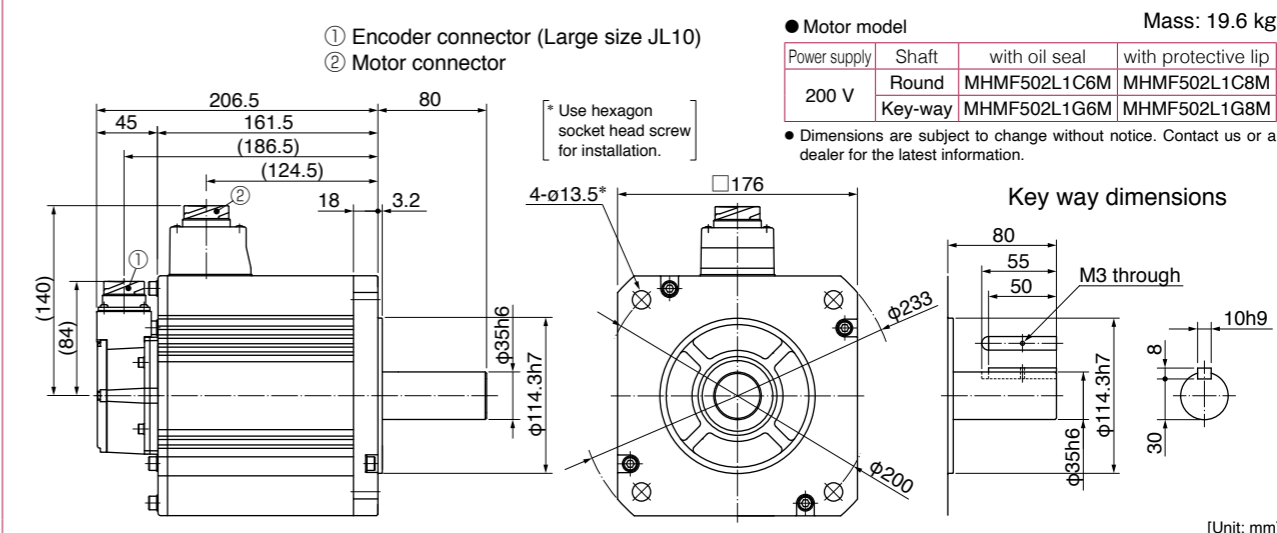
MHMF 4.0 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

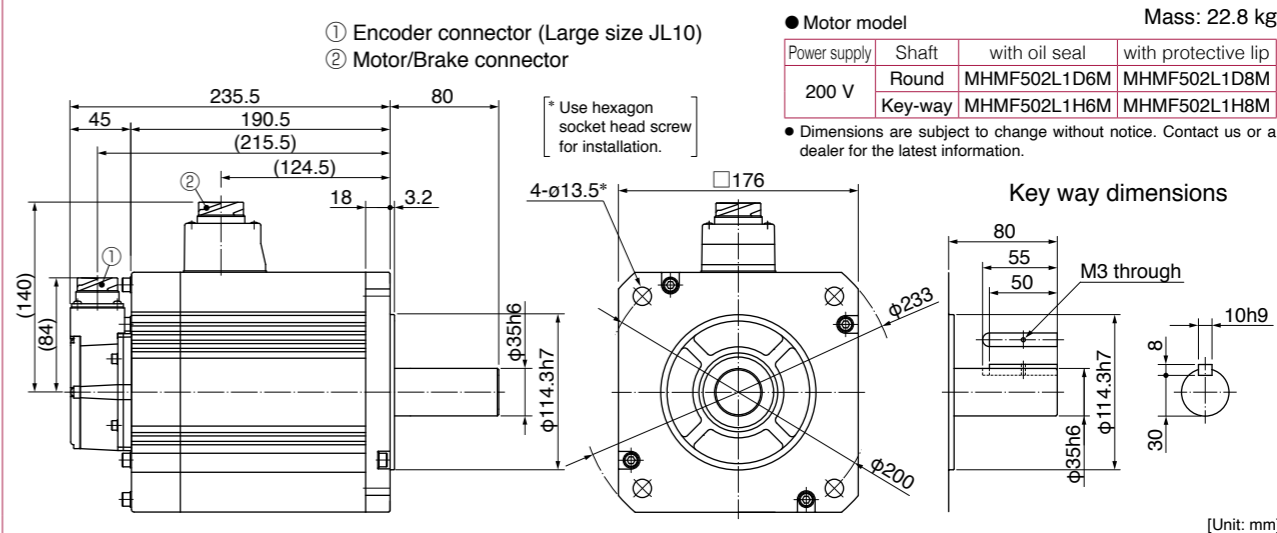


MHMF 5.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



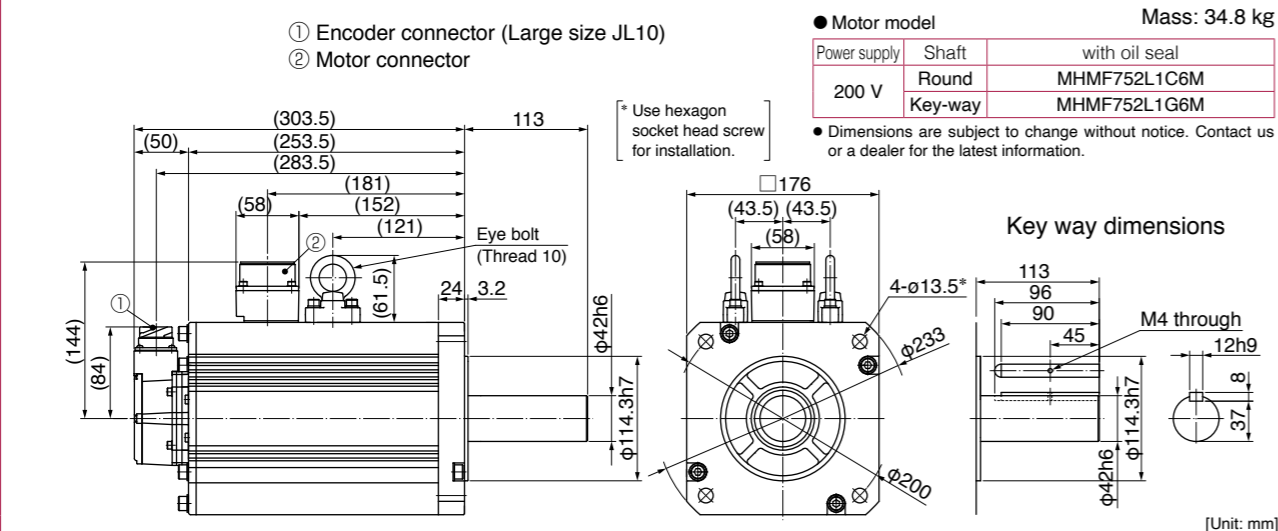
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



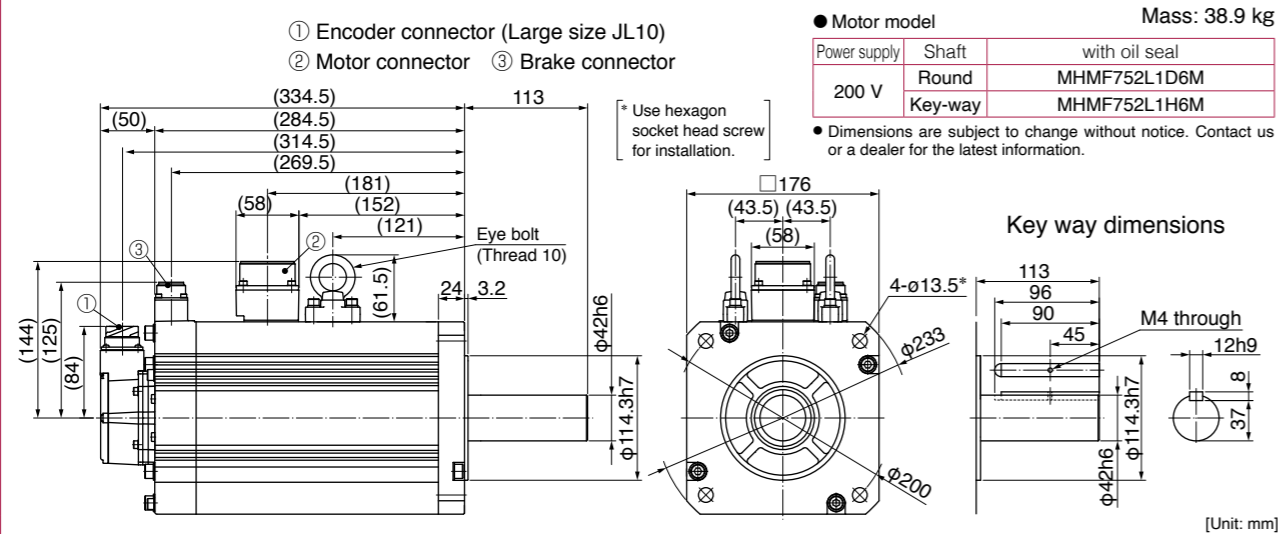
\* For motors specifications, refer to P.236, P.237.

MHMF 7.5 kW

Large size connector (JL10) type • without brake • with oil seal • Key way shaft/ Round shaft

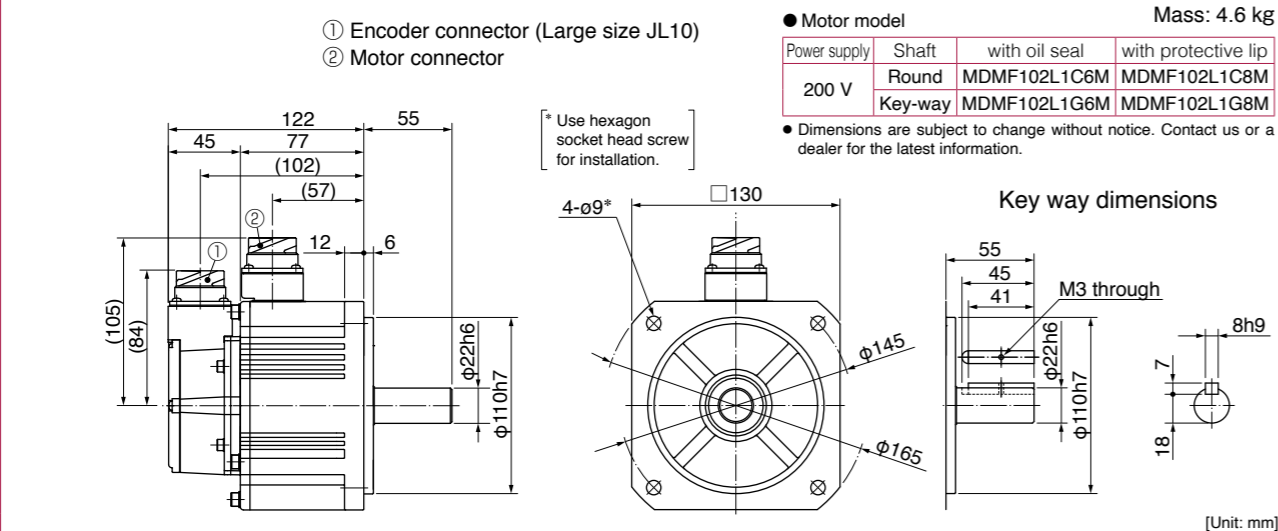


Large size connector (JL10) type • with brake • with oil seal • Key way shaft/ Round shaft



MDMF 1.0 kW

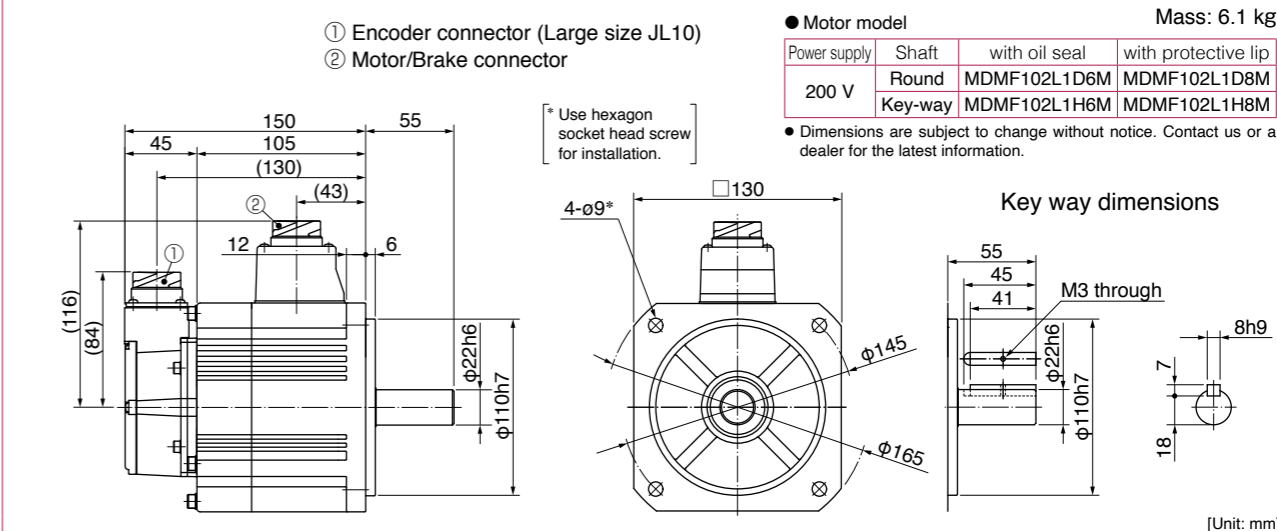
Large size connector (JL10) type • without brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



\* For motors specifications, refer to P.238, P.239.

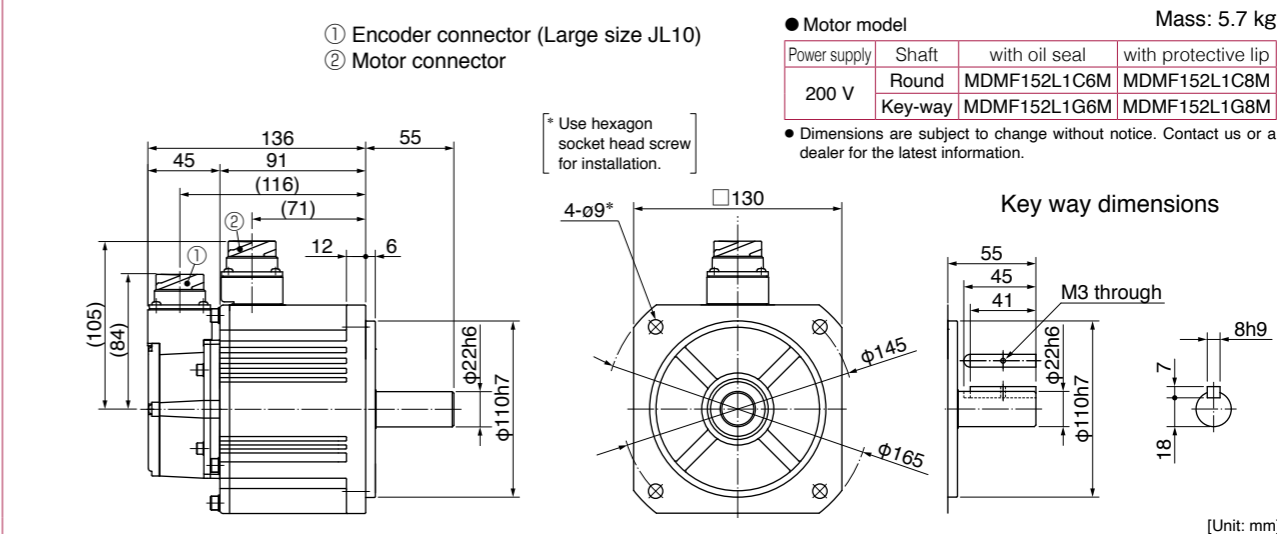
MDMF 1.0 kW

Large size connector (JL10) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft

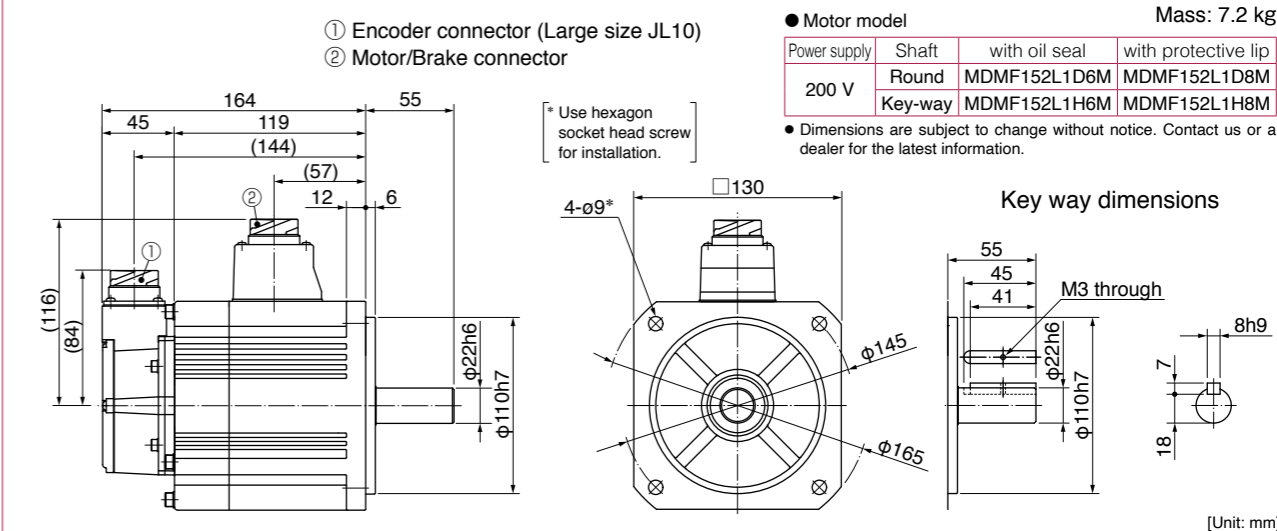


MDMF 1.5 kW

Large size connector (JL10) type • without brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



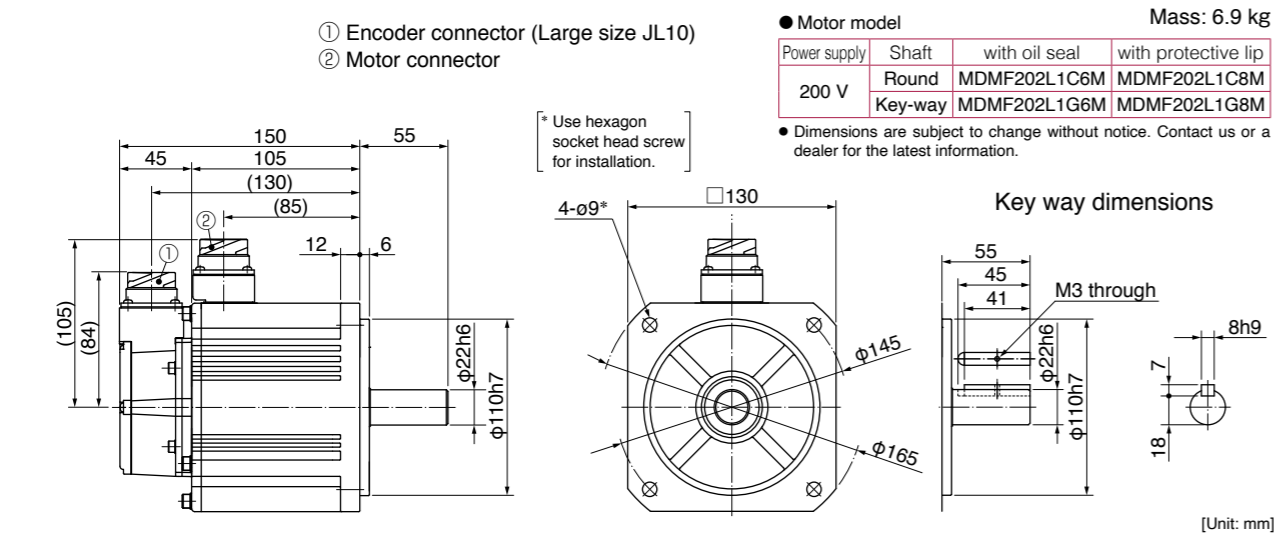
Large size connector (JL10) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



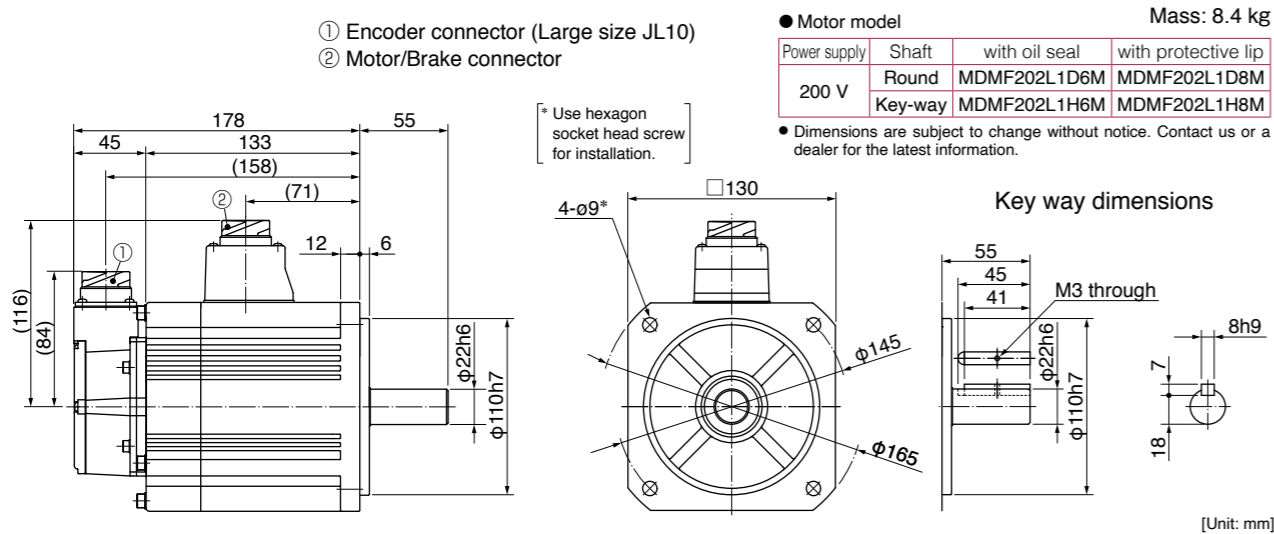
\* For motors specifications, refer to P.239, P.240.

MDMF 2.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

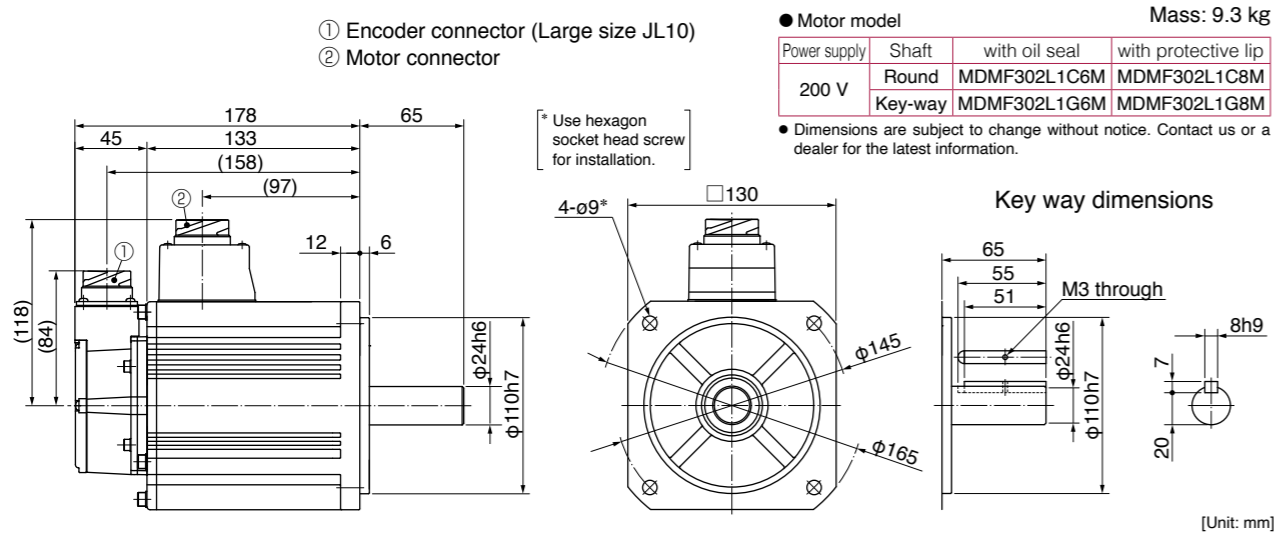


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MDMF 3.0 kW

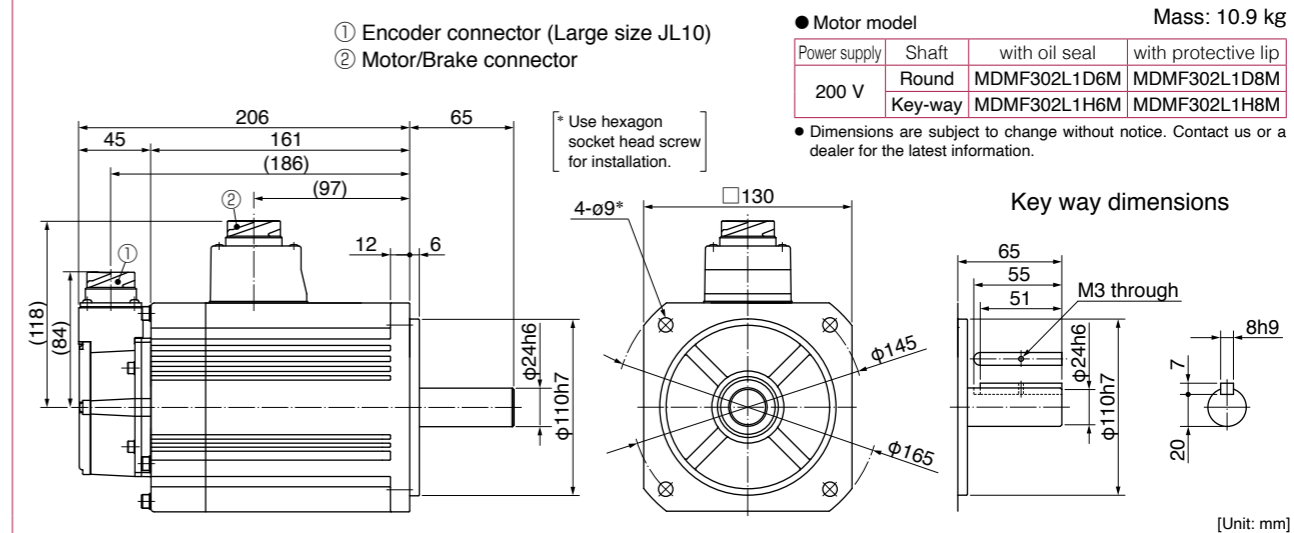
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.241, P.242.

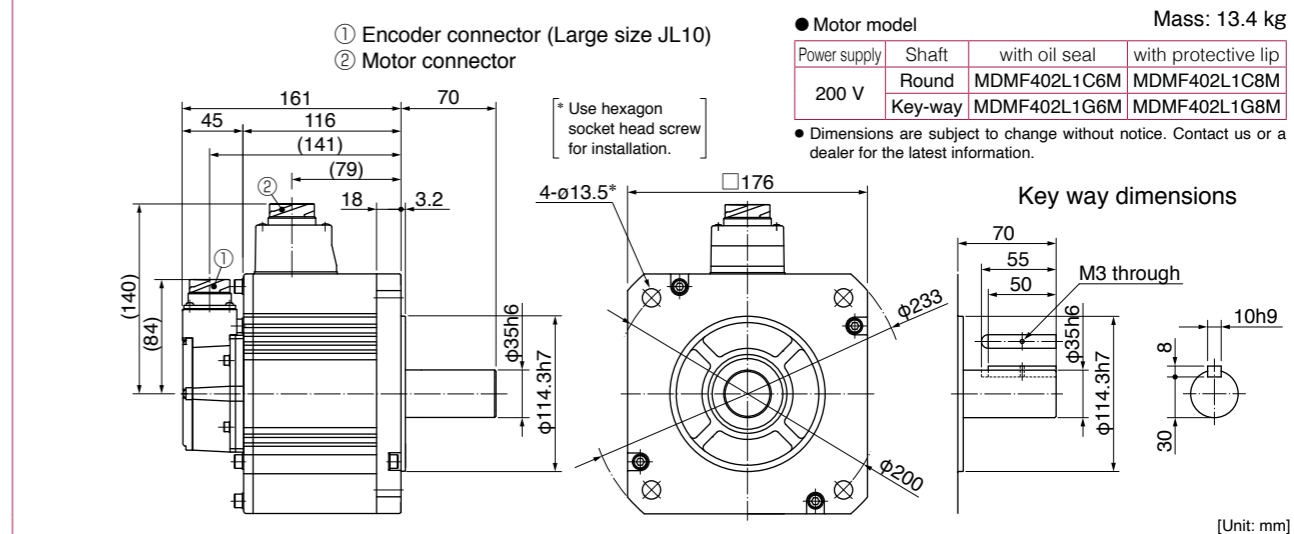
MDMF 3.0 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

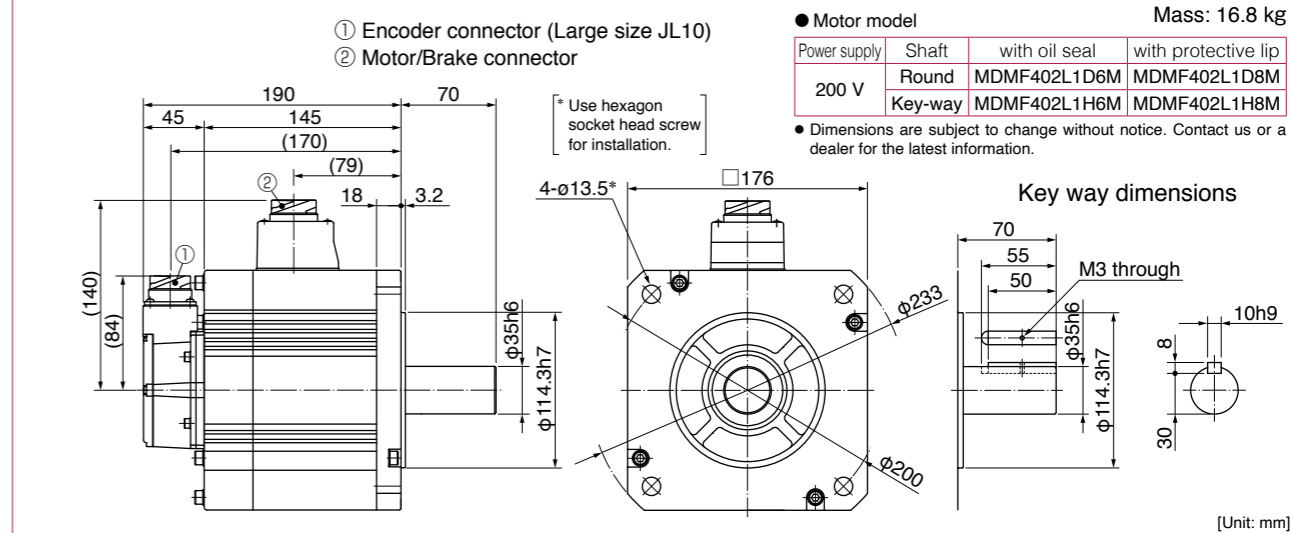


MDMF 4.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

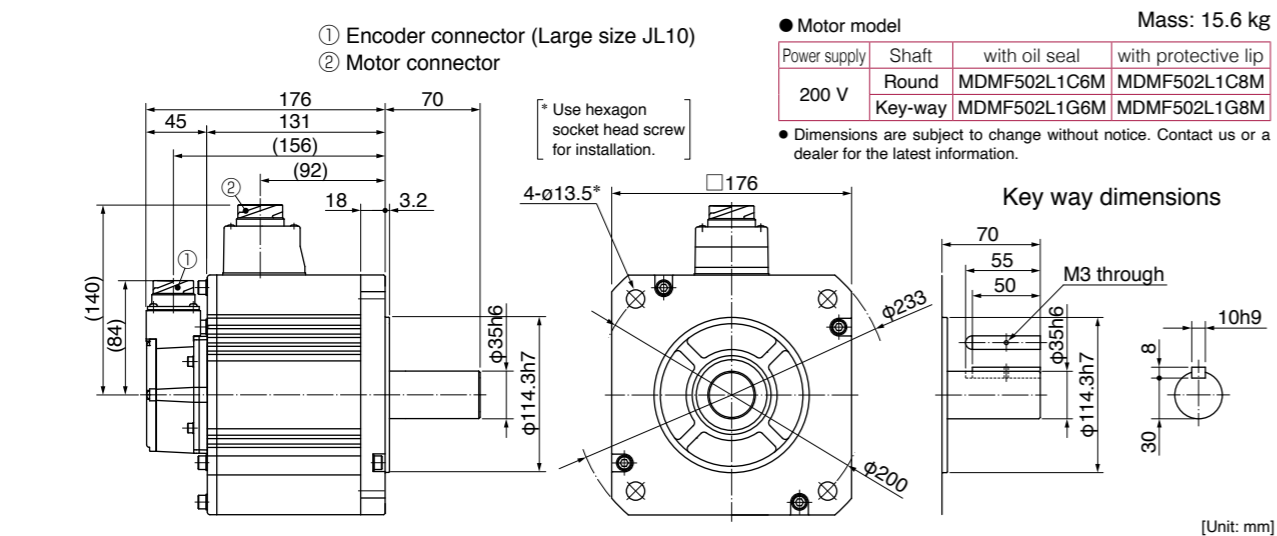


\* For motors specifications, refer to P.242, P.243.

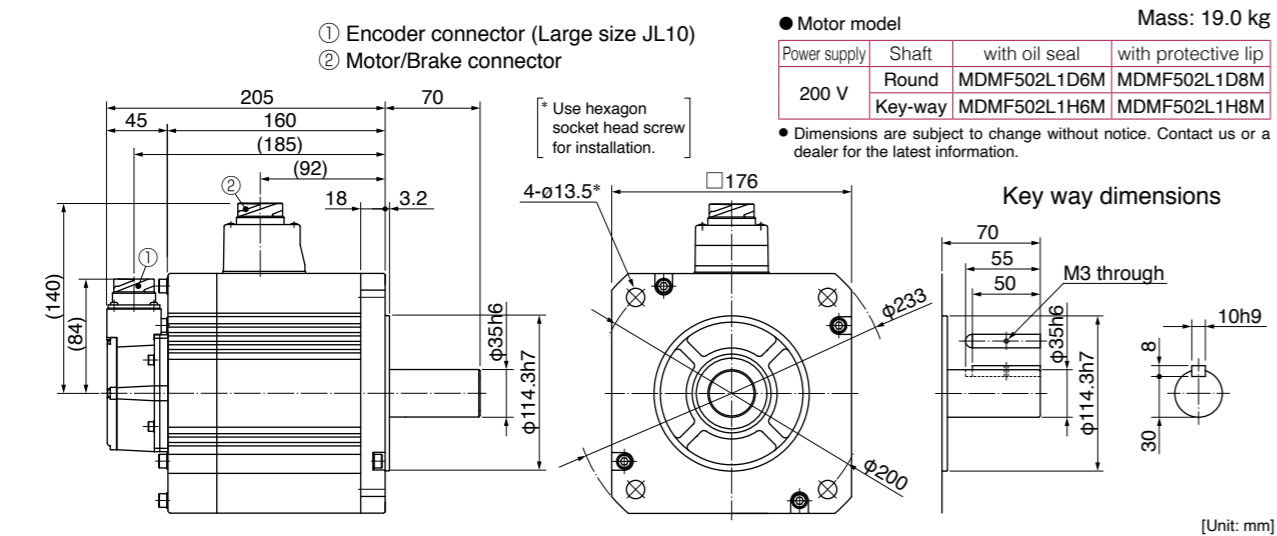


**MDMF 5.0 kW**

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

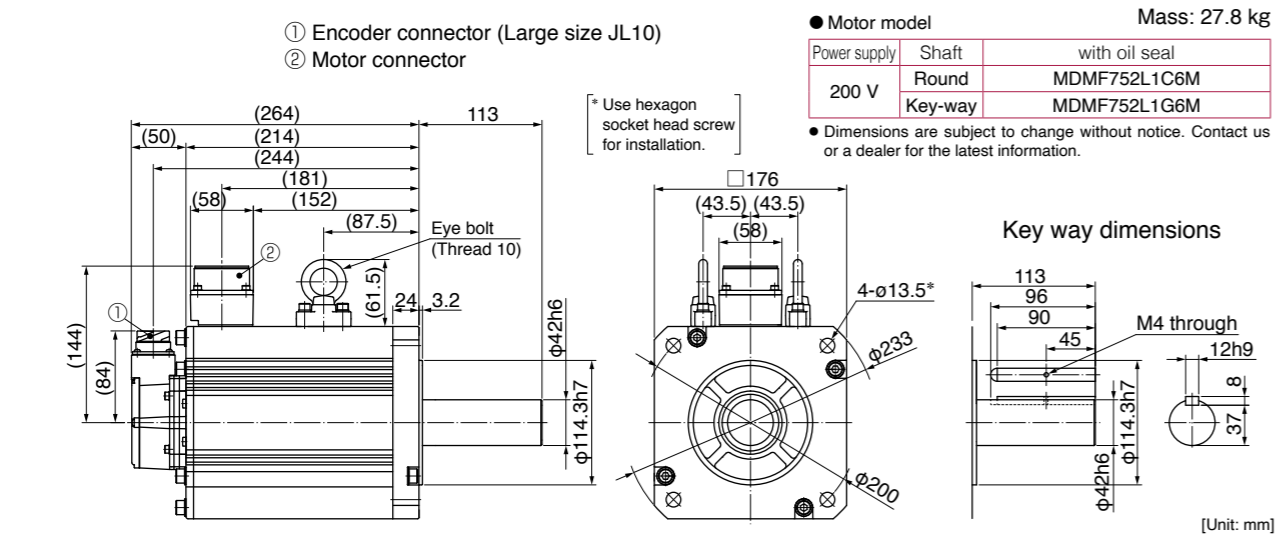


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



**MDMF 7.5 kW**

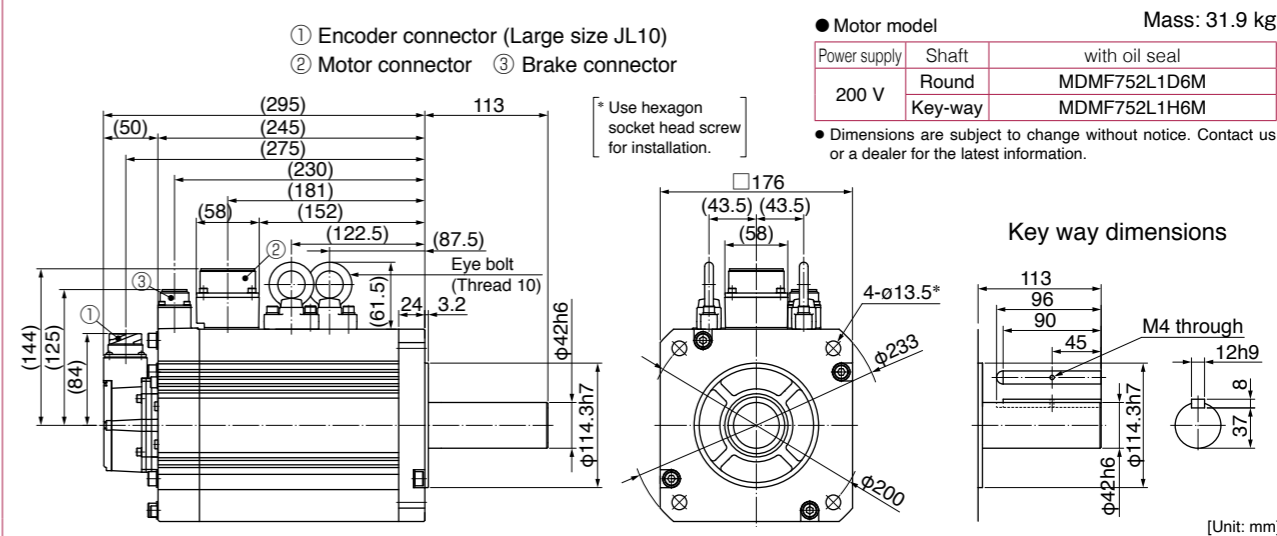
Large size connector (JL10) type · without brake · with oil seal · Key way shaft/ Round shaft



\* For motors specifications, refer to P.244, P.245.

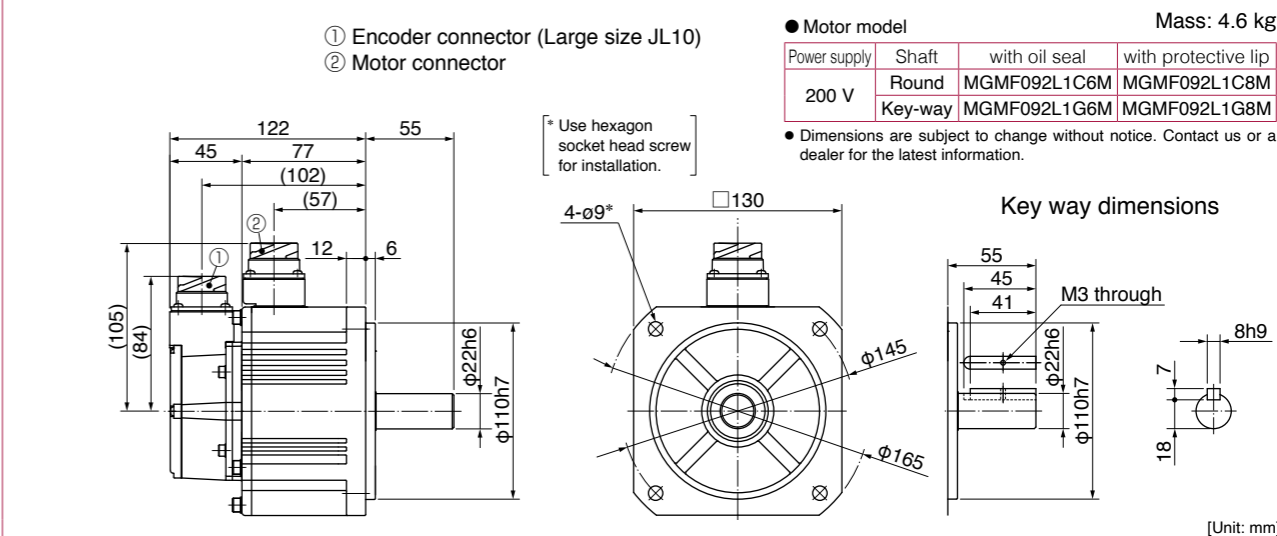
**MDMF 7.5 kW**

Large size connector (JL10) type · with brake · with oil seal · Key way shaft/ Round shaft

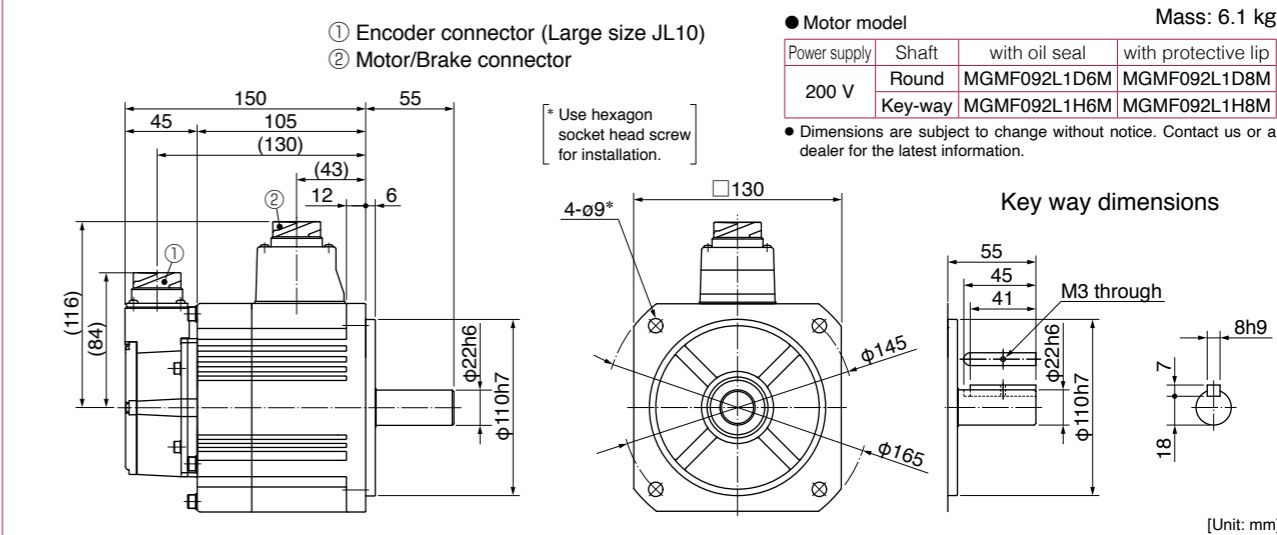


**MGMF 0.85 kW**

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



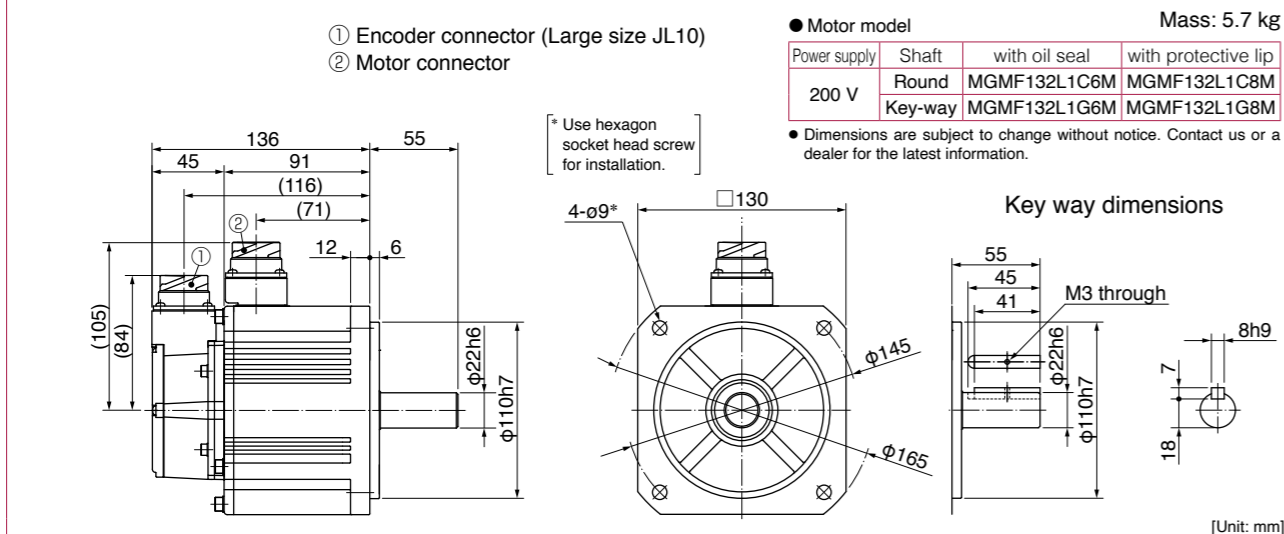
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



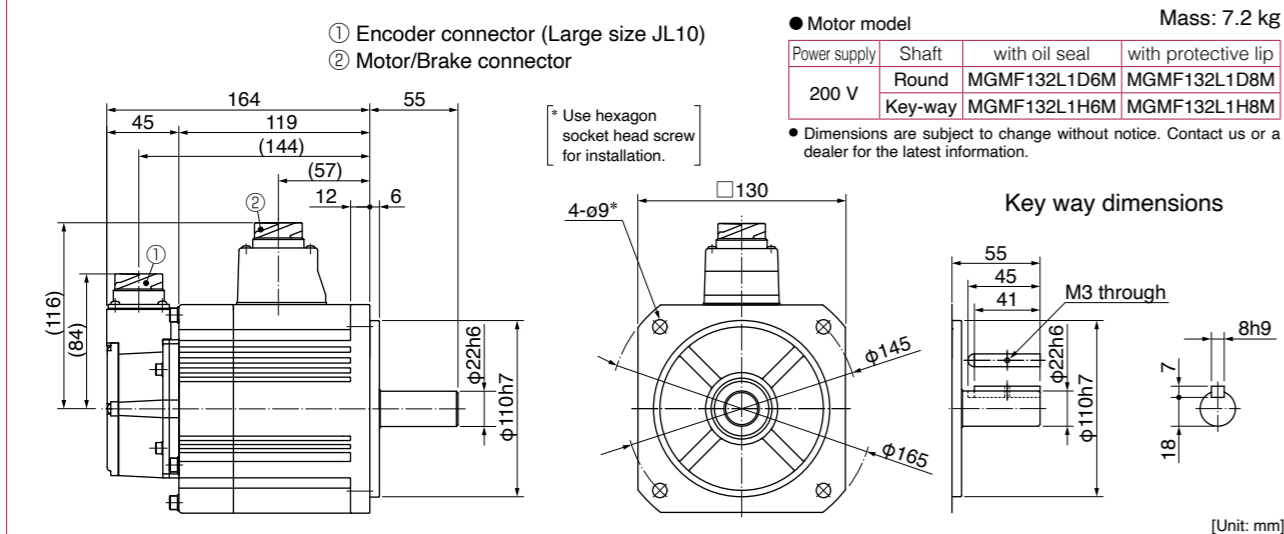
\* For motors specifications, refer to P.245, P.246.

**MGMF 1.3 kW**

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

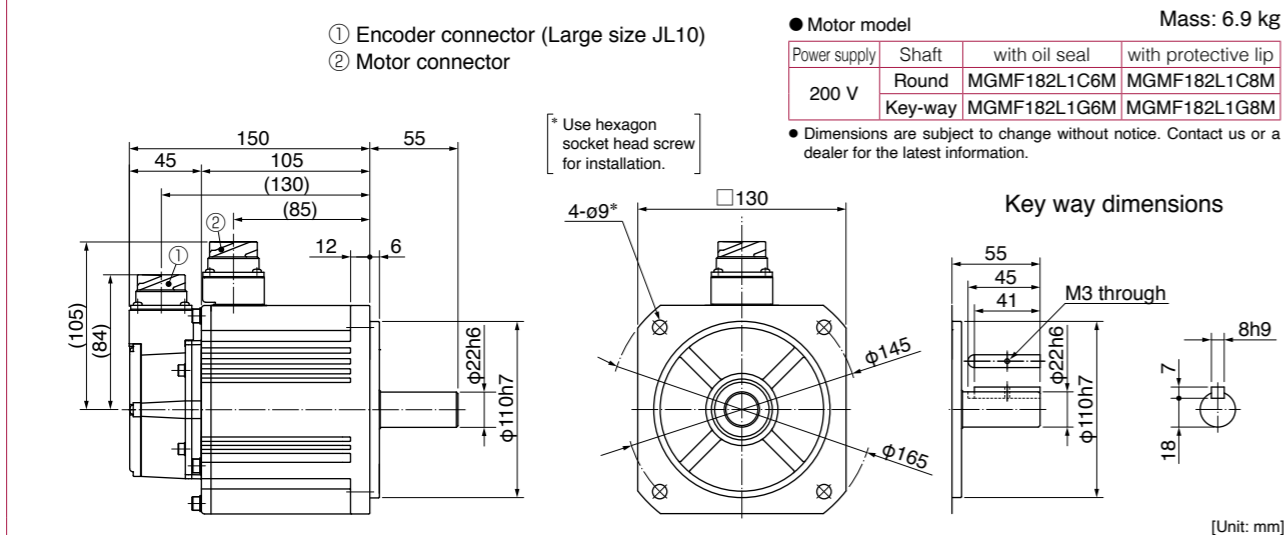


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



**MGMF 1.8 kW**

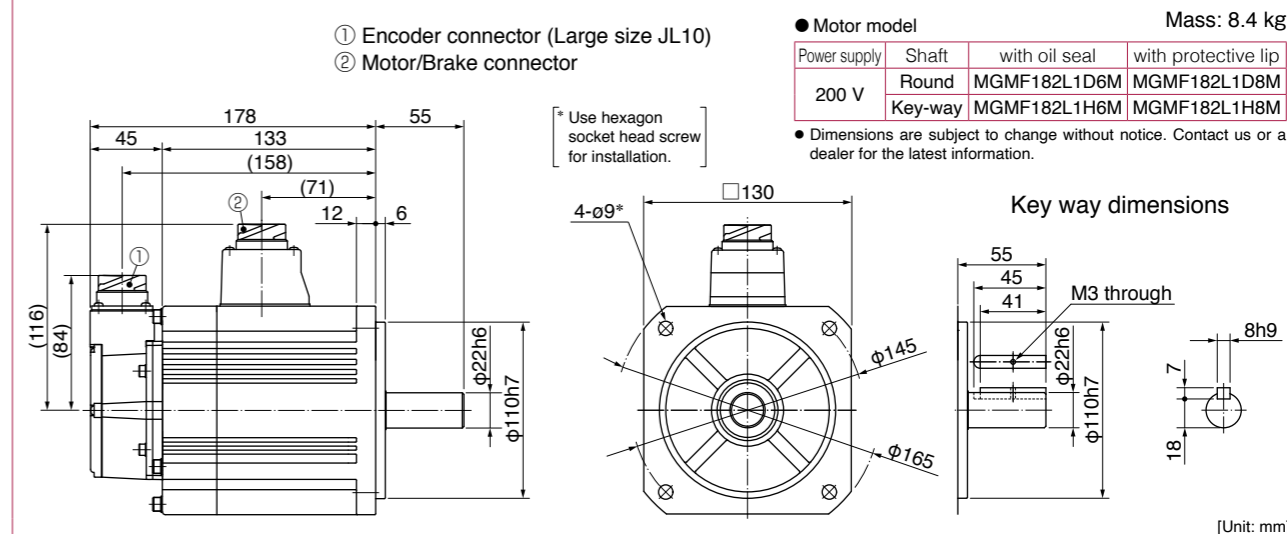
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.247, P.248.

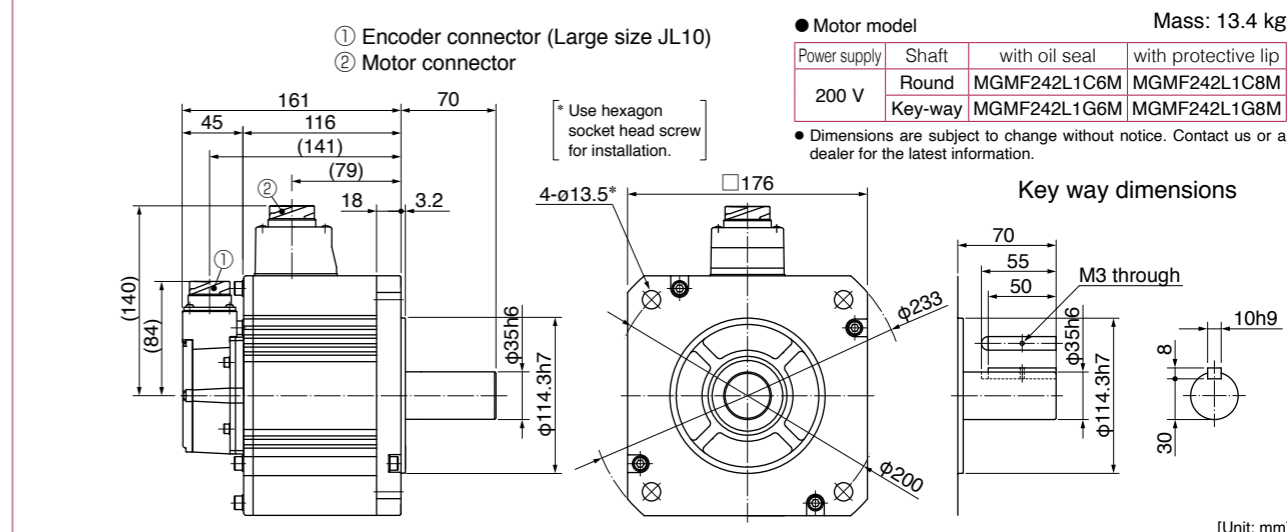
**MGMF 1.8 kW**

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

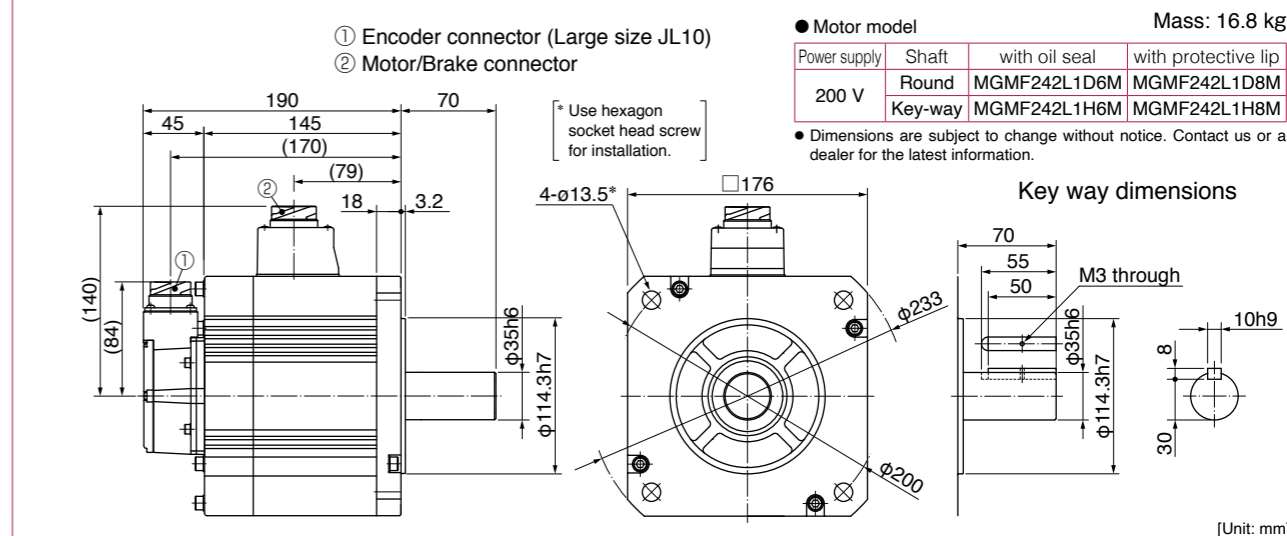


**MGMF 2.4 kW**

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



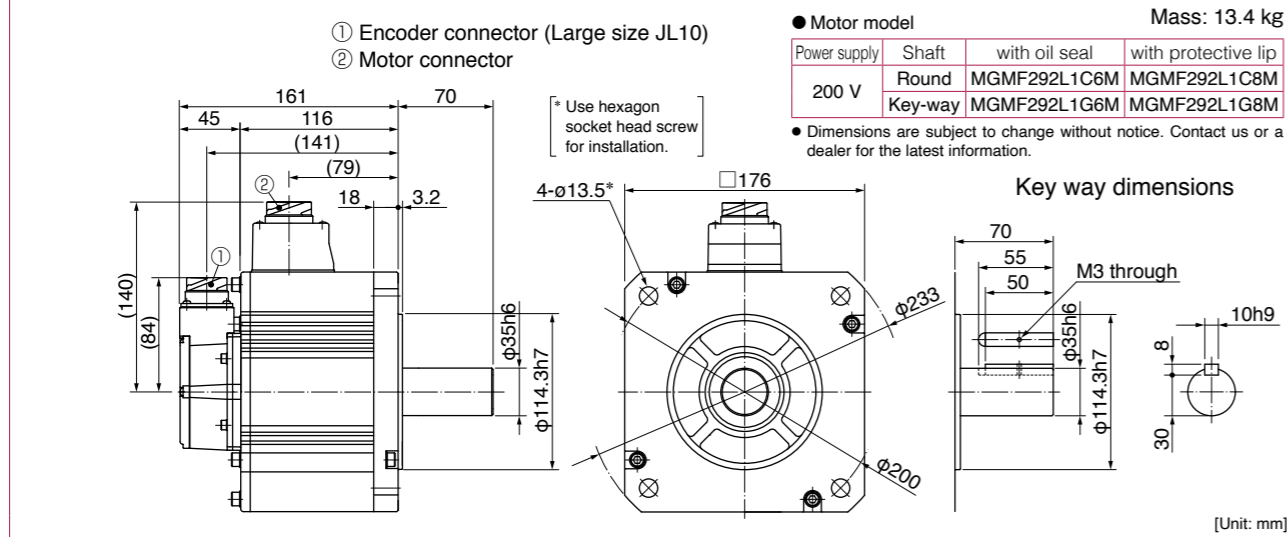
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



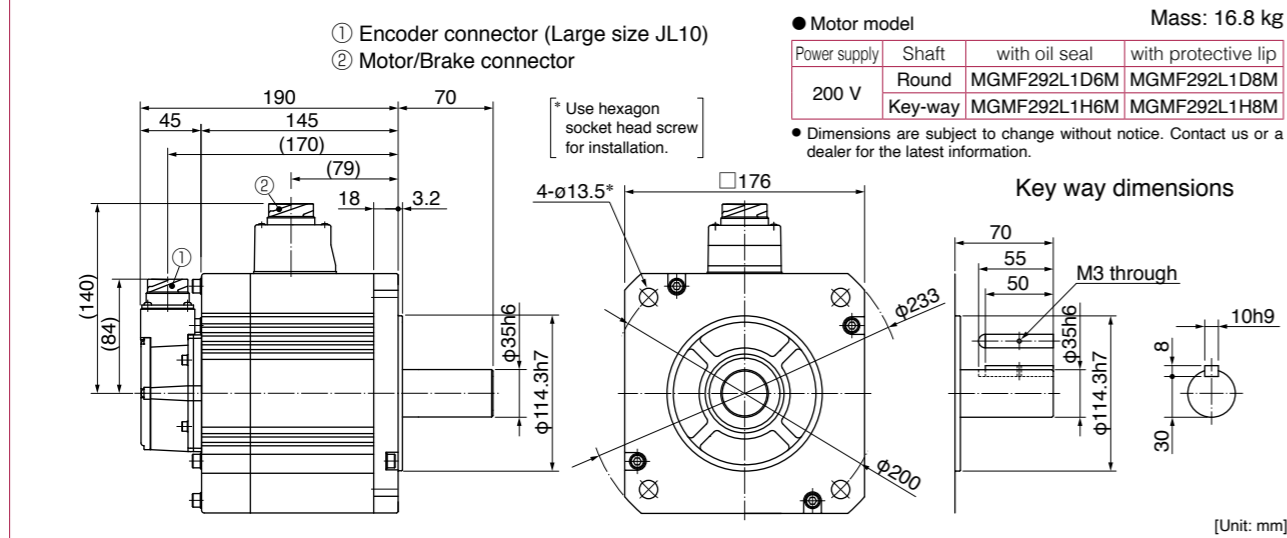
\* For motors specifications, refer to P.248, P.249.

**MGMF 2.9 kW**

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

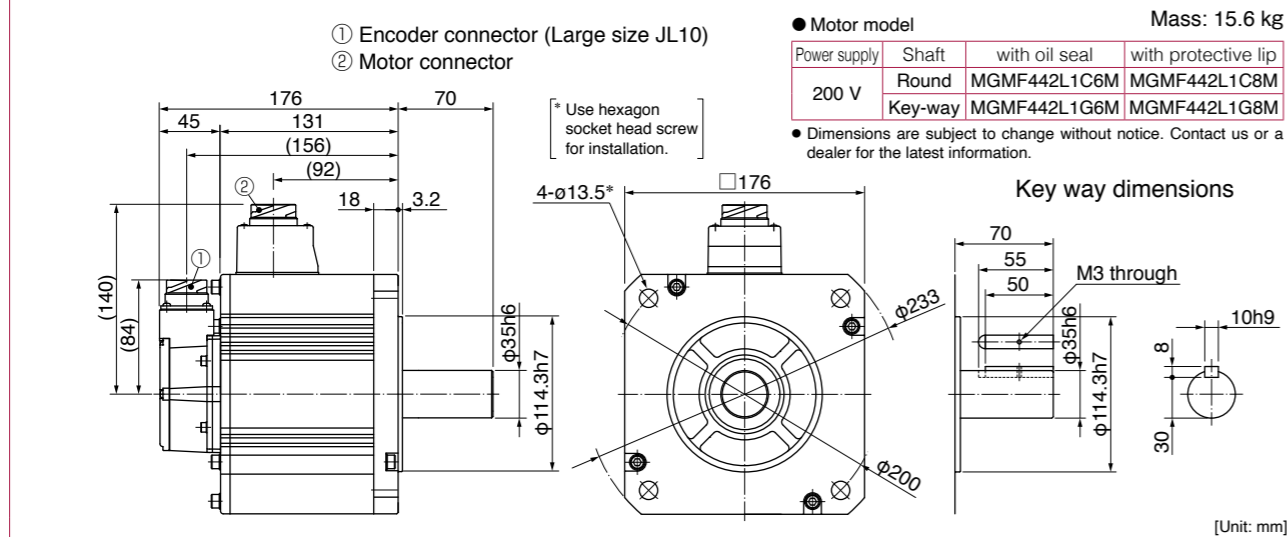


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



**MGMF 4.4 kW**

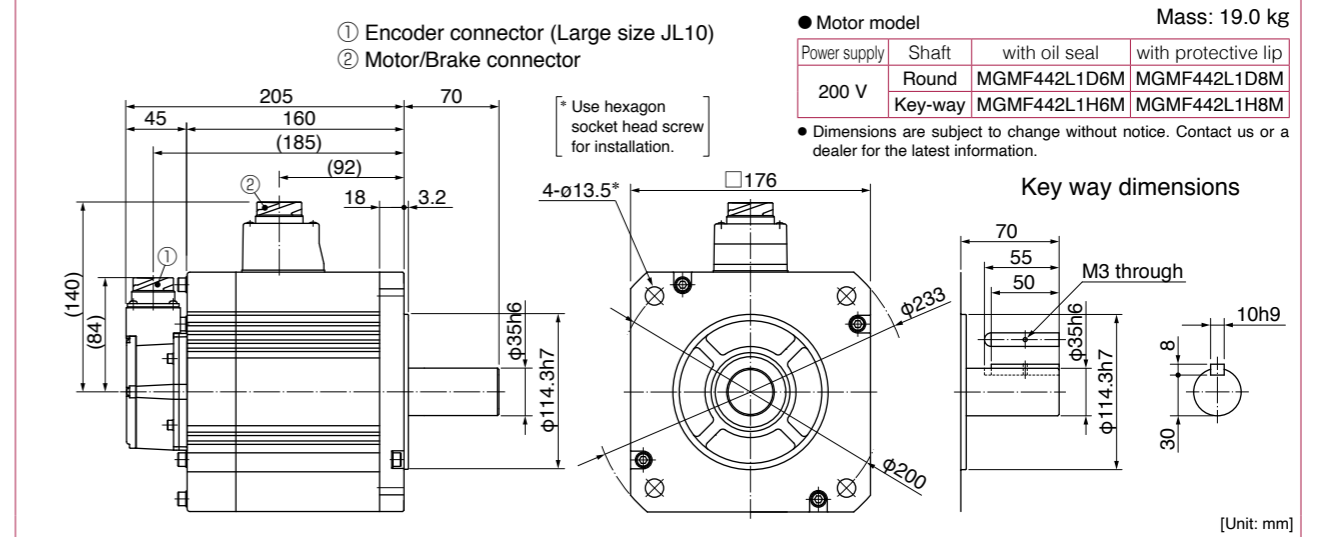
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.250, P.251.

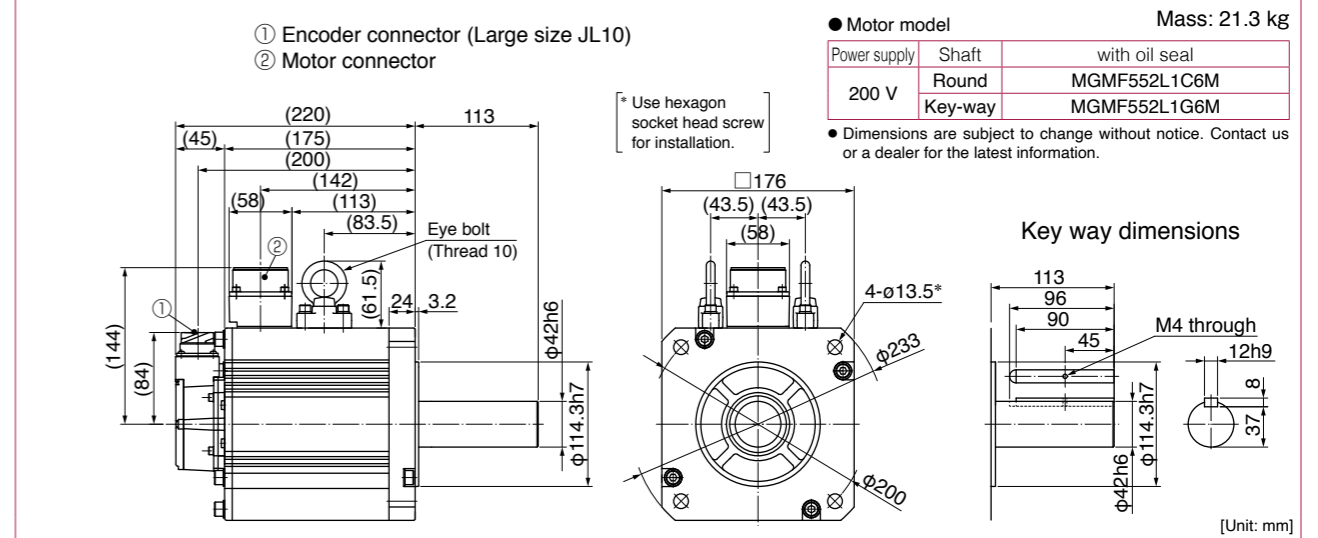
**MGMF 4.4 kW**

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

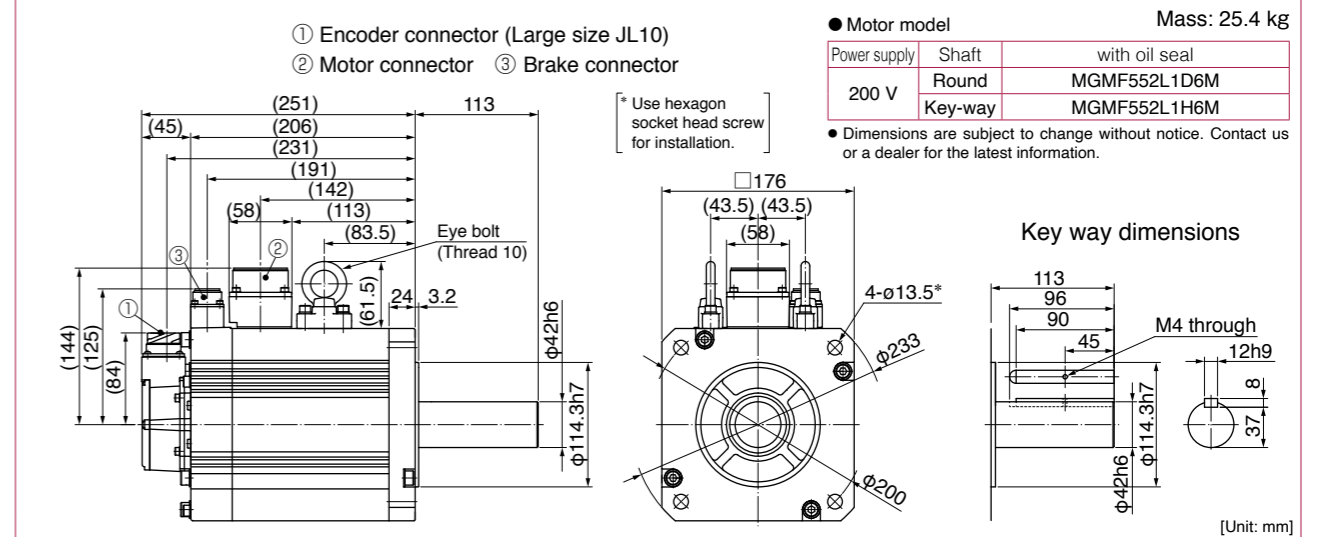


**MGMF 5.5 kW**

Large size connector (JL10) type · without brake · with oil seal · Key way shaft/ Round shaft

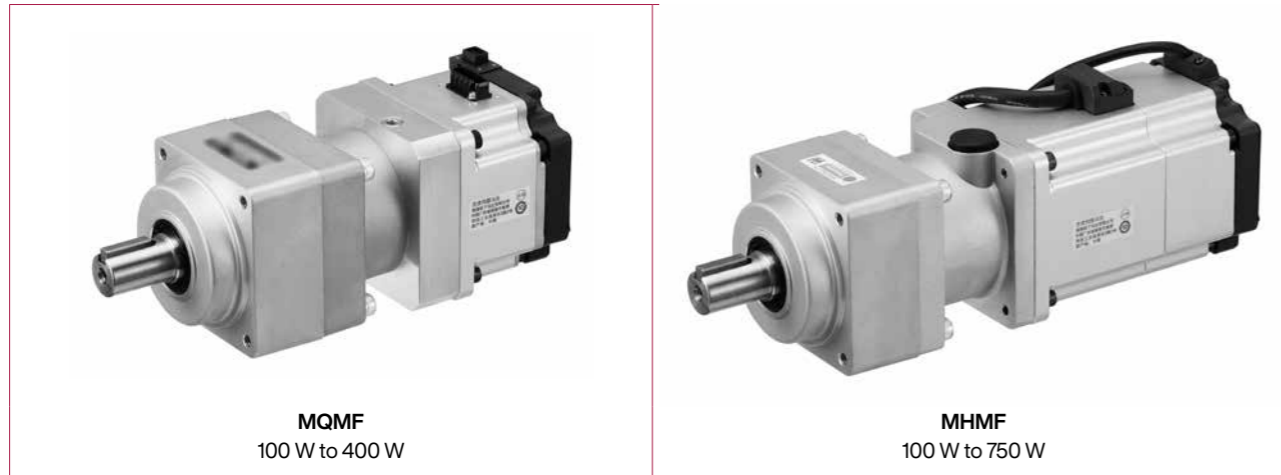


Large size connector (JL10) type · with brake · with oil seal · Key way shaft/ Round shaft



\* For motors specifications, refer to P.251, P.252.

Motor Types with Gear Reducer



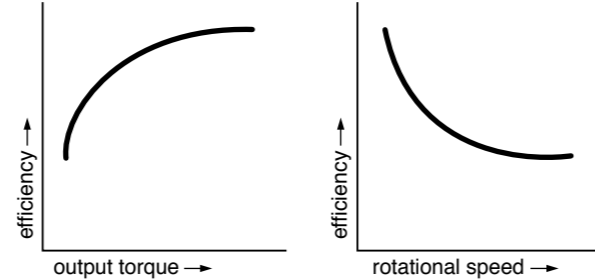
**MQMF**  
100 W to 400 W

**MHMF**  
100 W to 750 W

Reduction ratio	Motor output (W)				Type of reducer
	100	200	400	750	
1/5	●	●	●	●	For high precision
1/9	●	●	●	●	
1/15	●	●	●	●	
1/25	●	●	●	●	

\* MQMF 750 W is not prepared.  
\* MHMF 100 W 1/25, 400 W 1/25 are not prepared.

Efficiency of the gear reducer show the following inclination in relation to output torque and rotational speed.



Specifications of Motor with Gear Reducer

Items	Specifications
Backlash	3 minutes or smaller (initial value) at output shaft of the reducer
Composition of gear	Planetary gear
Gear efficiency	76 % to 87 %
Lubrication	Grease lubrication
Rotational direction at output shaft	Same direction as the motor output shaft
Mounting method	Flange mounting
Permissible moment of inertia of the load (conversion to the motor shaft)	10 times or smaller than rotor moment of inertia of the motor
Enclosure rating	IP44 (at gear reducer)
Ambient temperature	0 °C to 40 °C (free from freezing)
Storage temperature	-20 °C to 65 °C (Max. temperature guarantee: 80 °C for 72 hours free from condensation)
Ambient humidity, Storage humidity	20 %RH to 85 %RH (free from condensation)
Vibration	Lower than 49 m/s <sup>2</sup> (5G) at running, 24.5 m/s <sup>2</sup> (2.5G) at stall
Impact	Lower than 98 m/s <sup>2</sup> (10G)
Altitude	Lower than 1000 m

\* For combination of elements of model number, refer to Index P.448.

Model Designation

**M Q M F 0 1 1 L 3 1 N**

Symbol	Type
MQMF	Middle inertia Flat type 100 W to 400 W
MHMF	High inertia 100 W to 750 W

Symbol	Specifications
01	100 W
02	200 W
04	400 W
08	750 W

Symbol	Series
F	A6 Family

Symbol	Rated output
1	100 V
2	200 V

N: Standard

Symbol	Reduction ratio	Motor output (W)				Type of reducer
		100	200	400	750	
1N	1/5	●	●	●	●	For high precision
2N	1/9	●	●	●	●	
3N	1/15	●	●	●	●	
4N	1/25	●	●	●	●	

\* MQMF 750 W is not prepared.  
\* MHMF 100 W 1/25, 400 W 1/25 are not prepared.

Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wire
L	Absolute	23-bit	8388608	7

<Note>

When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder.

Motor structure

Symbol	Motor I/F	Shaft		Holding brake	
		Key way	without	with	with
3	Connector	●	●		
4		●			●
7	Leadwire	●	●		
8		●			●

The Combination of the Driver and the Motor

Motor series	Motor			Driver	
	Power supply	Output (W)	Part No.*	A6SF series	A6SE series
				Multi function type	Basic type
MQMF Middle inertia Flat type	Single phase 100 V	100	MQMF011L □□ N	MADLT11SF	MADLN11SE
		200	MQMF021L □□ N	MBDLT21SF	MBDLN21SE
		400	MQMF041L □□ N	MCDLT31SF	MCDLN31SE
	Single phase/ 3-phase 200 V	100	MQMF012L □□ N	MADLT05SF	MADLN05SE
		200	MQMF022L □□ N	MADLT15SF	MADLN15SE
		400	MQMF042L □□ N	MBDLT25SF	MBDLN25SE
MHMF High inertia	Single phase 100 V	100	MHMF011L □□ N	MADLT11SF	MADLN11SE
		200	MHMF021L □□ N	MBDLT21SF	MBDLN21SE
		400	MHMF041L □□ N	MCDLT31SF	MCDLN31SE
	Single phase/ 3-phase 200 V	100	MHMF012L □□ N	MADLT05SF	MADLN05SE
		200	MHMF022L □□ N	MADLT15SF	MADLN15SE
		400	MHMF042L □□ N	MBDLT25SF	MBDLN25SE
		750	MHMF082L □□ N	MCDLT35SF	MCDLN35SE

\* The symbols of the motor structure and the gear reduction ratio are entered in □□ of the motor part number. Please refer to the above "Model Designation".

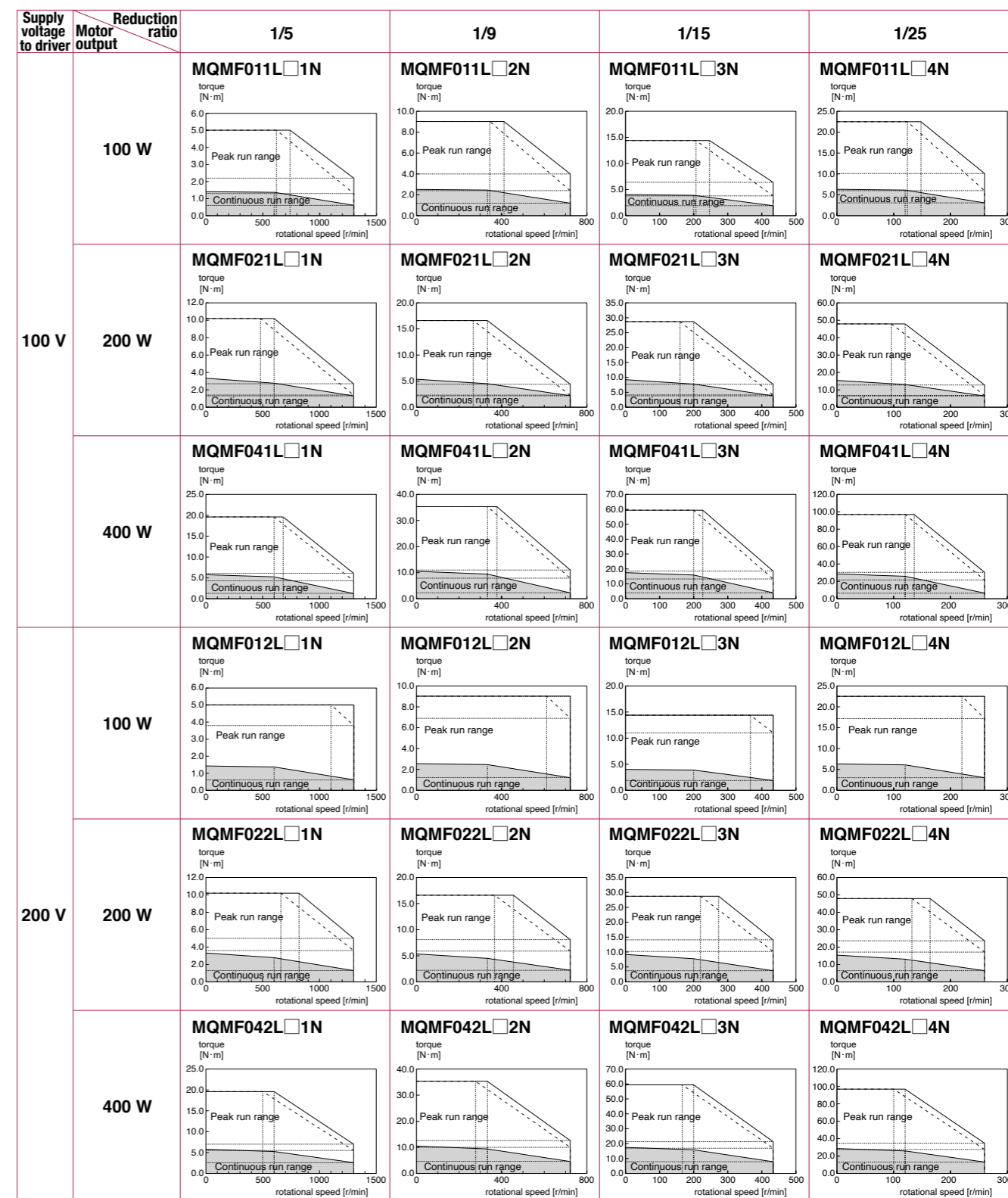
\* Motor options: Please check the upper 9th digit of the motor part number. If the motor is connector type, refer to P.31 to P.32. And if the motor is leadwire type, refer to P.29 to P.30.

Table of Motor Specifications

Part No.*	Motor Output (W)	Reduction ratio	Output (W)	Rated speed (r/min)	Max. speed (r/min)	Rated torque (N·m)	Peak max. torque (N·m)	Moment of inertia (motor + reducer/ converted to motor shaft)		Mass		Permissible radial load (N)	Permissible thrust load (N)
								w/o brake	w/ brake	w/o brake	w/ brake		
								J(x10 <sup>-4</sup> kg·m <sup>2</sup> )		(kg)			
MQMF Middle inertia Flat type	100	1/5	85	600	1300	1.36	5.01	0.210	0.240	1.2	1.4	490	245
		1/9	85	333	722	2.45	9.02	0.200	0.230	1.2	1.4	588	294
		1/15	81	200	433	3.89	14.4	0.207	0.237	1.4	1.7	784	392
		1/25	76	120	260	6.08	22.5	0.287	0.317	2.6	2.9	1670	833
	200	1/5	175	600	1300	2.78	10.2	0.650	0.740	1.9	2.3	490	245
		1/9	157	333	722	4.49	16.6	0.770	0.860	3.0	3.4	1180	588
		1/15	163	200	433	7.78	28.7	0.800	0.890	3.4	3.8	1470	735
		1/25	163	120	260	13.0	47.9	0.790	0.880	3.4	3.8	1670	833
	400	1/5	331	600	1300	5.27	19.6	1.35	1.43	3.4	3.9	980	490
		1/9	331	333	722	9.49	35.3	1.25	1.33	3.4	3.9	1180	588
		1/15	335	200	433	16.0	59.4	1.28	1.36	3.8	4.3	1470	735
		1/25	327	120	260	26.0	96.9	1.31	1.39	5.4	5.9	2060	1030
MHMF High inertia	100	1/5	85	600	1300	1.36	5.01	0.131	0.134	1.0	1.2	490	245
		1/9	85	333	722	2.45	9.02	0.121	0.124	1.0	1.2	588	294
		1/15	81	200	433	3.89	14.4	0.124	0.127	1.1	1.3	784	392
	200	1/5	175	600	1300	2.78	10.2	0.437	0.457	1.5	1.8	490	245
		1/9	157	333	722	4.49	16.6	0.563	0.583	2.5	2.8	1180	588
		1/15	163	200	433	7.78	28.7	0.592	0.612	2.9	3.2	1470	735
		1/25	163	120	260	13.0	47.9	0.583	0.603	2.9	3.2	1670	833
	750	1/5	339	600	1300	5.39	19.6	0.930	0.950	2.8	3.2	980	490
		1/9	332	333	722	9.51	35.3	0.833	0.853	2.8	3.2	1180	588
		1/15	335	200	433	16.0	59.4	0.862	0.882	3.2	3.6	1470	735
		1/5	672	600	1200	10.7	38.4	2.38	2.48	4.3	5.0	980	490
		1/9	645	333	667	18.5	68.4	2.32	2.42	5.6	6.3	1470	735
1/15	637	200	400	30.4	111	2.25	2.35	6.0	6.7	1760	882		
1/25	637	120	240	50.7	186	2.22	2.32	6.0	6.7	2060	1030		

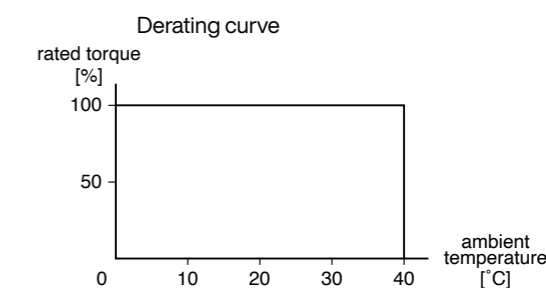
\* The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number. Please refer to "Model Designation" in P.294.

MQMF series (100 W to 400 W)

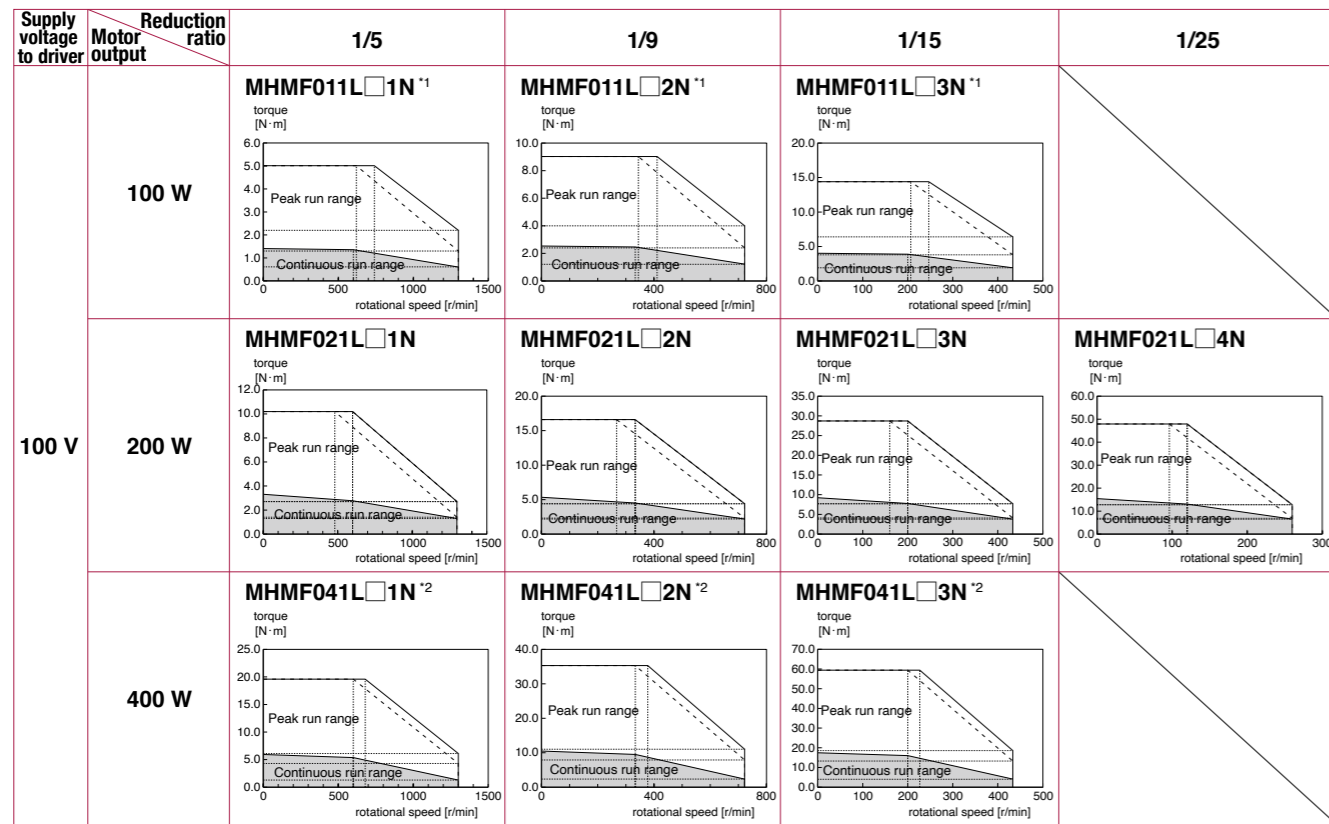


Dotted line represents the torque at 10% less supply voltage to driver.

\* The symbols of the motor structure are entered in □ of the motor part number. Please refer to "Model Designation" in P.294.



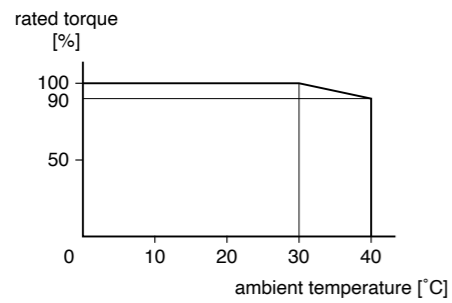
MHMF series (100 W to 750 W)



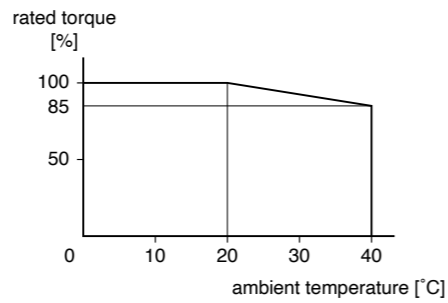
Dotted line represents the torque at 10 % less supply voltage to driver.

\* The symbols of the motor structure are entered in □ of the motor part number. Please refer to "Model Designation" in P.294.

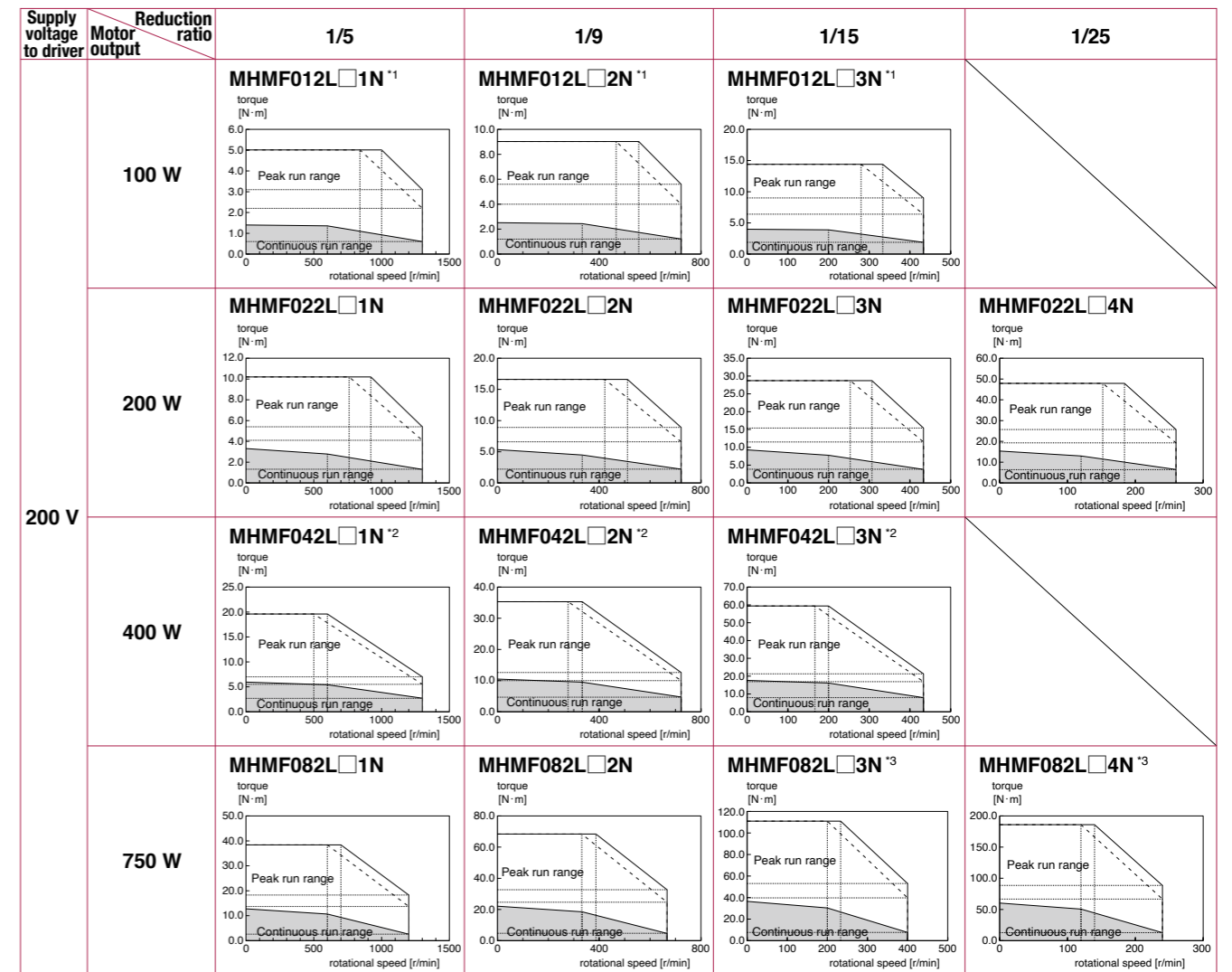
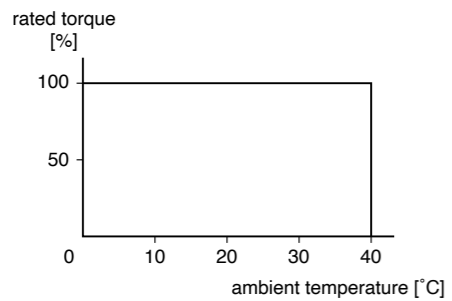
\*1 Derating curve



\*2 Derating curve



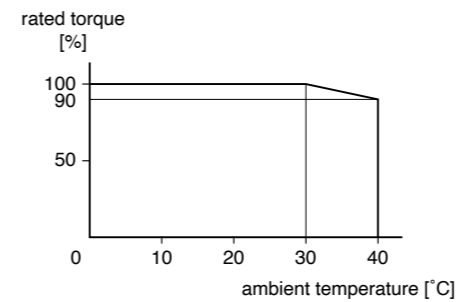
Motor number without \*1, \*2 Derating curve



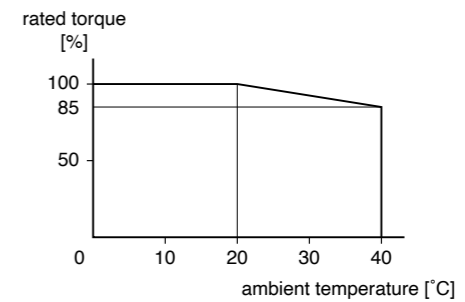
Dotted line represents the torque at 10 % less supply voltage to driver.

\* The symbols of the motor structure are entered in □ of the motor part number. Please refer to "Model Designation" in P.294.

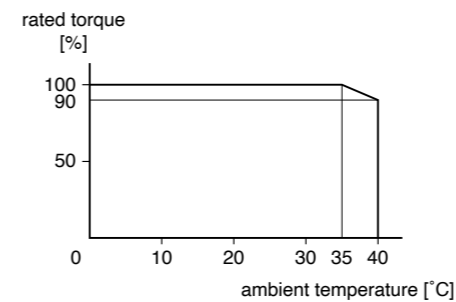
\*1 Derating curve



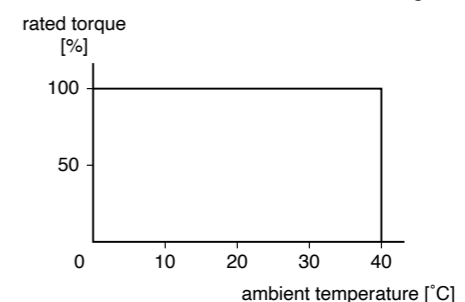
\*2 Derating curve



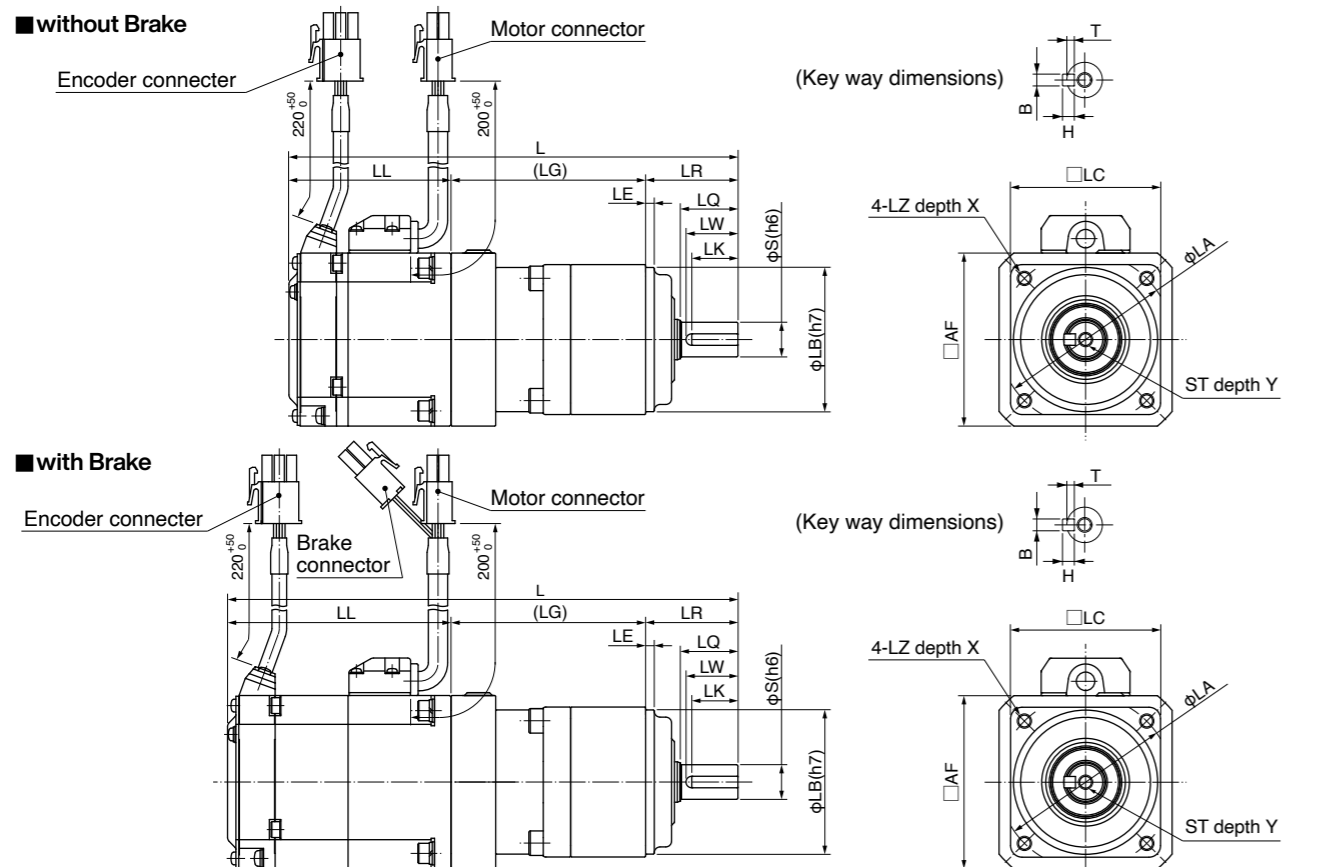
\*3 Derating curve



Motor number without \*1, \*2, \*3 Derating curve



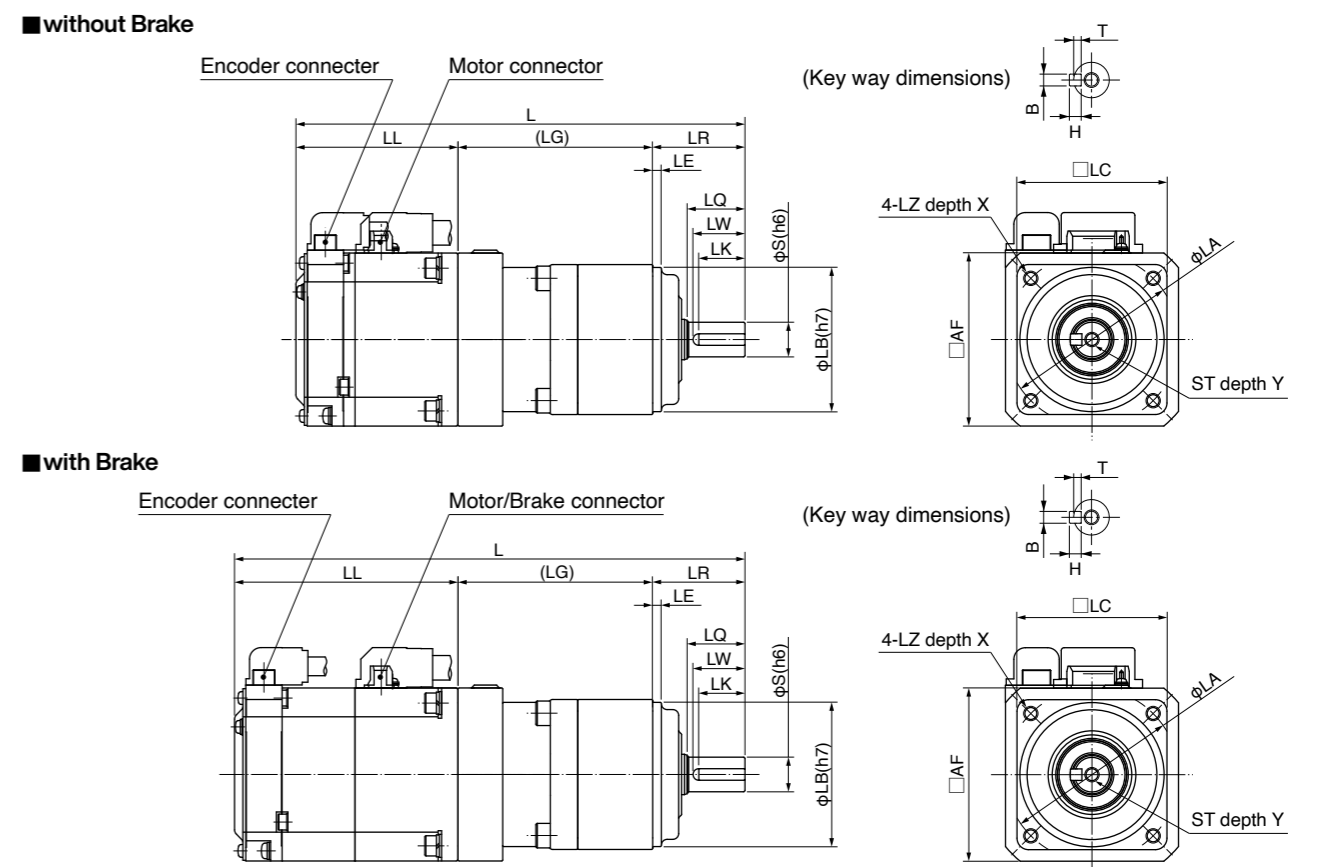
MQMF series (Leadwire type)



Motor Part No.*1	Motor output (W)	Reduction ratio	L	without Brake with Brake	without Brake with Brake	(LG)	LR	LQ	LW	LK	S	BxT	H	ST	Y	LB	LA	LE	LZ	LC <sub>2</sub>	X	AF <sub>2</sub>
MQMF01□L□1N	100	1/5	155.7	56.2	67.5	32	20	18	16	12	4x2.5	4	M5	10	50	60	3	M5	52	12	60	
			177	77.5																		
		1/9	155.7	56.2																		
			177	77.5																		
MQMF01□L□2N	100	1/15	171.7	56.2	83.5	50	30	26	22	19	6x3.5	6	M6	12	70	90	M6	78	20			
			193	77.5																		
		1/25	199.7	56.2																		
			221	77.5																		
MQMF01□L□3N	100	1/5	166.8	62.3	72.5	32	20	18	16	12	4x2.5	4	M5	10	50	60	M5	52	12			
			190.4	85.9																		
		1/9	201.8	62.3																		
			225.4	85.9																		
MQMF01□L□4N	100	1/15	212.3	62.3	100	50	30	26	22	19	6x3.5	6	M6	12	70	90	M6	78	20			
			235.9	85.9																		
		1/25	212.3	62.3																		
			235.9	85.9																		
MQMF02□L□1N	200	1/5	214.3	74.8	89.5	50	30	26	22	19	6x3.5	6	M6	12	70	90	3	M6	78			
			237.9	98.4																		
		1/9	214.3	74.8																		
			237.9	98.4																		
MQMF02□L□2N	200	1/15	224.8	74.8	100	61	40	35	30	24	8x4	7	M8	16	90	115	5	M8	98			
			248.4	98.4																		
		1/25	239.8	74.8																		
			263.4	98.4																		

\*1 The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number. Please refer to "Model Designation" in P294.  
 \*2 □LC: flange size of the reduction gear □, AF: □ flange size of the motor

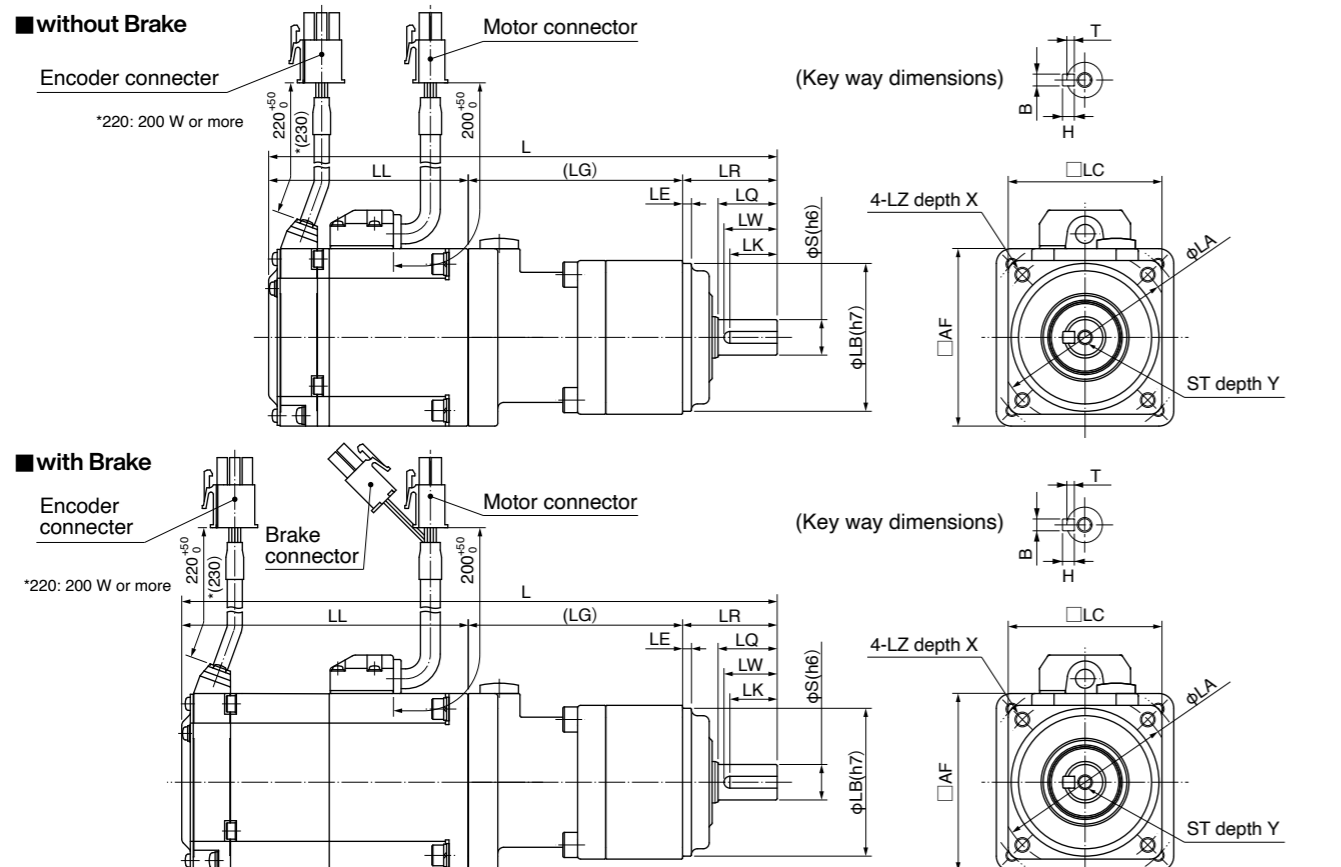
MQMF series (Connector type)



Motor Part No.*1	Motor output (W)	Reduction ratio	L	without Brake with Brake	without Brake with Brake	(LG)	LR	LQ	LW	LK	S	BxT	H	ST	Y	LB	LA	LE	LZ	LC <sub>2</sub>	X	AF <sub>2</sub>
MQMF01□L□1N	100	1/5	155.7	56.2	67.5	32	20	18	16	12	4x2.5	4	M5	10	50	60	3	M5	52	12	60	
			177	77.5																		
		1/9	155.7	56.2																		
			177	77.5																		
MQMF01□L□2N	100	1/15	171.7	56.2	83.5	50	30	26	22	19	6x3.5	6	M6	12	70	90	M6	78	20			
			193	77.5																		
		1/25	199.7	56.2																		
			221	77.5																		
MQMF01□L□3N	100	1/5	166.8	62.3	72.5	32	20	18	16	12	4x2.5	4	M5	10	50	60	M5	52	12			
			190.4	85.9																		
		1/9	201.8	62.3																		
			225.4	85.9																		
MQMF01□L□4N	100	1/15	212.3	62.3	100	50	30	26	22	19	6x3.5	6	M6	12	70	90	M6	78	20			
			235.9	85.9																		
		1/25	212.3	62.3																		
			235.9	85.9																		
MQMF02□L□1N	200	1/5	214.3	74.8	89.5	50	30	26	22	19	6x3.5	6	M6	12	70	90	3	M6	78			
			237.9	98.4																		
		1/9	214.3	74.8																		
			237.9	98.4																		
MQMF02□L□2N	200	1/15	224.8	74.8	100	61	40	35	30	24	8x4	7	M8	16	90	115	5	M8	98			
			248.4	98.4																		
		1/25	239.8	74.8																		
			263.4	98.4																		

\*1 The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number. Please refer to "Model Designation" in P294.  
 \*2 □LC: flange size of the reduction gear □, AF: □ flange size of the motor

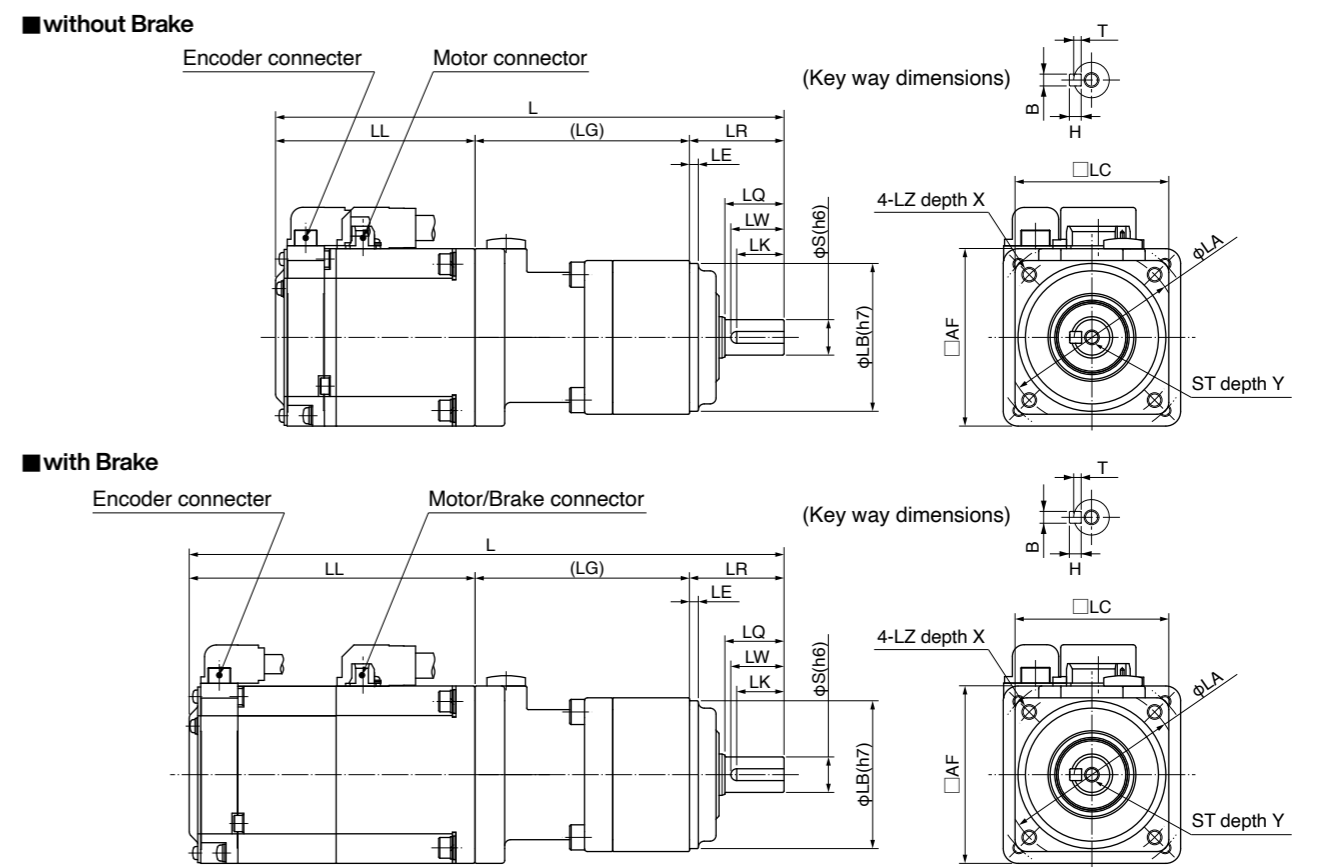
MHMF series (Leadwire type)



Motor Part No.*1	Motor output (W)	Reduction ratio	L	without Brake with Brake	LL	(LG)	LR	LQ	LW	LK	S	BxT	H	ST	Y	LB	LA	LE	LZ	LC	X	AF
MHMF01□L□1N	100	1/5	167	67.5	67.5	78	32	20	18	16	12	4x2.5	4	M5	10	50	60	3	M5	52	12	40
MHMF01□L□2N		1/9	200.9	101.4																		
MHMF01□L□3N		1/15	177.5	67.5																		
MHMF02□L□1N	200	1/5	172	67.5	89.5	100	50	30	26	22	19	6x3.5	6	M6	12	70	90	3	M6	78	20	60
MHMF02□L□2N		1/9	207	67.5																		
MHMF02□L□3N		1/15	217.5	67.5																		
MHMF02□L□4N		1/25	217.5	67.5																		
MHMF04□L□1N	400	1/5	224	84.5	89.5	100	50	30	26	22	19	6x3.5	6	M6	12	70	90	3	M6	78	20	60
MHMF04□L□2N		1/9	253.3	113.8																		
MHMF04□L□3N		1/15	234.5	84.5																		
MHMF082L□1N	750	1/5	235.4	91.9	97.5	110	61	40	35	30	24	8x4	7	M8	16	90	115	5	M8	98	20	80
MHMF082L□2N		1/9	250.4	91.9																		
MHMF082L□3N		1/15	262.9	91.9																		
MHMF082L□4N		1/25	262.9	91.9																		

\*1 The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number. Please refer to "Model Designation" in P294.  
 \*2 □LC: flange size of the reduction gear □, AF: □ flange size of the motor

MHMF series (Connector type)



Motor Part No.*1	Motor output (W)	Reduction ratio	L	without Brake with Brake	LL	(LG)	LR	LQ	LW	LK	S	BxT	H	ST	Y	LB	LA	LE	LZ	LC	X	AF
MHMF01□L□1N	100	1/5	167	67.5	67.5	78	32	20	18	16	12	4x2.5	4	M5	10	50	60	3	M5	52	12	40
MHMF01□L□2N		1/9	200.9	101.4																		
MHMF01□L□3N		1/15	177.5	67.5																		
MHMF02□L□1N	200	1/5	172	67.5	89.5	100	50	30	26	22	19	6x3.5	6	M6	12	70	90	3	M6	78	20	60
MHMF02□L□2N		1/9	207	67.5																		
MHMF02□L□3N		1/15	217.5	67.5																		
MHMF02□L□4N		1/25	217.5	67.5																		
MHMF04□L□1N	400	1/5	224	84.5	89.5	100	50	30	26	22	19	6x3.5	6	M6	12	70	90	3	M6	78	20	60
MHMF04□L□2N		1/9	253.3	113.8																		
MHMF04□L□3N		1/15	234.5	84.5																		
MHMF082L□1N	750	1/5	235.4	91.9	97.5	110	61	40	35	30	24	8x4	7	M8	16	90	115	5	M8	98	20	80
MHMF082L□2N		1/9	250.4	91.9																		
MHMF082L□3N		1/15	262.9	91.9																		
MHMF082L□4N		1/25	262.9	91.9																		

\*1 The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number. Please refer to "Model Designation" in P294.  
 \*2 □LC: flange size of the reduction gear □, AF: □ flange size of the motor

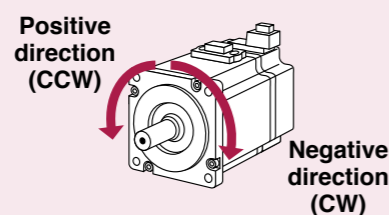


Environmental Conditions

Item	Conditions
Ambient temperature *1	0 °C to 40 °C (free from freezing)
Ambient humidity	20 %RH to 85 %RH (free from condensation *5*6)
Storage temperature *2	-20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation *5)
Storage humidity	20 %RH to 85 %RH (free from condensation *5*6)
Vibration	Motor only Lower than 49 m/s <sup>2</sup> (5 G) at running, 24.5 m/s <sup>2</sup> (2.5 G) at stall*7
Impact	Motor only Lower than 98 m/s <sup>2</sup> (10 G)
Enclosure rating (Motor only)	IP65 *3 MSMF, MQMF, MHMF (except rotating portion of output shaft and leadwire end.) (MSMF, MQMF, MHMF In case of leadwire type.)
	IP67 *3*4 IP67 motor (except rotating portion of output shaft and connecting pin part of the motor connector and the encoder connector)
	IP44 *3 Excludes output shaft rotating part, connector connection pin part, and motor lead hole part of terminal box.
Altitude	Lower than 1000 m

- \*1 Ambient temperature to be measured at 5 cm away from the motor.
- \*2 Permissible temperature for short duration such as transportation.
- \*3 These motors conform to the test conditions specified in EN standards (EN60529, EN60034-5). Do not use these motors in application where water proof performance is required such as continuous wash-down operation.
- \*4 This condition is applied when the connector mounting screw are tightened to the recommended tightening torque.
- \*5 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.
- \*6 The terminal block of MDMFD22L1□□ is between 45%RH to 85%RH.
- \*7 For motors with rated output capacity of 5.5 kW or more, both motor rotation and stop will be 24.5 m/s<sup>2</sup> (2.5 G) or less.

**<Note>**  
Initial setup of rotational direction:  
positive = CCW and negative = CW.  
Pay an extra attention.



IP65 (1000 W or less) <Leadwire type>	IP67 <Connector type>

Notes on [Motor specification] page

Note) 1. Regenerative resistors are not built in drivers of A and B frames. When regeneration occurs, prepare an optional external regenerative resistor.

[At AC100 V of power voltage]

Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
- When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is AC115 V (at 100 V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.
- When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

[At AC200 V of power voltage]

Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defines as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
- When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is AC230 V (at 200 V of the main voltage).  
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.

- When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

Note) 2. If the effective torque is within the rated torque, there is no limit in generative brake.

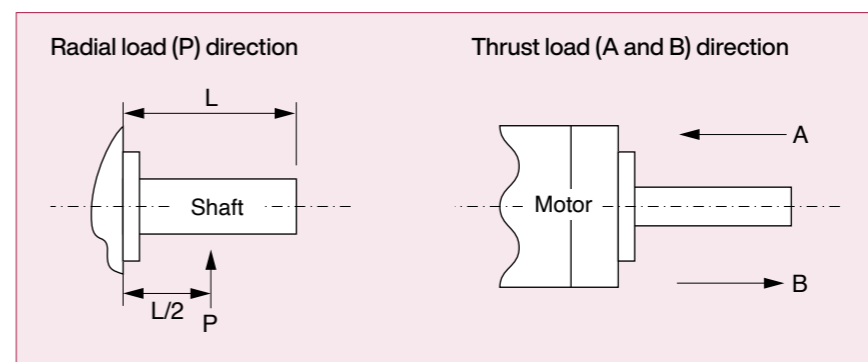
Note) 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.

Note) 4. Releasing time values represent the ones with DC-cutoff using a varistor.

Permissible Load at Output Shaft

The radial load is defined as a load applied to the output shaft in the right-angle direction. This load is generated when the gear head is coupled to the machine using a chain, belt, etc., but not when the gear head is directly connected to the coupling. As shown in the right figure, the permissible value is determined based on the load applied to the L/2 position of the output shaft. The thrust load is defined as a load applied to the output shaft in the axial direction.

**Because the radial load and thrust load significantly affect the life of the bearing, take care not to allow the load during operation to exceed the permissible radial load and thrust load shown in the table below.**



Built-in Holding Brake

In the applications where the motor drives the vertical axis, this brake would be used to hold and prevent the work (moving load) from falling by gravity while the power to the servo is shut off.

**Use this built-in brake for "Holding" purpose only, that is to hold the stalling status. Never use this for "Brake" purpose to stop the load in motion.**

• Output Timing of BRK-OFF Signal

- For the brake release timing at power-on, or braking timing at Servo-OFF/Servo-Alarm while the motor is in motion, refer to the Operating Instructions (Overall).
- With the parameter, Pr4.38 (Setup of mechanical brake action while the motor is in motion), you can set up a time between when the motor enters to a free-run from energized status and when BRK-OFF signal turns off (brake will be engaged), when the Servo-OFF or alarm occurs while the motor is in motion. For details, download a copy of the instruction manual from our website.

<Note>

1. The lining sound of the brake (chattering and etc.) might be generated while running the motor with built-in brake, however this does not affect any functionality.
2. Magnetic flux might be generated through the motor shaft while the brake coil is energized (brake is open).  
Pay an extra attention when magnetic sensors are used nearby the motor.

● Specifications of Built-in Holding Brake

Motor series	Motor output	Static friction torque N·m	Rotor inertia × 10 <sup>-4</sup> kg·m <sup>2</sup>	Engaging time ms	Releasing time ms	Exciting current DC A (at cool-off)	Releasing voltage DC V / Exciting voltage DC V	Permissible work (J) per one braking	Permissible total work × 10 <sup>3</sup> J	Permissible angular acceleration rad/s <sup>2</sup>			
MSMF (80 mm sq.) or less	50 W, 100 W	0.294 or more	0.002	35 or less	20 or less	0.30	1 or more	39.2	4.9	30000			
	200 W, 400 W	1.27 or more	0.018	50 or less	15 or less	0.36	24±1.2	137	44.1				
	750 W	2.45 or more	0.075	70 or less	20 or less	0.42	1 or more	185	80.0				
	1000 W	3.80 or more					24±2.4						
MSMF (100 mm sq.) or more	1.0 kW, 1.5 kW, 2.0 kW	8.0 or more	0.175	50 or less	15 or less	0.81	2 or more	600	50	10000			
	3.0 kW	12.0 or more		80 or less				900					
	4.0 kW	16.2 or more	1.12	110 or less	50 or less	0.90	24±2.4	1470	2160				
	5.0 kW	22.0 or more					1545	2000					
MQMF (80 mm sq.) or less	100 W	0.39 or more	0.018	15 or less	20 or less	0.30	1 or more	105	44.1	30000			
	200 W, 400 W	1.6 or more	0.075	70 or less		0.36	24±2.4	185	80				
MHMF (80 mm sq.) or less	50 W, 100 W	0.38 or more	0.002	35 or less	20 or less	0.30	1 or more	39.2	4.9	30000			
	200 W, 400 W	1.6 or more	0.018	50 or less		0.36		105	44.1				
	750 W, 1000 W	3.8 or more	0.075	70 or less		0.42		185	80				
MHMF (100 mm sq.) or more	1.0 kW, 1.5 kW	13.7 or more	1.12	100 or less	50 or less	0.79	2 or more	1470	2160	10000			
	2.0 kW, 3.0 kW, 4.0 kW	25.0 or more	4.7	80 or less				25 or less	1.29	1800	3000	5440	
	5.0 kW	44.1 or more	4.1	150 or less	30 or less	1.29		24±2.4	1800	3100	5108		
	7.5 kW	63.0 or more	3.9	200 or less	80 or less								
MDMF (100 mm sq.) or more	1.0 kW, 1.5 kW, 2.0 kW	13.7 or more	1.12	100 or less	50 or less	0.79	2 or more	1470	2160	10000			
	3.0 kW	22.0 or more		110 or less				0.90	1545		2000		
	4.0 kW	25.0 or more	4.7	80 or less	25 or less	1.29		24±2.4	1800	3000	5440		
	5.0 kW	44.1 or more	4.1	150 or less	30 or less								
	7.5 kW	63.0 or more	3.9	200 or less	80 or less	1.08		2000	4000	3000			
	11.0 kW	100 or more	7.1	300 or less	140 or less								
	15.0 kW				150 or less						1.72		
MGMF (100 mm sq.) or more	0.85 kW, 1.3 kW, 1.8 kW	13.7 or more	1.12	100 or less	50 or less	0.79	2 or more	1470	2160	10000			
	2.9 kW	25.0 or more	4.7	80 or less				25 or less	1.29	24±2.4	1800	3000	5440
	4.4 kW	44.1 or more	3.93	150 or less				30 or less					
	5.5 kW	63.0 or more	3.9	200 or less				80 or less					

- The engaging time and releasing time represent the delay time of the brake operation.
- Releasing time values represent the ones with DC-cutoff using a varistor.
- Above values (except static friction torque, releasing voltage and exciting voltage) represent typical values.
- Backlash of the built-in holding brake is kept 2° or smaller at ex-factory point.
- Service life of the number of acceleration/deceleration with the above permissible angular acceleration is more than 10 million times. (Life end is defined as when the brake backlash drastically changes.)
- The motor brake power supply must be different from the power supply for the driver's connectors X1, X2, X3, X4, X5, X6.

# Options

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50 W to 1000 W 80 mm sq. or less

• When the motors of <MSMF, MQMF, MHMF (Leadwire type)> are used, they are connected as shown below.  
Connector: Tyco Electronics Japan G.K. (The figures below show connectors for the motor.)

**[Connector for encoder]**

PIN No.	Application
1	BAT+*
2	BAT-*
3	FG(SHIELD)
4	PS
5	PS
6	NC
7	E5V
8	EOV
9	NC

**[Connector for motor]**

PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
4	Ground

**[Connector for Brake]**

PIN No.	Application
1	Brake
2	Brake

**<Remarks>**  
Do not connect anything to NC.  
\* When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

• When the motors of <MSMF, MQMF, MHMF (Connector type)> are used, they are connected as shown below.  
Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)

**[Connector for encoder]**

PIN No.	Application
1	FG(SHIELD)
2	BAT-*
3	EOV
4	PS
5	BAT+*
6	E5V
7	PS

**[Connector for motor]**

PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
4	NC
5	NC
6	NC
7	NC

**[Connector for Brake]**

PIN No.	Application
1	Brake
2	Brake

Tightening torque of the screw (M2) 0.19 N·m to 0.21 N·m  
\* Be sure to use only the screw supplied with the connector, to avoid damage.  
\* When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

**<MSMF>**

PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
PE	Ground

Tightening torque of the screw (M2) 0.085 N·m to 0.095 N·m (screwed to plastic)  
\* Be sure to use only the screw supplied with the connector, to avoid damage.  
\* Secure the gasket in place without removing it from the connector.

**<MHMF 50 W, 100 W>**

PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
4	NC
5	NC
PE	Ground

**<MQMF, MHMF 200 W to 1000 W>**

PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
4	NC
5	NC
PE	Ground

Tightening torque of the screw (M2) 0.085 N·m to 0.095 N·m  
\* Electromagnetic brake is a nonpolar device.  
\* Be sure to use only the screw supplied with the connector, to avoid damage.  
\* Secure the gasket in place without removing it from the connector.  
**<Remarks>** Do not connect anything to NC.

**[Motor with brake] <MSMF>**

PIN No.	Application
1	Brake
2	Brake

Tightening torque of the screw (M2) 0.19 N·m to 0.21 N·m  
\* Electromagnetic brake is a nonpolar device.  
\* Be sure to use only the screw supplied with the connector, to avoid damage.  
\* Secure the gasket in place without removing it from the connector.

0.85 kW to 5.0 kW 100 mm sq. or more

• When the motors of <MSMF, MDMF, MGMF, MHMF> are used, they are connected as shown below.  
Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)

**• Connector for encoder**

<Large size Encoder connector> JL10-2A20-29P 23-bit Absolute

PIN No.	Application	PIN No.	Application
A	NC	K	PS
B	NC	L	PS
C	NC	M	NC
D	NC	N	NC
E	NC	P	NC
F	NC	R	NC
G	E0V	S	BAT-*
H	E5V	T	BAT+*
J	FG(SHIELD)		

<Small size Encoder connector> JN2AS10ML3-R 23-bit Absolute

PIN No.	Application
1	E0V
2	NC
3	PS
4	E5V
5	BAT-*
6	BAT+*
7	PS
8	NC
9	FG(SHIELD)
10	NC

**<Remarks>**  
Do not connect anything to NC.  
\* When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

**• Connector for motor/brake**  
Table for motor connector and brake connector

Motor part No.	Motor output	200 V	
		without Brake	with Brake
MSMF	1.0 kW to 2.0 kW	A	C
	3.0 kW to 5.0 kW	B	D
MDMF	1.0 kW to 2.0 kW	A	C
	3.0 kW to 5.0 kW	B	D
	7.5 kW to 15.0 kW	E	E, F
MGMF	22.0 kW	G	G, F
	0.85 kW to 1.8 kW	A	C
MHMF	2.4 kW to 4.4 kW	B	D
	5.5 kW	E	E, F
MHMF	1.0 kW to 1.5 kW	A	C
	2.0 kW to 5.0 kW	B	D
MHMF	7.5 kW	E	E, F

**Connector for motor/brake**

\* Electromagnetic brake is a nonpolar device.

**A** JL10-2E20-4PE-B

PIN No.	Application
G	with Brake: Brake without Brake: NC
H	with Brake: Brake without Brake: NC
A	NC
F	U-phase
B	W-phase
E	Ground
D	Ground
C	NC

**B** JL10-2E22-22PE-B

PIN No.	Application
A	U-phase
B	V-phase
C	W-phase
D	Ground

**C** JL10-2E20-18PE-B

PIN No.	Application
A	U-phase
B	V-phase
C	W-phase
D	Ground
E	Ground
F	Ground
G	Ground
H	Ground
I	Ground
J	Ground
K	Ground
L	Ground
M	Ground
N	Ground
O	Ground
P	Ground
Q	Ground
R	Ground
S	Ground
T	Ground
U	Ground
V	Ground
W	Ground
X	Ground
Y	Ground
Z	Ground

**D** JL10-2E24-11PE-B

PIN No.	Application
A	with Brake: Brake without Brake: NC
B	with Brake: Brake without Brake: NC
C	NC
D	U-phase
E	V-phase
F	W-phase
G	Ground
H	Ground
I	NC

**Connector for motor**

**Connector for brake**

**<Motor>** JL04V-2E32-17PE-B-R

PIN No.	Application
A	U-phase
B	V-phase
C	W-phase
D	Ground

**<Brake>** N/MS3102A 14S-2P

PIN No.	Application
A	Brake
B	Brake
C	NC
D	NC

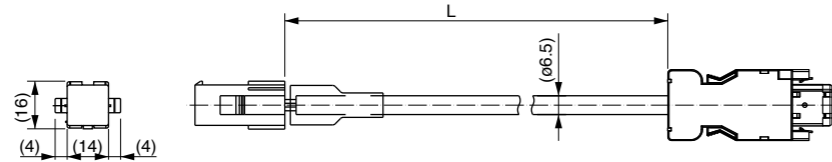
**<Terminal block>**

Terminal	Application
U	U-phase
V	V-phase
W	W-phase
Ground	Ground

\* U, V, W, Earth screw Nominal: M8  
Tightening torque: 12.0 N·m

Part No.	MFECA0 ** 0EAD	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W, MHMF 50 W to 1000 W (Leadwire type)	MQMF 100 W to 400 W
Specifications	23-bit absolute encoder When used in incremental system (without battery box)			

[Unit: mm]

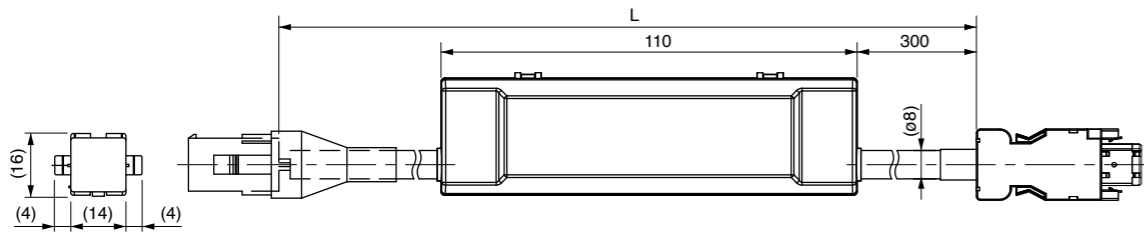


Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M (or equivalent)	3	MFECA0030EAD
Shell kit	3E306-3200-008		5	MFECA0050EAD
Connector (Motor side)	172161-1	Tyco Electronics Japan G.K.	10	MFECA0100EAD
Connector pin	170365-1		20	MFECA0200EAD
Cable	0.20 mm <sup>2</sup> ×3P (6-wire)	Ok Electric Cable Co., Ltd.		

Part No.	MFECA0 ** 0EAE	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W, MHMF 50 W to 1000 W (Leadwire type)	MQMF 100 W to 400 W
Specifications	23-bit absolute encoder When used in absolute system (with battery box) *			

\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

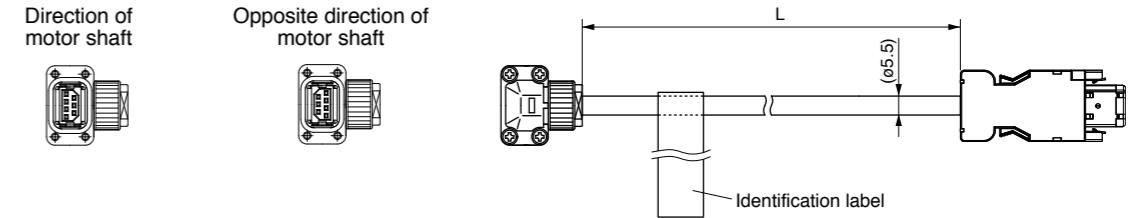
[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M (or equivalent)	3	MFECA0030EAE
Shell kit	3E306-3200-008		5	MFECA0050EAE
Connector (Motor side)	172161-1	Tyco Electronics Japan G.K.	10	MFECA0100EAE
Connector pin	170365-1		20	MFECA0200EAE
Cable	0.20 mm <sup>2</sup> ×4P (8-wire)	Ok Electric Cable Co., Ltd.		

Part No.	MFECA0 ** 0MJD (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W MQMF 100 W to 400 W MHMF 50 W to 1000 W (Connector type)
	MFECA0 ** 0MKD (Highly bendable type, Opposite direction of motor shaft)		
	MFECA0 ** 0TJD (Standard bendable type, Direction of motor shaft)		
	MFECA0 ** 0TKD (Standard bendable type, Opposite direction of motor shaft)		
Specifications	23-bit absolute encoder When used in incremental system (without battery box)		

[Unit: mm]

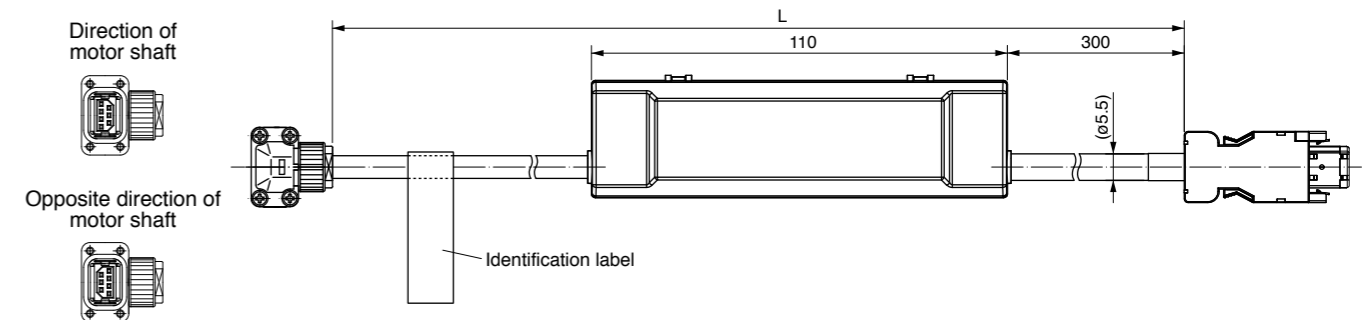


Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M (or equivalent)	3	MFECA0030MJD
Shell kit	3E306-3200-008		5	MFECA0050MJD
Connector (Motor side)	JN6FR07SM1	Japan Aviation Electronics Ind.	10	MFECA0100MJD
Connector pin	LY10-C1-A1-10000		20	MFECA0200MJD
Cable	AWG24 4-wire, AWG22 2-wire (ø5.5)	Hitachi Cable, Ltd.		

Part No.	MFECA0 ** 0MJE (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W MQMF 100 W to 400 W MHMF 50 W to 1000 W (Connector type)
	MFECA0 ** 0MKE (Highly bendable type, Opposite direction of motor shaft)		
	MFECA0 ** 0TJE (Standard bendable type, Direction of motor shaft)		
	MFECA0 ** 0TKE (Standard bendable type, Opposite direction of motor shaft)		
Specifications	23-bit absolute encoder When used in absolute system (with battery box) *		

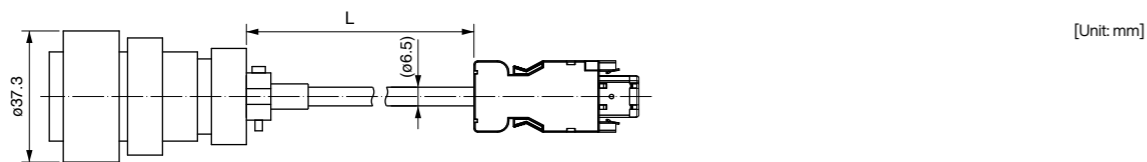
\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

[Unit: mm]



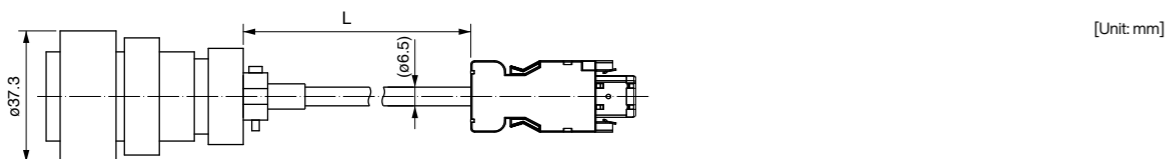
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M (or equivalent)	3	MFECA0030MJE
Shell kit	3E306-3200-008		5	MFECA0050MJE
Connector (Motor side)	JN6FR07SM1	Japan Aviation Electronics Ind.	10	MFECA0100MJE
Connector pin	LY10-C1-A1-10000		20	MFECA0200MJE
Cable	AWG24 4-wire, AWG22 2-wire (ø5.5)	Hitachi Cable, Ltd.		

<b>Part No.</b>	<b>MFECA0 ** OEPD</b>	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW
<b>Specifications</b>	23-bit absolute encoder When used in incremental system (without battery box) <Large one-touch lock type>		



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EPD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EPD
Connector (Motor side)	JL10-6A20-29S-EB	Japan Aviation Electronics Ind.	10	MFECA0100EPD
Cable clamp	JL04-2022CK(09)-R		20	MFECA0200EPD
Cable	0.2 mm <sup>2</sup> x3P (6-wire)	Oki Electric Cable Co., Ltd.		

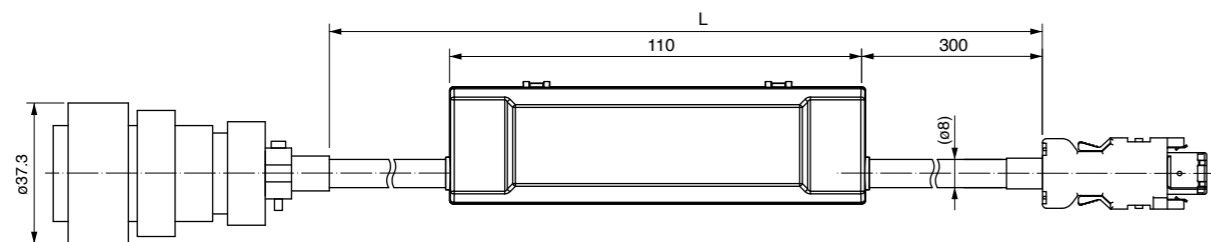
<b>Part No.</b>	<b>MFECA0 ** OESD</b>	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW
<b>Specifications</b>	23-bit absolute encoder When used in incremental system (without battery box) <Large screwed type>		



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ESD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ESD
Connector (Motor side)	N/MS3106B20-29S	Japan Aviation Electronics Ind.	10	MFECA0100ESD
Cable clamp	N/MS3057-12A		20	MFECA0200ESD
Cable	0.2 mm <sup>2</sup> x3P (6-wire)	Oki Electric Cable Co., Ltd.		

<b>Part No.</b>	<b>MFECA0 ** OEPE</b>	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW (IP67 motor)
<b>Specifications</b>	23-bit absolute encoder When used in absolute system (with battery box) * <Large one-touch lock type>		

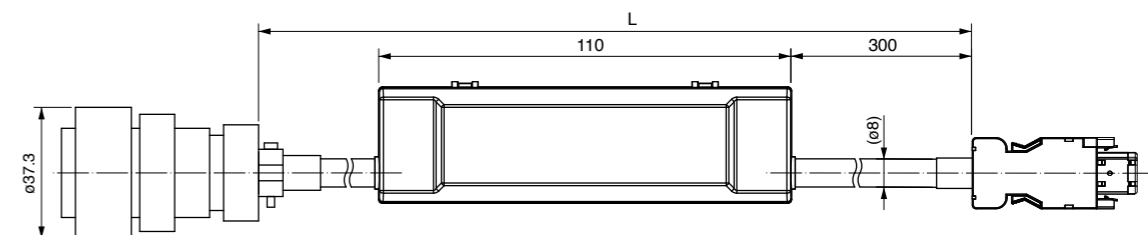
\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EPE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EPE
Connector (Motor side)	JL10-6A20-29S-EB	Japan Aviation Electronics Ind.	10	MFECA0100EPE
Cable clamp	JL04-2022CK(09)-R		20	MFECA0200EPE
Cable	0.2 mm <sup>2</sup> x3P (6-wire)	Oki Electric Cable Co., Ltd.		

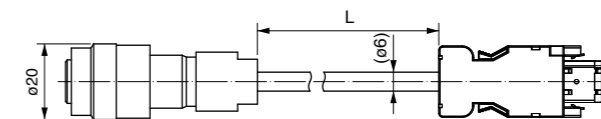
<b>Part No.</b>	<b>MFECA0 ** OESE</b>	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW (IP67 motor)
<b>Specifications</b>	23-bit absolute encoder When used in absolute system (with battery box) * <Large screwed type>		

\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ESE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ESE
Connector (Motor side)	N/MS3106B20-29S	Japan Aviation Electronics Ind.	10	MFECA0100ESE
Cable clamp	N/MS3057-12A		20	MFECA0200ESE
Cable	0.2 mm <sup>2</sup> x4P (8-wire)	Oki Electric Cable Co., Ltd.		

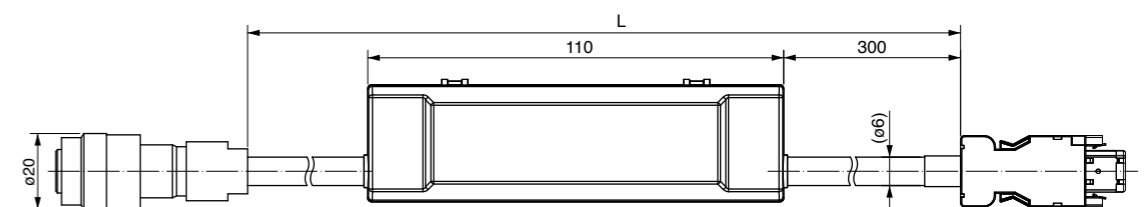
<b>Part No.</b>	<b>MFECA0 ** OETD</b>	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW (IP67 motor)
<b>Specifications</b>	23-bit absolute encoder When used in incremental system (without battery box) <Small one-touch lock type>		



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ETD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETD
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation Electronics Ind.	10	MFECA0100ETD
Connector pin	JN1-22-22S-PKG100		20	MFECA0200ETD
Cable	0.2 mm <sup>2</sup> x3P (6-wire)	Oki Electric Cable Co., Ltd.		

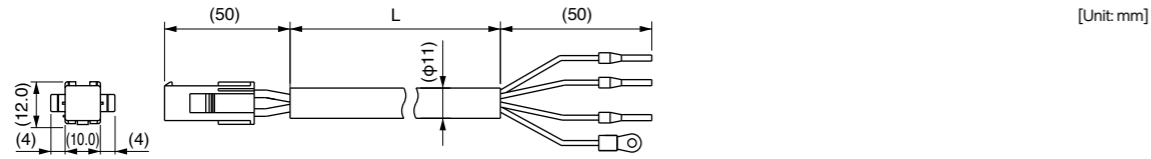
<b>Part No.</b>	<b>MFECA0 ** OETE</b>	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW (IP67 motor)
<b>Specifications</b>	23-bit absolute encoder When used in absolute system (with battery box) * <Small one-touch lock type>		

\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.



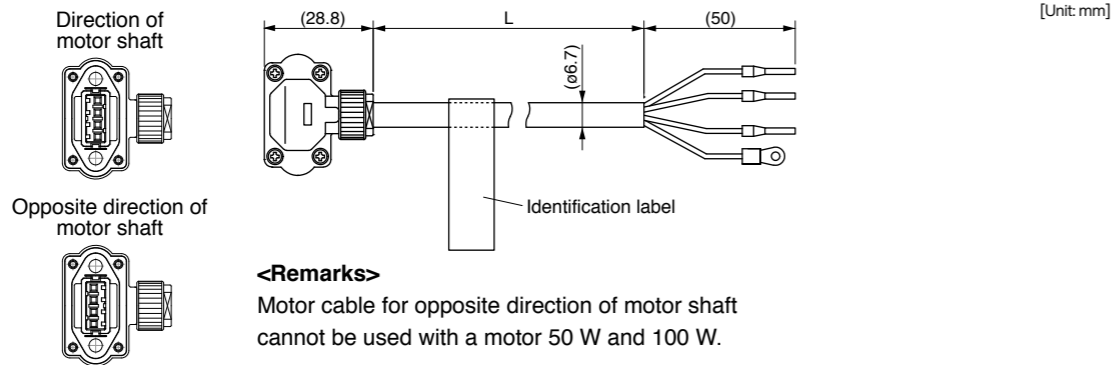
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ETE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETE
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation Electronics Ind.	10	MFECA0100ETE
Connector pin	JN1-22-22S-PKG100		20	MFECA0200ETE
Cable	0.2 mm <sup>2</sup> x3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFMCAO ** OEED	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W,	MQMF 100 W to 400 W
			MHMF 50 W to 1000 W (Leadwire type)	



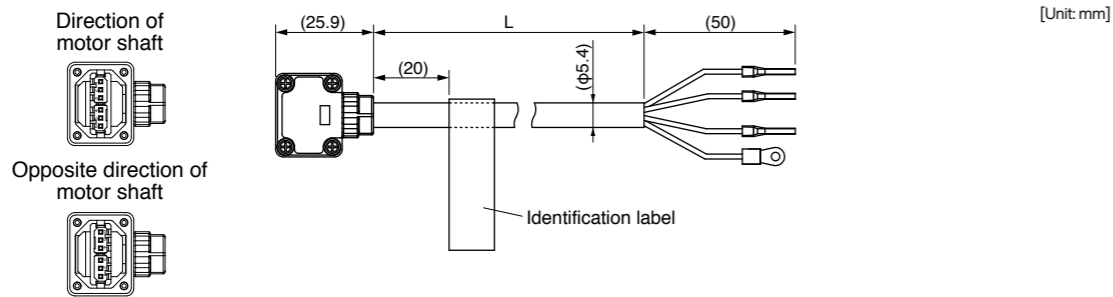
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	172159-1	Tyco Electronics Japan G.K.	3	MFMCA0030EED
Cable clamp	170366-1		5	MFMCA0050EED
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100EED
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200EED
Cable	ROBO-TOP 600V 0.75 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

Part No.	MFMCAO ** ONJD (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W	(Connector type)
	MFMCAO ** ORJD (Standard bendable type, Direction of motor shaft)		MHMF 200 W to 1000 W	
	MFMCAO ** ONKD (Highly bendable type, Opposite direction of motor shaft)		(Connector type)	
	MFMCAO ** ORKD (Standard bendable type, Opposite direction of motor shaft)			



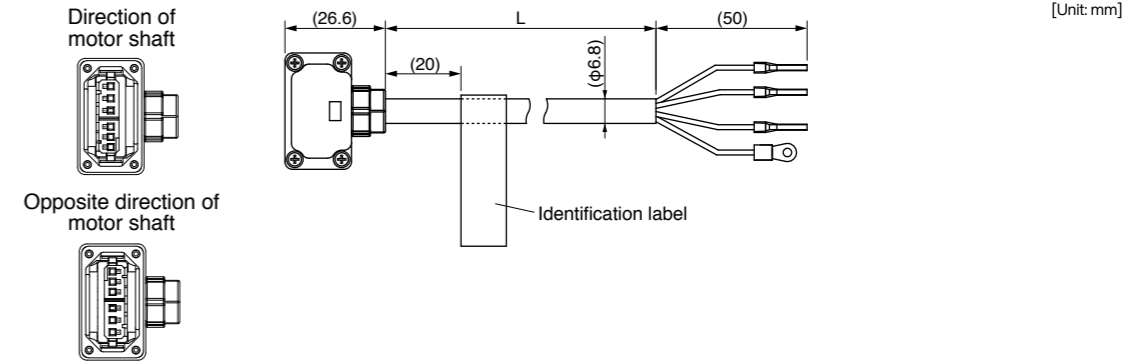
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN8FT04SJ1	Japan Aviation Electronics Ind.	3	MFMCA0030NJD
Cable clamp	ST-TMH-S-C1B-3500		5	MFMCA0050NJD
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100NJD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200NJD
Cable	AWG18 4-wire (φ6.7 mm)	Hitachi Cable, Ltd.		

Part No.	MFMCAO ** 7UFD (Movable/fixed common-use, direction of motor shaft)	80 mm sq. or less Applicable model	MHMF 50 W, 100 W
	MFMCAO ** 7UGD (Movable/fixed common-use, opposite direction of motor shaft)		(Connector type)



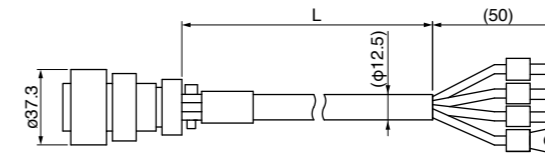
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN2	Japan Aviation Electronics Ind.	3	MFMCA0037UFD
Cable clamp	JN11S10K4A1		5	MFMCA0057UFD
Rod terminal	AI0.34-8TQ	PHOENIX CONTACT	10	MFMCA0107UFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0207UFD
Cable	AWG22 6-wire (φ5.4 mm)	NIKKO ELECTRIC WIRE CO.,LTD		

Part No.	MFMCAO ** OUFD (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MQMF 100 W to 400 W
	MFMCAO ** OUGD (Highly bendable type, Opposite direction of motor shaft)		MHMF 200 W to 1000 W
	MFMCAO ** OWFD (Standard bendable type, Direction of motor shaft)		(Connector type)
	MFMCAO ** OWGD (Standard bendable type, Opposite direction of motor shaft)		



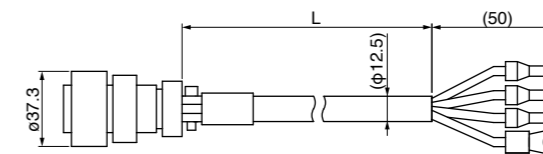
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN1	Japan Aviation Electronics Ind.	3	MFMCA0030UFD
Cable clamp	JN11S35H3A1		5	MFMCA0050UFD
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100UFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200UFD
Cable	AWG18 6-wire (φ6.8)	NIKKO ELECTRIC WIRE CO.,LTD		

Part No.	MFMCDO ** 2EUD	100 mm sq. or more Applicable model	MSMF 1.0 kW to 2.0 kW,	MDMF 1.0 kW to 2.0 kW
			MHMF 1.0 kW, 1.5 kW, <One-touch lock type>	MGMF 0.85 kW to 1.8 kW



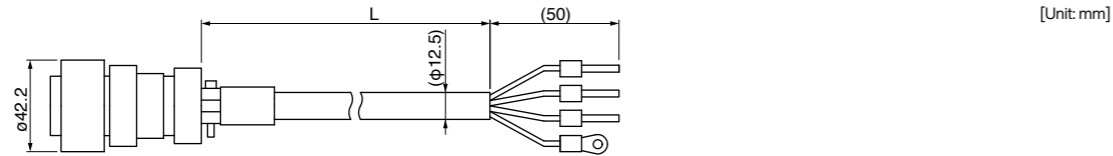
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A20-4SE-EB	Japan Aviation Electronics Ind.	3	MFMCD0032EUD
Cable clamp	JL04-2022CK(14)-R		5	MFMCD0052EUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCD0102EUD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCD0202EUD
Cable	ROBO-TOP 600V 2.0mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

Part No.	MFMCDO ** 2ECD	100 mm sq. or more Applicable model	MSMF 1.0 kW to 2.0 kW,	MDMF 1.0 kW to 2.0 kW
			MHMF 1.0 kW, 1.5 kW, <Screwed type>	MGMF 0.85 kW to 1.8 kW



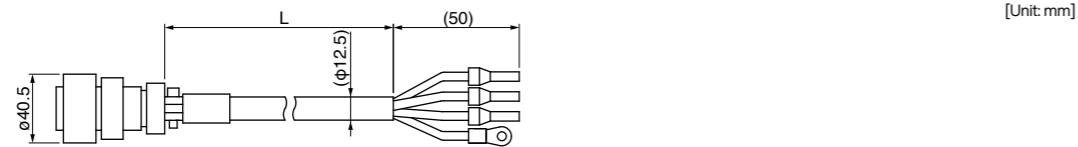
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A20-4SE-EB-RK	Japan Aviation Electronics Ind.	3	MFMCD0032ECD
Cable clamp	JL04-2022CK(14)-R		5	MFMCD0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCD0102ECD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCD0202ECD
Cable	ROBO-TOP 600V 2.0mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

Part No.	<b>MFMCEO ** 2EUD</b>	100 mm sq. or more Applicable model	MHMF 2.0 kW <One-touch lock type>
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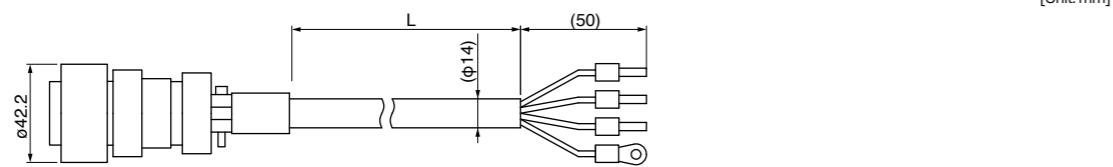
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-22SE-EB	Japan Aviation Electronics Ind.	3	MFMCE0032EUD
Cable clamp	JL04-2022CK(14)-R	Japan Aviation Electronics Ind.	5	MFMCE0052EUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102EUD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202EUD
Cable	ROBO-TOP DP6/2501 2.0 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

Part No.	<b>MFMCEO ** 2ECD</b>	100 mm sq. or more Applicable model	MHMF 2.0 kW <Screwed type>
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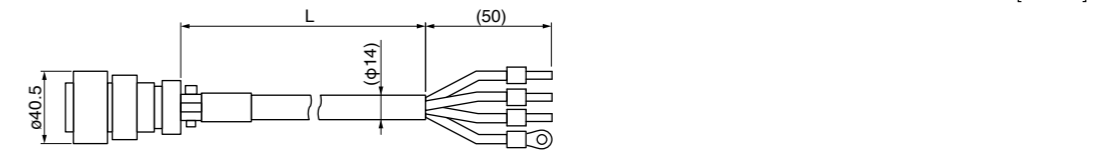
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCE0032ECD
Cable clamp	JL04-2022CK(14)-R	Japan Aviation Electronics Ind.	5	MFMCE0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102ECD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202ECD
Cable	ROBO-TOP 600V 2.0 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

Part No.	<b>MFMCEO ** 3EUT</b>	100 mm sq. or more Applicable model	MGMF 2.4 kW <One-touch lock type>
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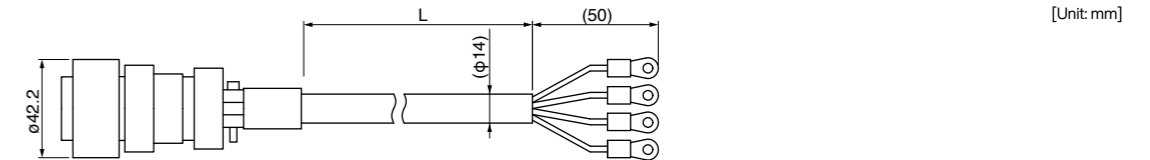
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-22SE-EB	Japan Aviation Electronics Ind.	3	MFMCE0033EUT
Cable clamp	JL04-2022CK(14)-R	Japan Aviation Electronics Ind.	5	MFMCE0053EUT
Rod terminal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCE0103EUT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	20	MFMCE0203EUT
Cable	ROBO-TOP DP6/2501 3.5 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

Part No.	<b>MFMCEO ** 3ECT</b>	100 mm sq. or more Applicable model	MGMF 2.4 kW <Screwed type>
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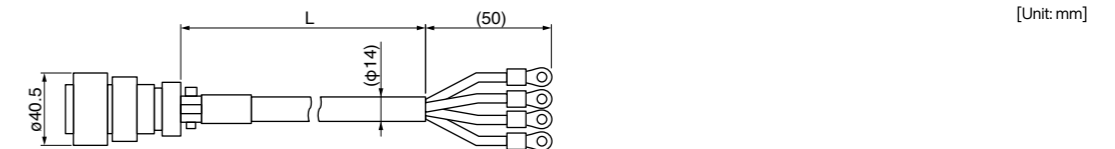
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCE0033ECT
Cable clamp	JL04-2022CK(14)-R	Japan Aviation Electronics Ind.	5	MFMCE0053ECT
Rod terminal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCE0103ECT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	20	MFMCE0203ECT
Cable	ROBO-TOP 600V 3.5 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

Part No.	<b>MFMCAO ** 3EUT</b>	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <One-touch lock type>	MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW to 4.4 kW
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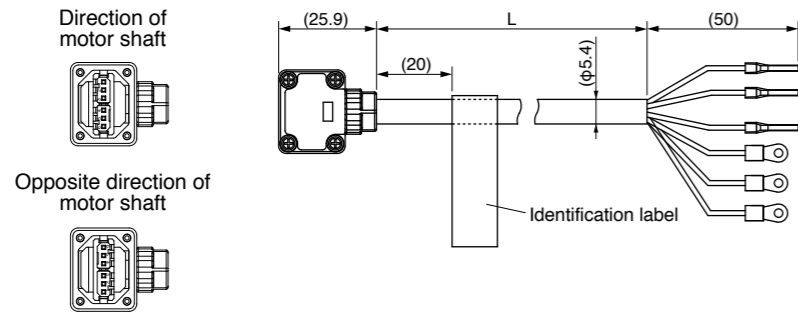
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-22SE-EB	Japan Aviation Electronics Ind.	3	MFMCA0033EUT
Cable clamp	JL04-2022CK(14)-R	Japan Aviation Electronics Ind.	5	MFMCA0053EUT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCA0103EUT
Cable	ROBO-TOP DP6/2501 3.5 mm <sup>2</sup> 4-wire	DYDEN CORPORATION	20	MFMCA0203EUT

Part No.	<b>MFMCAO ** 3ECT</b>	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <Screwed type>	MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW to 4.4 kW
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Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCA0033ECT
Cable clamp	JL04-2022CK(14)-R	Japan Aviation Electronics Ind.	5	MFMCA0053ECT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCA0103ECT
Cable	ROBO-TOP 600V 3.5 mm <sup>2</sup> 4-wire	DYDEN CORPORATION	20	MFMCA0203ECT

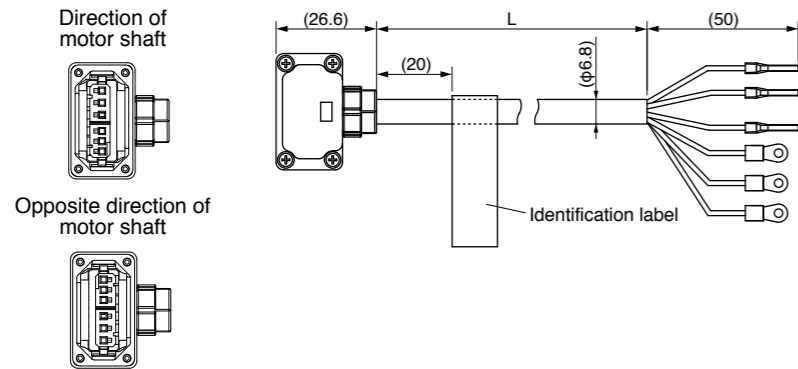
Part No.	<b>MFMCA0 ** 7VFD</b>	(Movable/fixed common-use, direction of motor shaft)	80 mm sq. or less Applicable model	MHMF 50 W, 100 W (Connector type)
	<b>MFMCA0 ** 7VGD</b>	(Movable/fixed common-use, opposite direction of motor shaft)		



[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN2	Japan Aviation Electronics Ind.	3	MFMCA0037VFD
Cable clamp	JN11S10K4A1	PHOENIX CONTACT	5	MFMCA0057VFD
Rod terminal	A10.34-8TQ	J.S.T Mfg. Co., Ltd.	10	MFMCA0107VFD
Nylon insulated round terminal	N1.25-M4	NIKKO ELECTRIC WIRE CO.,LTD	20	MFMCA0207VFD
Cable	AWG22 6-wire (φ5.4 mm)			

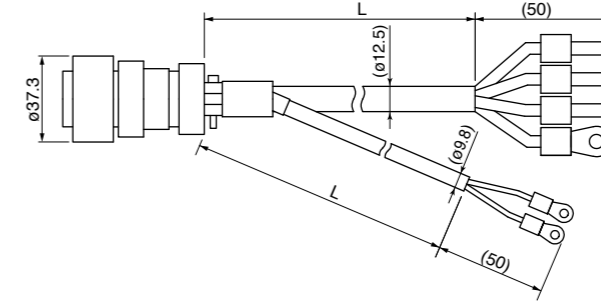
Part No.	<b>MFMCA0 ** 0VFD</b>	(Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MQMF 100 W to 400 W MHMF 200 W to 1000 W (Connector type)
	<b>MFMCA0 ** 0VGD</b>	(Highly bendable type, Opposite direction of motor shaft)		
	<b>MFMCA0 ** 0XFD</b>	(Standard bendable type, Direction of motor shaft)		
	<b>MFMCA0 ** 0XGD</b>	(Standard bendable type, Opposite direction of motor shaft)		



[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN1	Japan Aviation Electronics Ind.	3	MFMCA0030VFD
Cable clamp	JN11S35H3A1	PHOENIX CONTACT	5	MFMCA0050VFD
Rod terminal	A10.75-8GY	J.S.T Mfg. Co., Ltd.	10	MFMCA0100VFD
Nylon insulated round terminal	N1.25-M4	NIKKO ELECTRIC WIRE CO.,LTD	20	MFMCA0200VFD
Cable	AWG18 6-wire (φ6.8 mm)			

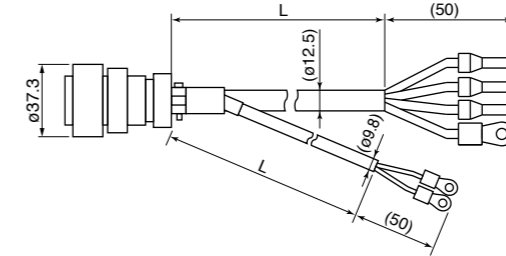
Part No.	<b>MFMCA0 ** 2FUD</b>	100 mm sq. or more Applicable model	MSMF 1.0 kW to 2.0 kW, MHMF 1.0 kW to 1.5 kW, <One-touch lock type>	MDMF 1.0 kW to 2.0 kW MGMF 0.85 kW to 1.8 kW
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A20-18SE-EB	Japan Aviation Electronics Ind.	3	MFMCA0032FUD
Cable clamp	JL042022CK(14)-R	J.S.T Mfg. Co., Ltd.	5	MFMCA0052FUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCA0102FUD
Nylon insulated round terminal	Earth: N2-M4 Brake: N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0202FUD
Cable	ROBO-TOP 600V 2.0 mm <sup>2</sup> 4-wire ROBO-TOP 600V 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		

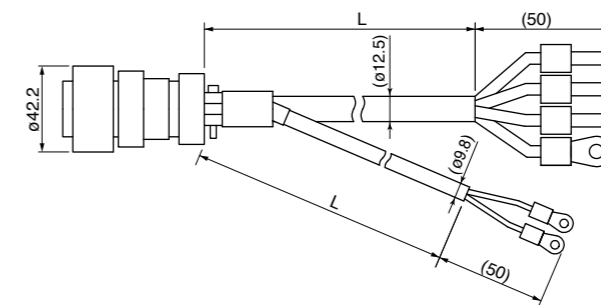
Part No.	<b>MFMCA0 ** 2FCD</b>	100 mm sq. or more Applicable model	MSMF 1.0 kW to 2.0 kW, MHMF 1.0 kW to 1.5 kW, <Screwed type>	MDMF 1.0 kW to 2.0 kW MGMF 0.85 kW to 1.8 kW
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A20-18SE-EB-RK	Japan Aviation Electronics Ind.	3	MFMCA0032FCD
Cable clamp	JL04-2022CK(14)-R	J.S.T Mfg. Co., Ltd.	5	MFMCA0052FCD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCA0102FCD
Nylon insulated round terminal	Earth: N2-M4 Brake: N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0202FCD
Cable	ROBO-TOP 600V 2.0 mm <sup>2</sup> 4-wire ROBO-TOP 600V 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		

Part No.	<b>MFMCE0 ** 2FUD</b>	100 mm sq. or more Applicable model	MHMF 2.0 kW <One-touch lock type>
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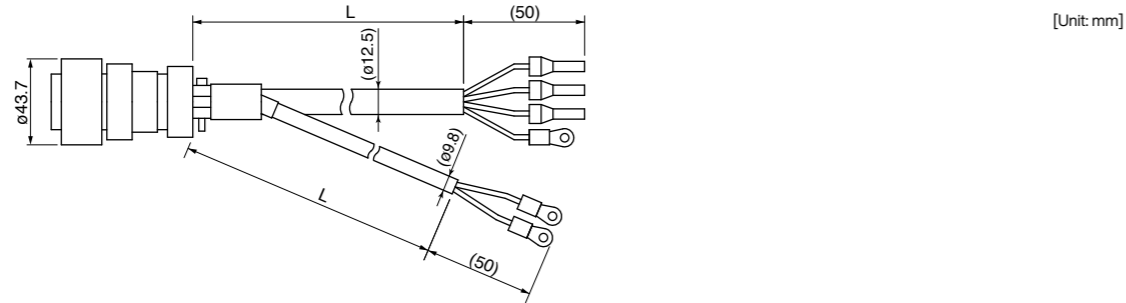


[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A24-11SE-EB	Japan Aviation Electronics Ind.	3	MFMCE0032FUD
Cable clamp	JL04-2428CK(17)-R	J.S.T Mfg. Co., Ltd.	5	MFMCE0052FUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102FUD
Nylon insulated round terminal	Earth: N2-M4 Brake: N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202FUD
Cable	ROBO-TOP DP6/2501 2.0 mm <sup>2</sup> 4-wire ROBO-TOP DP6/2501 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		

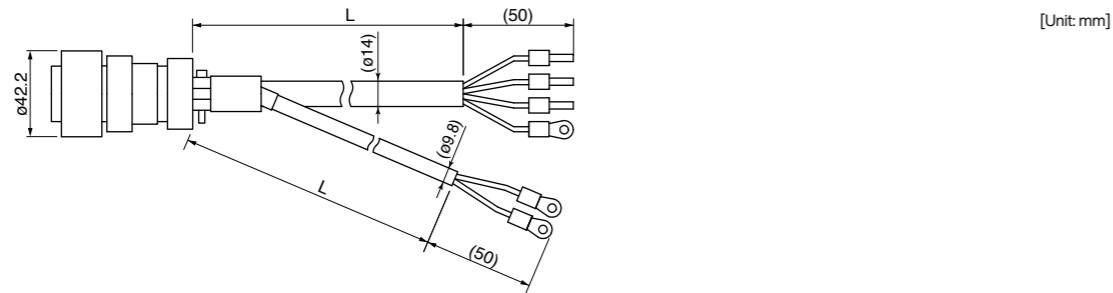


Part No.	<b>MFMCCE0 ** 2FCD</b>	100 mm sq. or more Applicable model	MHMF 2.0 kW <Screwed type>
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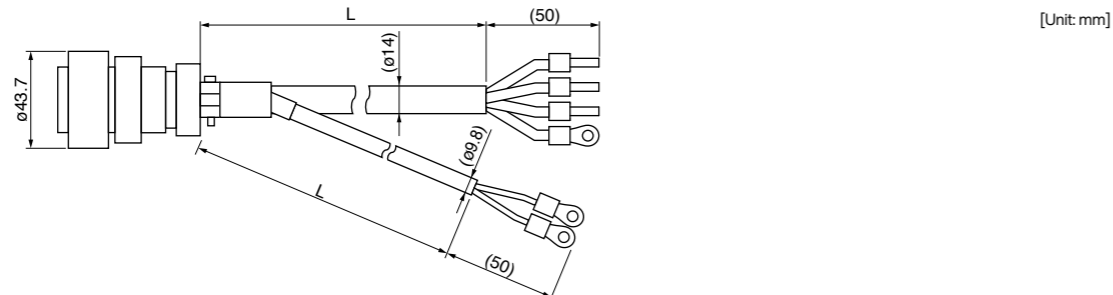
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCCE0032FCD
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCCE0052FCD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCCE0102FCD
Nylon insulated round terminal	Earth N2-M4 Brake N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCCE0202FCD
Cable	ROBO-TOP 600V 2.0 mm <sup>2</sup> 4-wire ROBO-TOP 600V 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		

Part No.	<b>MFMCD0 ** 3FUT</b>	100 mm sq. or more Applicable model	MGMF 2.4 kW <One-touch lock type>
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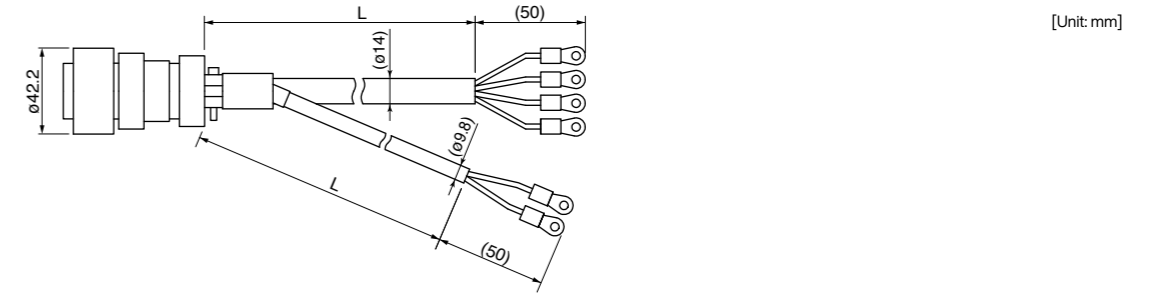
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A24-11SE-EB	Japan Aviation Electronics Ind.	3	MFMCD0033FUT
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCD0053FUT
Rod terminal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCD0103FUT
Nylon insulated round terminal	Earth N5.5-5 Brake N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCD0203FUT
Cable	ROBO-TOP DP6/2501 3.5 mm <sup>2</sup> 4-wire ROBO-TOP DP6/2501 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		

Part No.	<b>MFMCD0 ** 3FCT</b>	100 mm sq. or more Applicable model	MGMF 2.4 kW <Screwed type>
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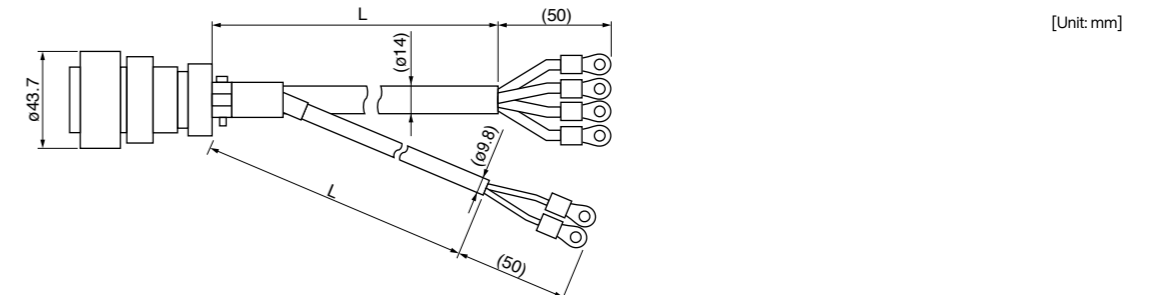
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCD0033FCT
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCD0053FCT
Rod terminal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCD0103FCT
Nylon insulated round terminal	Earth N5.5-5 Brake N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCD0203FCT
Cable	ROBO-TOP 600V 3.5 mm <sup>2</sup> 4-wire ROBO-TOP 600V 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		

Part No.	<b>MFMCA0 ** 3FUT</b>	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <One-touch lock type>	MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW, 4.4 kW
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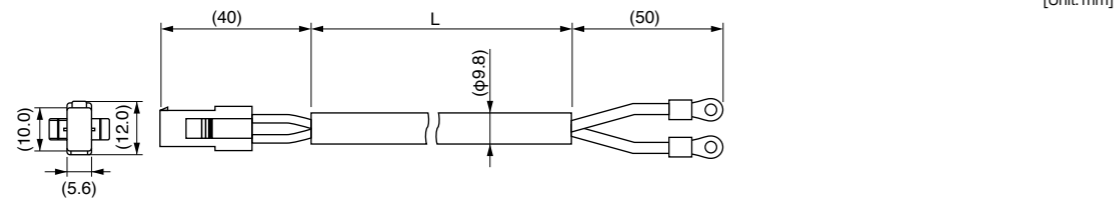
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A24-11SE-EB	Japan Aviation Electronics Ind.	3	MFMCA0033FUT
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCA0053FUT
Nylon insulated round terminal	Earth N5.5-5 Brake N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCA0103FUT
20	MFMCA0203FUT			
Cable	ROBO-TOP DP6/2501 3.5 mm <sup>2</sup> 4-wire ROBO-TOP DP6/2501 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		

Part No.	<b>MFMCA0 ** 3FCT</b>	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <Screwed type>	MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW, 4.4 kW
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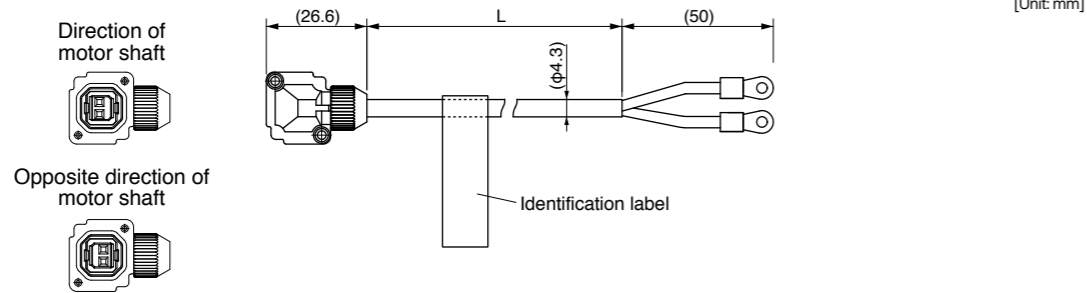
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCA0033FCT
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCA0053FCT
Nylon insulated round terminal	Earth N5.5-5 Brake N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCA0103FCT
20	MFMCA0203FCT			
Cable	ROBO-TOP 600V 3.5 mm <sup>2</sup> 4-wire ROBO-TOP 600V 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		

Part No.	MFMCB0 ** OGET	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W, MHMF 50 W to 1000 W (Leadwire type)	MQMF 100 W to 400 W
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Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	172157-1	Tyco Electronics Japan	3	MFMCB0030GET
Connector pin	170366-1, 170362-1	G.K.	5	MFMCB0050GET
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100GET
Cable	ROBO-TOP 600V 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION	20	MFMCB0200GET

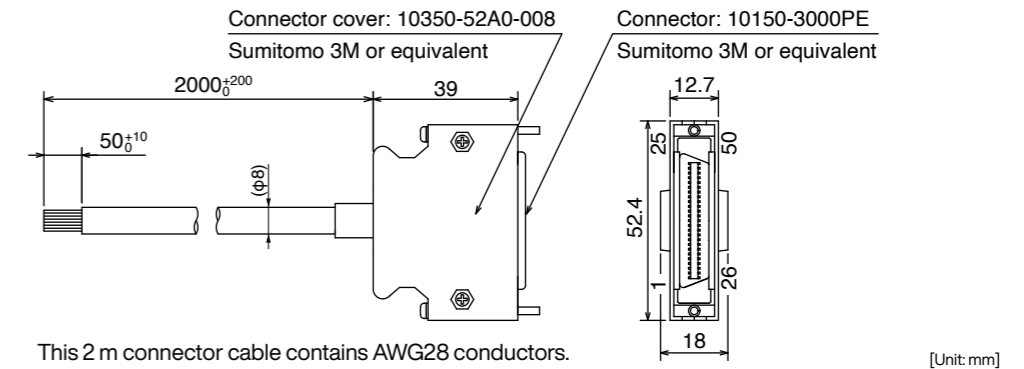
Part No.	MFMCB0 ** OPJT (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W (Connector type)
	MFMCB0 ** OPKT (Highly bendable type, Opposite direction of motor shaft)		
	MFMCB0 ** OSJT (Standard bendable type, Direction of motor shaft)		
	MFMCB0 ** OSKT (Standard bendable type, Opposite direction of motor shaft)		



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN4FT02SJMR	Japan Aviation Electronics Ind.	3	MFMCB0030PJT
Connector pin	ST-TMH-S-C1B-3500		5	MFMCB0050PJT
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100PJT
Cable	AWG22 2-wire (φ4.3)	Hitachi Cable, Ltd.	20	MFMCB0200PJT

Cable for Interface

Part No.	DVOP4360
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This 2 m connector cable contains AWG28 conductors.

Table for wiring

Pin No.	color	Pin No.	color	Pin No.	color	Pin No.	color	Pin No.	color
1	Orange (Red1)	11	Orange (Black2)	21	Orange (Red3)	31	Orange (Red4)	41	Orange (Red5)
2	Orange (Black1)	12	Yellow (Black1)	22	Orange (Black3)	32	Orange (Black4)	42	Orange (Black5)
3	Gray (Red1)	13	Gray (Red2)	23	Gray (Red3)	33	Gray (Red4)	43	Gray (Red5)
4	Gray (Black1)	14	Gray (Black2)	24	Gray (Black3)	34	White (Red4)	44	White (Red5)
5	White (Red1)	15	White (Red2)	25	White (Red3)	35	White (Black4)	45	White (Black5)
6	White (Black1)	16	Yellow (Red2)	26	White (Black3)	36	Yellow (Red4)	46	Yellow (Red5)
7	Yellow (Red1)	17	Yel (Blk2)/Pink (Blk2)	27	Yellow (Red3)	37	Yellow (Black4)	47	Yellow (Black5)
8	Pink (Red1)	18	Pink (Red2)	28	Yellow (Black3)	38	Pink (Red4)	48	Pink (Red5)
9	Pink (Black1)	19	White (Black2)	29	Pink (Red3)	39	Pink (Black4)	49	Pink (Black5)
10	Orange (Red2)	20	-	30	Pink (Black3)	40	Gray (Black4)	50	Gray (Black5)

<Remarks>  
Color designation of the cable e.g.) Pin-1  
Cable color : Orange  
(Red1) : One red dot on the cable

<Caution>

Cable pin No. 50 is not connected to the connector shell (housing) or shielded wire (net wire).  
Pin No. 50 of the Driver is connected to the shell (housing) of the connector.  
The shielded wire (net wire) of the cable is connected to the shell (housing) of the connector of the cable, and by connecting the connector of the optional cable to the Driver, pin No. 50 of the cable and the shielded wire (net wire) of the cable gets connected via the Driver.

Interface Conversion Cable

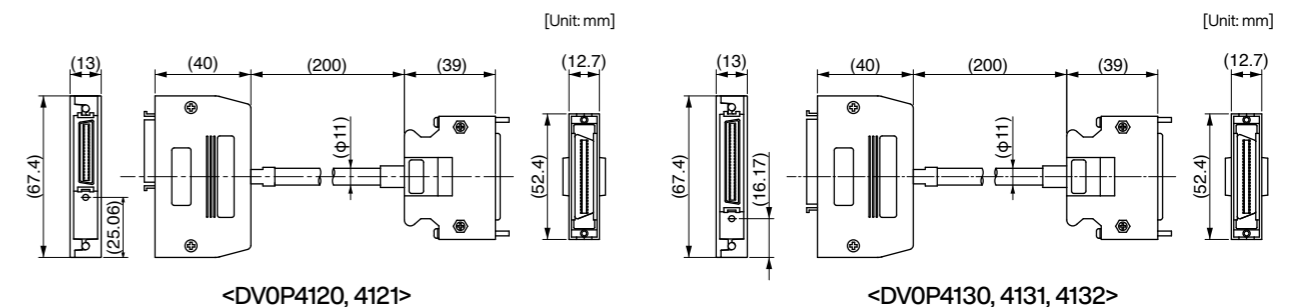
Part No.	DVOP4120, 4121, 4130, 4131, 4132
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Interface cables for old product (XX series or V series) can be connected to the current product by using the connector conversion cable shown below.

DVOP4120	MINAS XX → A6 series (A5II, A5, A4, A series) for position control/ velocity control
DVOP4121	MINAS XX → A6 series (A5II, A5, A4, A series) for torque control
DVOP4130	MINAS V → A6 series (A5II, A5, A4, A series) for position control
DVOP4131	MINAS V → A6 series (A5II, A5, A4, A series) for velocity control
DVOP4132	MINAS V → A6 series (A5II, A5, A4, A series) for torque control

\* For details of wiring, contact our sales department.

Converts 36-pin configuration to 50-pin.



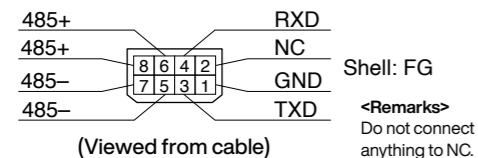
Connector Kit for Communication Cable (for RS485, RS232) (Excluding A6SE, A6NE, A6BE Series)

Part No.	DV0PM20102
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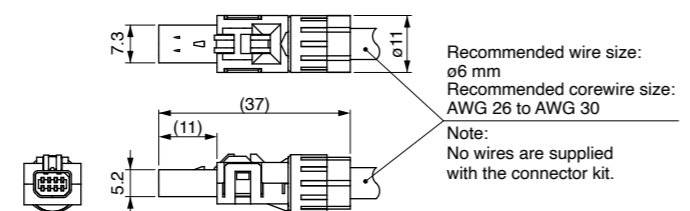
• Components

Title	Part No.	Manufacturer	Note
Connector	CIF-PCNS08KK-072R	J.S.T Mfg. Co., Ltd.	For Connector X2 (8-pins)

• Pin disposition of connector, connector X2



• Dimensions



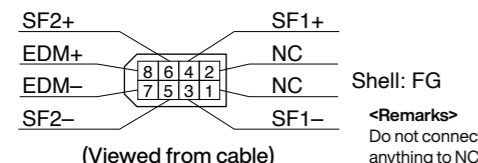
Connector Kit for Safety (Excluding A6SE, A6SG, A6NE, A6BE Series)

Part No.	DV0PM20103
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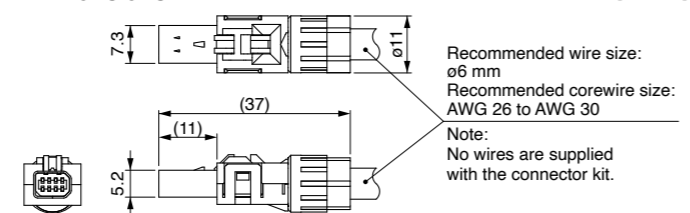
• Components

Title	Part No.	Manufacturer	Note
Connector	CIF-PCNS08KK-071R	J.S.T Mfg. Co., Ltd.	For Connector X3 (8-pins)

• Pin disposition of connector, connector X3



• Dimensions



Safety bypass plug (Excluding A6SE, A6SG, A6NE, A6BE Series)

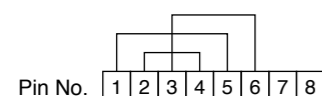
Part No.	DV0PM20094
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• Components

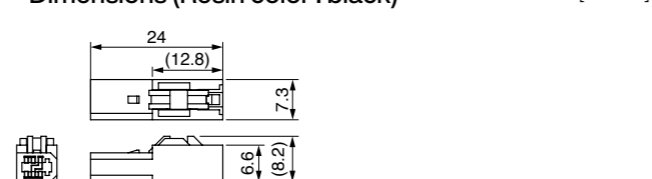
Title	Part No.	Manufacturer	Note
Connector	CIF-PB08AK-GF1R	J.S.T Mfg. Co., Ltd.	For Connector X3

• Internal wiring

(Wiring of the following has been applied inside the plug.)



• Dimensions (Resin color : black)



**<Remarks>**  
 • For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

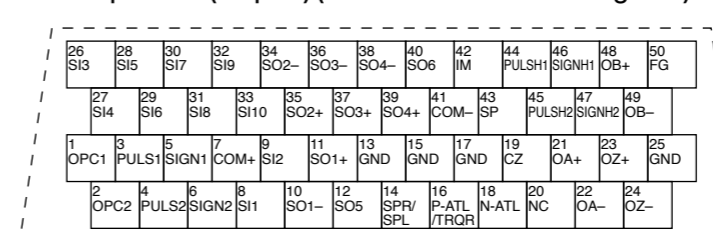
Connector Kit for Interface

Part No.	DV0P4350
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	10150-3000PE	1	Sumitomo 3M (or equivalent)	For Connector X4 (50-pins)
Connector cover	10350-52A0-008	1		

• Pin disposition (50 pins) (viewed from the soldering side)



- 1) Check the stamped pin-No. on the connector body while making a wiring.
- 2) For the function of each signal title or its symbol, refer to the operating manual.
- 3) Do not connect anything to NC pins in the above table.

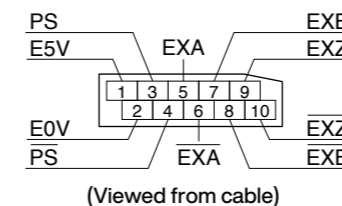
Connector Kit for External Scale (Excluding A6SE, A6SG, A6NE, A6BE Series)

Part No.	DV0PM20026
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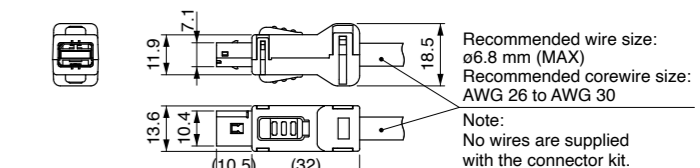
• Components

Title	Part No.	Manufacturer	Note
Connector	MUF-PK10K-X	J.S.T Mfg. Co., Ltd.	For Connector X5 (10-pins)

• Pin disposition of connector, connector X5



• Dimensions



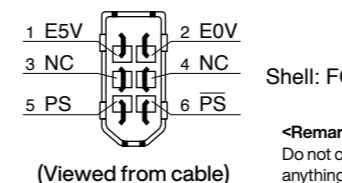
Connector Kit for Encoder

Part No.	DV0PM20010
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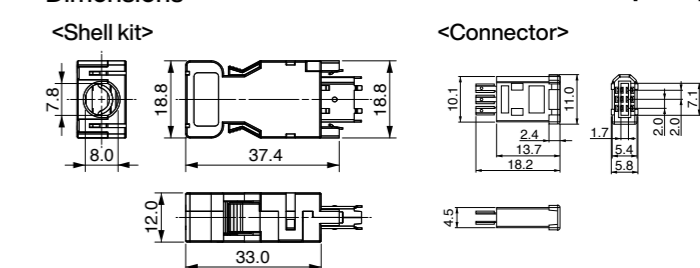
• Components

Title	Part No.	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M (or equivalent)	For Connector X6
Shell kit	3E306-3200-008		

• Pin disposition of connector, connector X6



• Dimensions



**<Remarks>**  
 Connector X1: use with commercially available cable.  
 • Configuration of connector X1: USB mini-B

Connector Kit for Power Supply Input

Part No. DV0PM20032 (For A-frame to D-frame: Single row type) ● Please refer to the Dimensions of driver P.57 for connector XA.

• Components

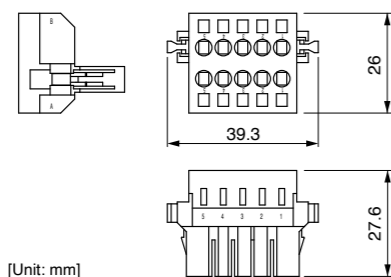
Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAX-GGKK-A	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT	2		

Part No. DV0PM20033 (For A-frame to D-frame: Double row type)

• Components

Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGSA-C	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT	2		

• Dimensions



\* When connection multiple axes in series, make sure the sum of the current value does not exceed the rated current (11.25 A) of DV0PM20033.

Remarks

When using drivers MDDL \* 55 \* \* in single-phase power supply, do not use DV0PM20033.

Driver part No.	Power supply	Rated input current
MADL * 01 * *	Single phase 100 V	1.7 A
MADL * 11 * *	Single phase 100 V	2.0 A
MADL * 05 * *	Single phase/3-phase 200 V	1.6 A/0.9 A
MADL * 15 * *	Single phase/3-phase 200 V	2.0 A/1.1 A
MBDL * 21 * *	Single phase 100 V	4.5 A
MBDL * 25 * *	Single phase/3-phase 200 V	3.7 A/2.1 A
MCDL * 31 * *	Single phase 100 V	7.0 A
MCDL * 35 * *	Single phase/3-phase 200 V	6.4 A/3.4 A
MDDL * 45 * *	Single phase/3-phase 200 V	7.9 A/4.6 A
MDDL * 55 * *	Single phase/3-phase 200 V	13.6 A/7.2 A

Part No. DV0PM20044 (For E-frame)

• Components

Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT-L	2		

Connector Kit for Regenerative Resistor Connection

Part No. DV0PM20045 (For E-frame)

• Components

Title	Part No.	Number	Manufacturer	Note
Connector	04JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	200 V: For Connector XC * Jumper wire is included.
Handle lever	J-FAT-OT-L	2		

<Remarks>

• For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Connector Kit for Motor Connection (Driver side)

Part No. DV0PM20034 (For A-frame to D-frame) ● Please refer to the Dimensions of driver P.57 for connector XB.

• Components

Title	Part No.	Number	Manufacturer	Note
Connector	06JFAT-SAX-GGKK-A	1	J.S.T Mfg. Co., Ltd.	For Connector XB * Jumper wire is included.
Handle lever	J-FAT-OT	2		

Part No. DV0PM20046 (For E-frame) ● Please refer to the Dimensions of driver P.59 for connector XB.

• Components

Title	Part No.	Number	Manufacturer	Note
Connector	03JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XB
Handle lever	J-FAT-OT-L	2		

Connector Kit for Motor/Encoder Connection

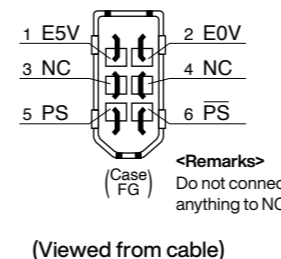
\* When IP65 or IP67 are necessary, the customer must give appropriate processing.

Part No.	DV0P4290	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W *, MQMF 100 W to 400 W MHMF 50 W to 1000 W * (Leadwire type IP65)
* MSMF092□1□2, MHMF092□1□□			

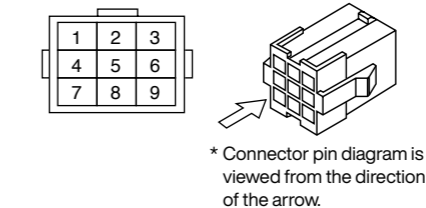
• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M (or equivalent)	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1		
Connector	172161-1	1	Tyco Electronics Japan G.K.	For Encoder cable (9-pins)
Connector pin	170365-1	9		
Connector	172159-1	1	Tyco Electronics Japan G.K.	For Motor cable (4-pins)
Connector pin	170366-1	4		

• Pin disposition of connector, connector X6



• Pin disposition of connector for encoder cable

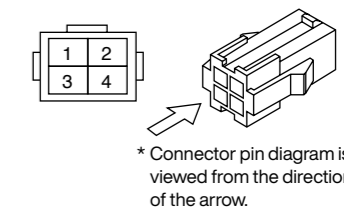


PIN No.	Application
1	BAT+*
2	BAT-*
3	FG(SHIELD)
4	PS
5	PS
6	NC
7	E5V
8	E0V
9	NC

\* When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

<Remarks> Do not connect anything to NC.

• Pin disposition of connector for motor cable



PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
4	Ground

\* When you connect the battery for absolute encoder, refer to P.338, "When you make your own cable for 23-bit absolute encoder"

<Remarks>

• For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

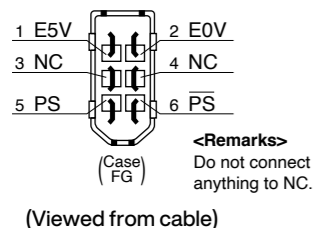
Part No.	DV0PM20035	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W * (Connector type IP67)
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\* MSMF092L1□1

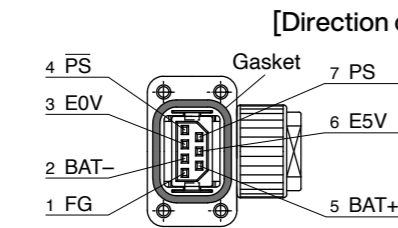
• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN6FR07SM1	1	Japan Aviation Electronics Ind.	For Encoder cable (7-pins)
Socket contact	LY10-C1-A1-10000	7		
Motor connector	JN8FT04SJ1	1	Japan Aviation Electronics Ind.	For Motor cable (4-pins)
Socket contact	ST-TMH-S-C1B-3500	4		

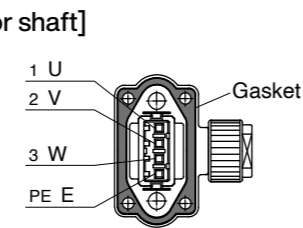
• Pin disposition of connector connector X6



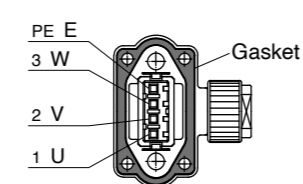
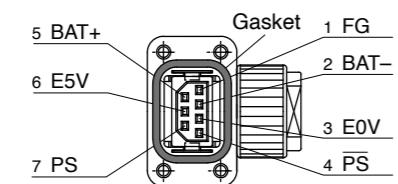
• Pin disposition of connector for encoder cable



• Pin disposition of connector for motor cable



[Opposite direction of motor shaft]



<Remarks>  
Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

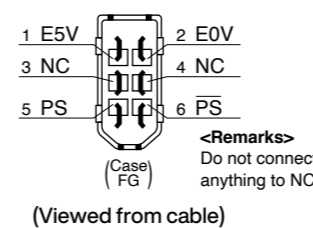
\* Pins 2 and 5 are left unused (NC) when used in incremental system.

Part No.	DV0PM24581	80 mm sq. or less Applicable model	MHMF 50 W, 100 W (Connector type IP67)	with/without brake common use
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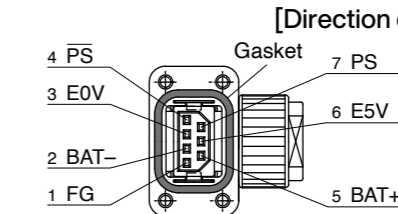
• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN6FR07SM1	1	Japan Aviation Electronics Ind.	For Encoder cable (7-pins)
Socket contact	LY10-C1-A1-10000	7		
Motor connector	JN11FH06SN2	1	Japan Aviation Electronics Ind.	For Motor cable (6-pins)
Socket contact	JN11S10K4A1	6		

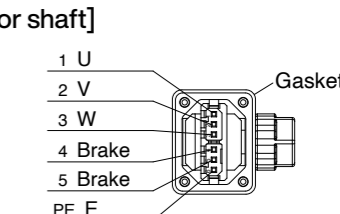
• Pin disposition of connector connector X6



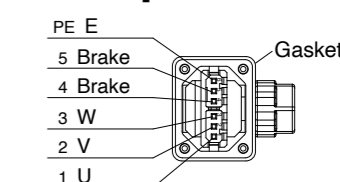
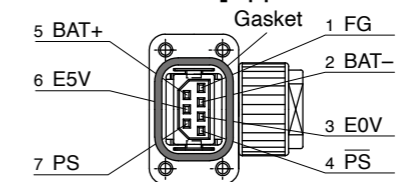
• Pin disposition of connector for encoder cable



• Pin disposition of connector for motor cable



[Opposite direction of motor shaft]



<Remarks>  
Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

\* Pins 2 and 5 are left unused (NC) when used in incremental system.

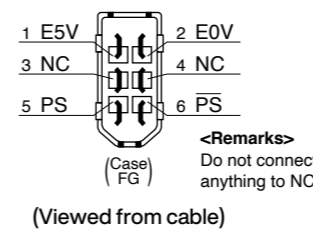
\* 4-pin and 5-pin are not used in case of no brake.

Part No.	DV0PM24582	80 mm sq. or less Applicable model	MQMF 100 W to 400 W, MHMF 200 W to 1000 W (Connector type IP67)	with/without brake common use
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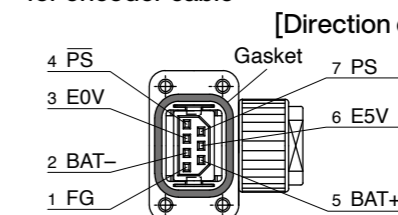
• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN6FR07SM1	1	Japan Aviation Electronics Ind.	For Encoder cable (7-pins)
Socket contact	LY10-C1-A1-10000	7		
Motor connector	JN11FH06SN1	1	Japan Aviation Electronics Ind.	For Motor cable (6-pins)
Socket contact	JN11S35H3A1	6		

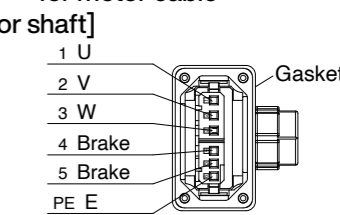
• Pin disposition of connector connector X6



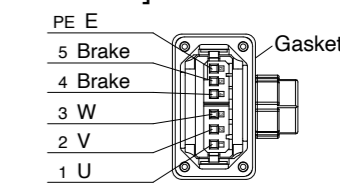
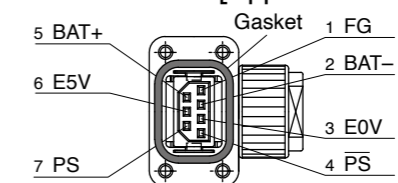
• Pin disposition of connector for encoder cable



• Pin disposition of connector for motor cable



[Opposite direction of motor shaft]



<Remarks>  
Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

\* Pins 2 and 5 are left unused (NC) when used in incremental system.

\* 4-pin and 5-pin are not used in case of no brake.

<Remarks>  
• For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

**Connector Kit for Motor/Encoder Connection**

\* When IP65 or IP67 are necessary, the customer must give appropriate processing.

Part No.	DV0PM24583	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL10-6A20-4SE-EB	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(One-touch lock type)

\* MSMF102□□□, MHMF102□□□

Part No.	DV0PM24585	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL10-6A20-18SE-EB	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(One-touch lock type)

\* MSMF102□□□, MHMF102□□□

Part No.	DV0PM24587	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1		(One-touch lock type)
Motor connector	JL10-6A20-4SE-EB	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(One-touch lock type)

\* MSMF102L1□□, MHMF102L1□□

Part No.	DV0PM24589	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1		(One-touch lock type)
Motor connector	JL10-6A20-18SE-EB	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(One-touch lock type)

\* MSMF102L1□□, MHMF102L1□□

<Remarks>

• For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM24584	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL10-6A22-22SE-EB	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(One-touch lock type)

Part No.	DV0PM24586	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL10-6A24-11SE-EB	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2428CK(17)-R	1		(One-touch lock type)

Part No.	DV0PM24588	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1		(One-touch lock type)
Motor connector	JL10-6A22-22SE-EB	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(One-touch lock type)

Part No.	DV0PM24590	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1		(One-touch lock type)
Motor connector	JL10-6A24-11SE-EB	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2428CK(17)-R	1		(One-touch lock type)

<Remarks>

• For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

**Connector Kit for Motor/Encoder Connection**

\* When IP65 or IP67 are necessary, the customer must give appropriate processing.

Part No.	DV0PM20036	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	Without brake
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\* MSMF102□□□, MHMF102□□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A20-4SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(Screwed type)

Part No.	DV0PM20038	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	With brake
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\* MSMF102□□□, MHMF102□□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A20-18SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(Screwed type)

Part No.	DV0P4310	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	Without brake
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\* MSMF102L1□□, MHMF102L1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	N/MS3106B20-4S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-12A	1		(Screwed type)

Part No.	DV0P4330	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	With brake
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\* MSMF102L1□□, MHMF102L1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	N/MS3106B20-18S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-12A	1		(Screwed type)

<Remarks>

• For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM20037	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A22-22SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(Screwed type)

Part No.	DV0PM20039	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A24-11SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2428CK(17)-R	1		(Screwed type)

Part No.	DV0P4320	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	N/MS3106B22-22S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-12A	1		(Screwed type)

Part No.	DV0P4340	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	N/MS3106B24-11S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-16A	1		(Screwed type)

<Remarks>

• For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

**Connector Kit for Motor/Encoder Connection**

\* When IP65 or IP67 are necessary, the customer must give appropriate processing.

<b>Part No.</b>	<b>DV0PM20107</b>	<b>100 mm sq. or more Applicable model</b>	(IP67 motor) Encoder JL10 <Large size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1		(One-touch lock type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-32CK(24)-RK <sup>*1</sup>	1		(Screwed type)

\*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

<b>Part No.</b>	<b>DV0PM20108</b>	<b>100 mm sq. or more Applicable model</b>	(IP67 motor) Encoder JL10 <Large size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1		(One-touch lock type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-32CK(24)-RK <sup>*1</sup>	1		(Screwed type)
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable
Cable clamp	N/MS3057-6A	1		(Screwed type)

\*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

<b>Part No.</b>	<b>DV0PM20111</b>	<b>100 mm sq. or more Applicable model</b>	(IP67 motor) Encoder JL10 <Large size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-32CK(24)-RK <sup>*1</sup>	1		(Screwed type)

\*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

<b>Part No.</b>	<b>DV0PM20112</b>	<b>100 mm sq. or more Applicable model</b>	(IP67 motor) Encoder JL10 <Large size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-32CK(24)-RK <sup>*1</sup>	1		(Screwed type)
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable
Cable clamp	N/MS3057-6A	1		(Screwed type)

\*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

<b>Part No.</b>	<b>DV0PM20056</b>	<b>100 mm sq. or more Applicable model</b>	(IP67 motor) Encoder JN2 <Small size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-32CK(24)-RK <sup>*1</sup>	1		(Screwed type)

\*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

<b>Part No.</b>	<b>DV0PM20057</b>	<b>100 mm sq. or more Applicable model</b>	(IP67 motor) Encoder JN2 <Small size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-32CK(24)-RK <sup>*1</sup>	1		(Screwed type)
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable
Cable clamp	N/MS3057-6A	1		(Screwed type)

\*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".



**Connector Kit for Motor/Encoder Connection**

\* When IP44 is necessary, the customer must give appropriate processing.

Part No.	DV0PM20109	100 mm sq. or more Applicable model	(IP44 motor) Encoder JL10 <Large size connector> MDMF 22.0 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1		(One-touch lock type)

Part No.	DV0PM20110	100 mm sq. or more Applicable model	(IP44 motor) Encoder JL10 <Large size connector> MDMF 22.0 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1		(One-touch lock type)
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable
Cable clamp	N/MS3057-6A	1		(Screwed type)

Part No.	DV0PM20113	100 mm sq. or more Applicable model	(IP44 motor) Encoder JL10 <Large size connector> MDMF 22.0 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)

Part No.	DV0PM20114	100 mm sq. or more Applicable model	(IP44 motor) Encoder JL10 <Large size connector> MDMF 22.0 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable
Cable clamp	N/MS3057-6A	1		(Screwed type)

Part No.	DV0PM20115	100 mm sq. or more Applicable model	(IP44 motor) Encoder JN2 <Small size connector> MDMF 22.0 kW	Without brake
----------	------------	--	---	------------------

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)

Part No.	DV0PM20116	100 mm sq. or more Applicable model	(IP44 motor) Encoder JN2 <Small size connector> MDMF 22.0 kW	With brake
----------	------------	--	---	---------------

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable
Cable clamp	N/MS3057-6A	1		(Screwed type)

\* The motor / encoder connection connector kit for MDMF 22.0 kW does not include the connection parts for motor cable (terminal block). Please prepare a round terminal by yourself. (For details, see P.27)

**<Remarks>**  
 • For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

**<Remarks>**  
 • For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

\* When IP65 or IP67 are necessary, the customer must give appropriate processing.

Connector Kit for Motor/Brake Connection

Part No.	DV0PM20040	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W * (Connector type IP67)
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\* MSMF092L1□1

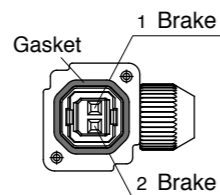
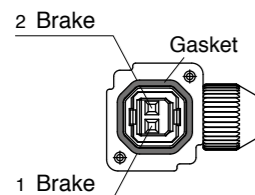
• Components

Title	Part No.	Number	Manufacturer	Note
Connector	JN4FT02SJM-R	1	Japan Aviation Electronics Ind.	For brake cable
Socket contact	ST-TMH-S-C1B-3500	2		

• Pin disposition of connector for brake cable

[Direction of motor shaft]

[Opposite direction of motor shaft]



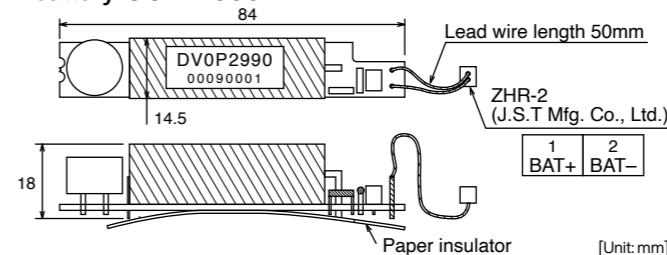
<Remarks>

Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

Battery for Absolute Encoder

Part No.	DV0P2990
----------	----------

• Lithium battery: 3.6 V 2000 mAh



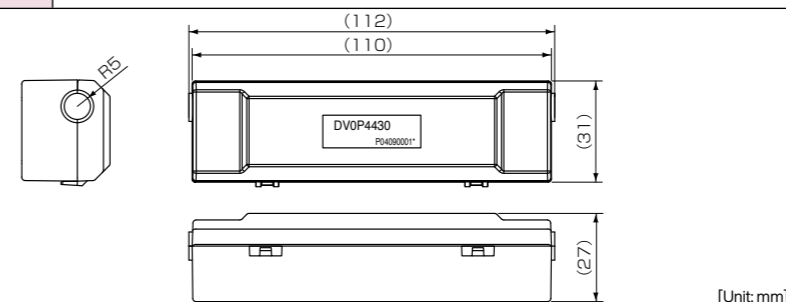
<Caution>

This battery is categorized as hazardous substance, and you may be required to present an application of hazardous substance when you transport by air (both passenger and cargo airlines).

Battery Box for Absolute Encoder \*

\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

Part No.	DV0P4430
----------	----------



When making a cable for 23-bit absolute encoder by yourself

When you make your own cable for 23-bit absolute encoder, connect the optional battery for absolute encoder, DV0P2990 as per the wiring diagram below. Connector of the battery for absolute encoder shall be provided by customer as well.

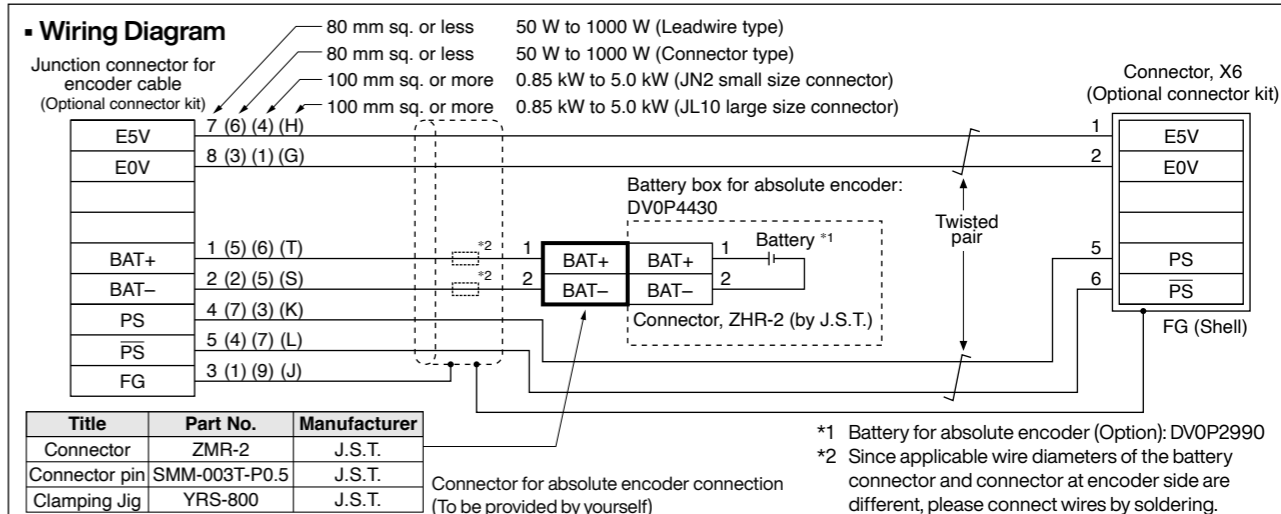
<Caution>

Install and fix the battery securely. If the installation and fixing of the battery is not appropriate, it may cause the wire breakdown or damage of the battery.

Refer to the instruction manual of the battery for handling the battery.

• Installation Place of Battery

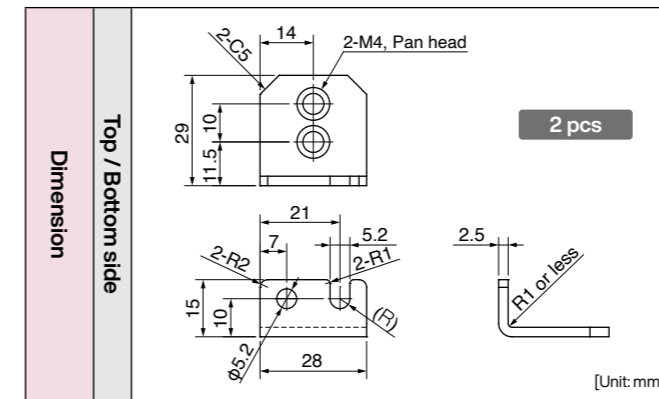
- 1) Indoors, where the products are not subjected to rain or direct sun beam.
- 2) Where the products are not subjected to corrosive atmospheres such as hydrogen sulfide, sulfurous acid, chlorine, ammonia, chloric gas, sulfuric gas, acid, alkaline and salt and so on, and are free from splash of inflammable gas, grinding oil, oil mist, iron powder or chips and etc.
- 3) Well-ventilated and humid and dust-free place.
- 4) Vibration-free place



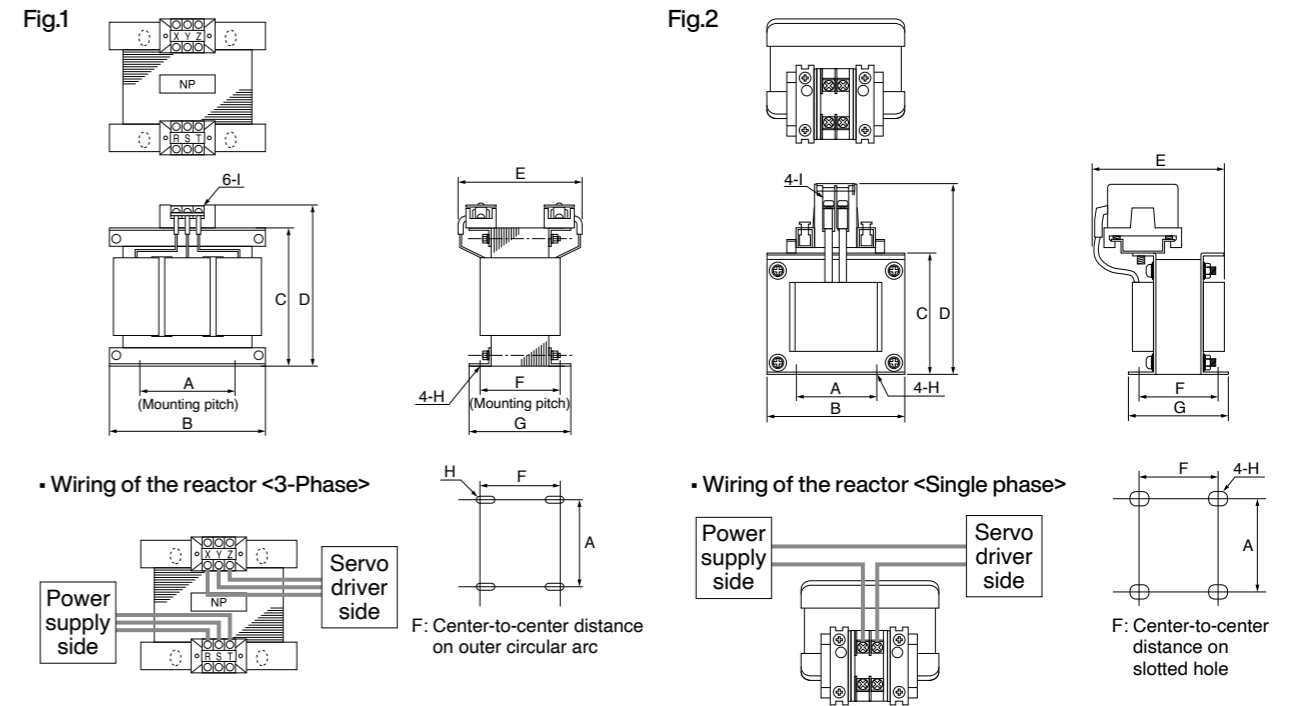
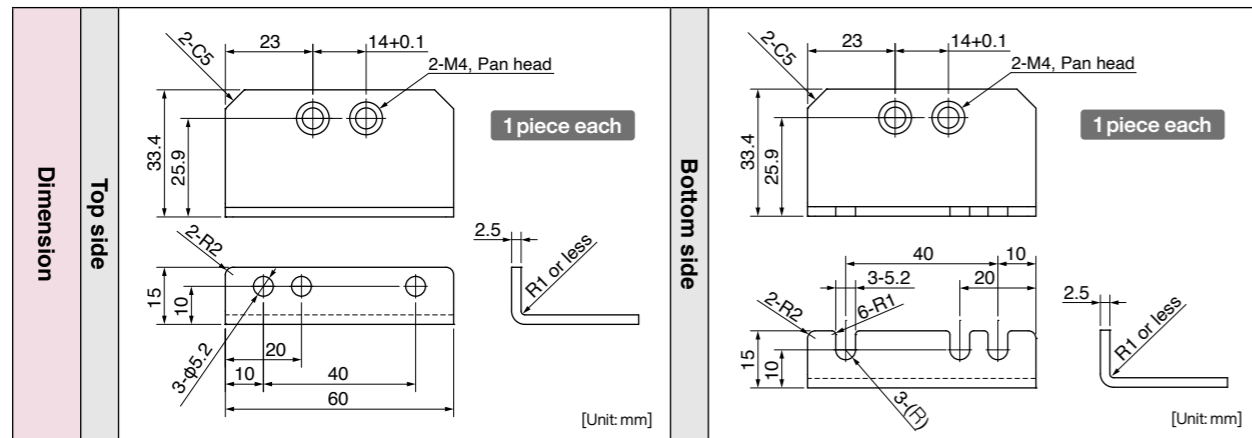
Recommended components

Motor	Part No.	Manufacturer
MSMF	50 W to 1000 W	TND14V-271K NIPPON CHEMI-CON CORPORATION
	1.0 kW to 3.0 kW	Z15D151 SEMITEC Corporation
	4.0 kW, 5.0 kW	NVD07SCD082 KOA Corporation
MQMF	100W to 400 W	TND14V-271K NIPPON CHEMI-CON CORPORATION
MHMF	50 W to 1000 W	
	1.0 kW, 1.5 kW	
	2.0 kW to 4.0 kW	Z15D151 SEMITEC Corporation
MDMF	5.0 kW, 7.5 kW	NVD07SCD082 KOA Corporation
	1.0 kW to 3.0 kW	NVD07SCD082 KOA Corporation
	4.0 kW	Z15D151 SEMITEC Corporation
MGMF	5.0 kW to 22.0 kW	NVD07SCD082 KOA Corporation
	0.85 kW to 1.8 kW	NVD07SCD082 KOA Corporation
MGMF	2.4 kW, 2.9 kW	Z15D151 SEMITEC Corporation
	4.4 kW, 5.5 kW	NVD07SCD082 KOA Corporation

Part No.	DVOPM20100	Frame symbol of applicable driver	A-frame B-frame	Mounting screw (comes with)	M4 × L6 Pan head 4pcs
----------	------------	-----------------------------------	--------------------	-----------------------------	-----------------------



Part No.	DV0PM20101	Frame symbol of applicable driver	C-frame D-frame	Mounting screw (comes with)	M4 × L6 Pan head 4pcs
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[Unit: mm]

	Part No.	A	B	C	D	E(Max)	F	G	H	I	Inductance (mH)	Rated current (A)
Fig.1	DV0P220	65±1	125±1	(93)	136 <sub>Max</sub>	155	70+3/-0	85±2	4-7φ×12	M4	6.81	3
	DV0P221	60±1	150±1	(113)	155 <sub>Max</sub>	130	60+3/-0	75±2	4-7φ×12	M4	4.02	5
	DV0P222	60±1	150±1	(113)	155 <sub>Max</sub>	140	70+3/-0	85±2	4-7φ×12	M4	2	8
	DV0P223	60±1	150±1	(113)	155 <sub>Max</sub>	150	79+3/-0	95±2	4-7φ×12	M4	1.39	11
	DV0P224	60±1	150±1	(113)	160 <sub>Max</sub>	155	84+3/-0	100±2	4-7φ×12	M5	0.848	16
Fig.2	DV0P225	60±1	150±1	(113)	160 <sub>Max</sub>	170	100+3/-0	115±2	4-7φ×12	M5	0.557	25
	DV0P227	55±0.7	76.5±1	66.5±1	110 <sub>Max</sub>	90	43.6±2	56±2	4-5φ×10	M3.5	4.02	5
	DV0P228	55±0.7	76.5±1	66.5±1	110 <sub>Max</sub>	95	48.0±2	61±2	4-5φ×10	M3.5	2	8
	DV0PM20047	55±0.7	76.5±1	66.5±1	110 <sub>Max</sub>	105	58.6±2	71±2	4-5φ×10	M4	1.39	11

\* For application, refer to P.29 to P.42 and P.205 to P.210 "Table of Part Numbers and Options".

**Harmonic restraint**

Harmonic restraint measures are not common to all countries. Therefore, prepare the measures that meet the requirements of the destination country.  
When installing a product for Japan, refer to the instruction manual available on our website.

[Panasonic Industry Co., Ltd. web site]  
[industrial.panasonic.com/ac/e/](http://industrial.panasonic.com/ac/e/)

**<Remarks>**

When using a reactor, be sure to install one reactor to one servo driver.

Part No.	Manufacturer's part No.	Specifications					Activation temperature of built-in thermal protector
		Resistance	cable core outside diameter	Weight	Rated power (reference) <sup>*1</sup>		
					Free air	with fan	
Ω	mm	kg	W	W			
DV0P4280	RF70M	50	φ1.27 (AWG18 stranded wire)	0.1	10	25	140±5 °C B-contact Open/Close capacity (resistance load) 1 A 125 VAC 6000 times 0.5 A 250 VAC 10000 times
DV0P4281	RF70M	100		0.1	10	25	
DV0P4282	RF180B	25		0.4	17	50	
DV0P4283	RF180B	50		0.2	17	50	
DV0P4284	RF240	30		0.5	40	100	
DV0P4285	RH450F	20		1.2	52	130	

Manufacturer : Iwaki Musen Kenkyusho

\*1 Power with which the driver can be used without activating the built-in thermal protector.

A built-in thermal fuse and a thermal protector are provided for safety.

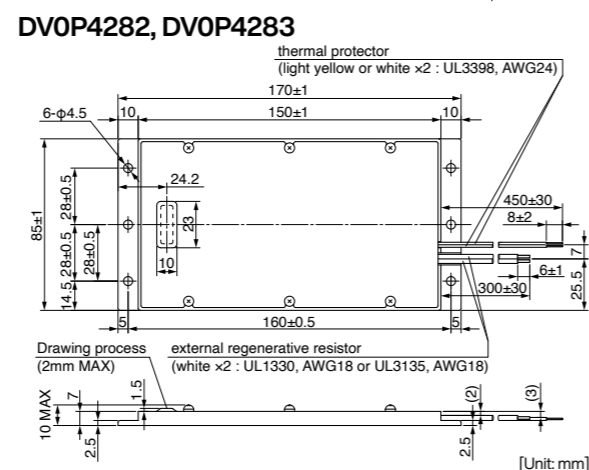
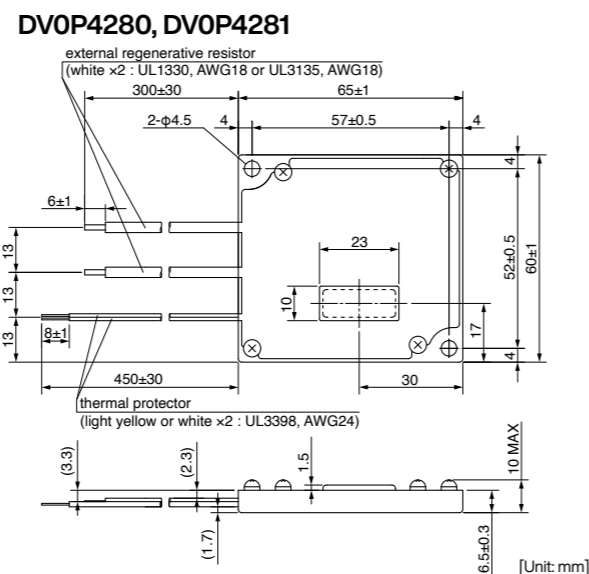
The circuit should be so designed that the power supply will be turned off as the thermal protector operates.

The built-in thermal fuse blows depending on changes in heat dissipation condition, operating temperature limit, power supply voltage or load.

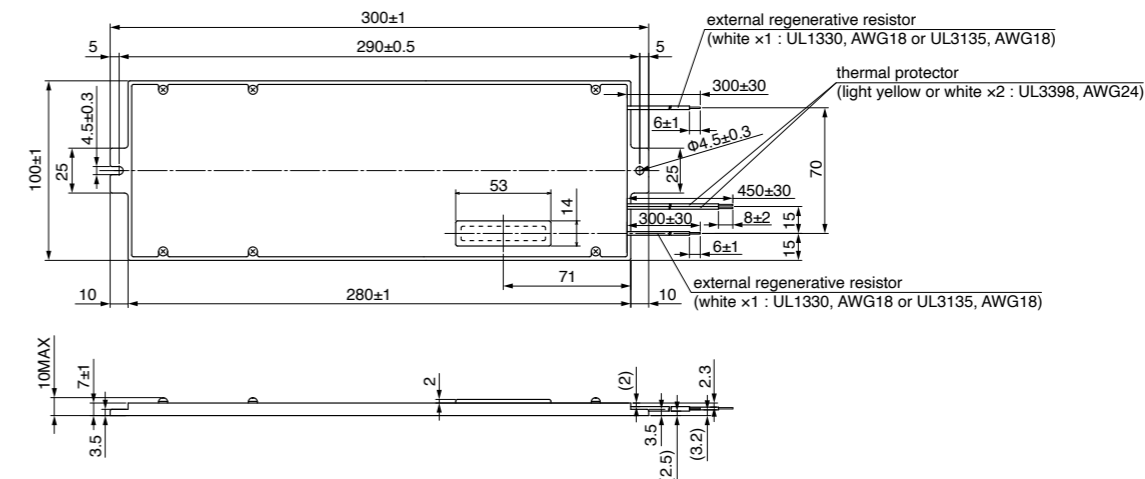
Mount the regenerative resistor on a machine operating under aggressive regenerating condition (high power supply voltage, large load inertia, shorter deceleration time, etc.) and make sure that the surface temperature will not exceed 100 °C.

\*2 If the wind speed is 1m / s by the fan.

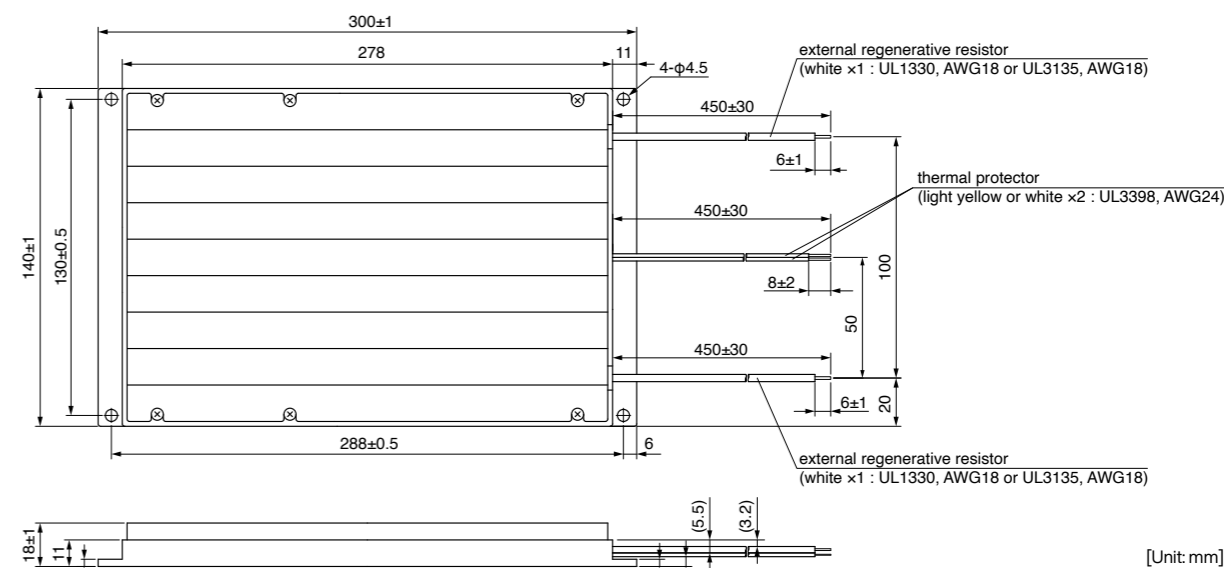
Frame	Power supply	
	Single phase, 100 V	Single phase, 200 V 3-phase, 200 V
A	DV0P4280	DV0P4281 (100 W or less) DV0P4283 (200 W)
B	DV0P4283	DV0P4283
C	DV0P4282	
D		DV0P4284
E		DV0P4284 × 2 in parallel or DV0P4285
F		DV0P4285 × 2 in parallel
G		DV0P4285 × 3 in parallel
H		DV0P4285 × 6 in parallel



DV0P4284



DV0P4285



<Caution when using external regenerative resistor>

Regenerative resistor gets very hot.

Configure a circuit so that a power supply shuts down when built-in thermal protector of the regenerative resistor works. Because it is automatic reset thermal protector, please apply a self-holding circuit to the outside in order to maintain safety in case of sudden activation. During the failure of the driver, the surface temperature of the regenerative resistor may exceed the operating temperature before thermal protector starts to work.

Built-in thermal fuse of regenerative resistor is intended to prevent from ignition during the failure of the driver and not intended to suppress the surface temperature of the resistor.

- Be attached the regenerative resistance to non-combustible material such as metal.
- Built-in thermal fuse of regenerative resistor is intended to prevent from ignition during the failure of the driver and not intended to suppress the surface temperature of the resistor.
- Do not install the regenerative resistor near flammable materials.

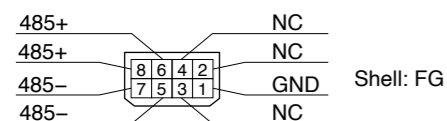
**Daisy Chain** (Excluding A6SE, A6NE, A6BE Series)

Part No. DV0PM24610

• Components

Title	Part No.	Manufacturer	Note
Connector	CIF-PCNS08KK-072R	J.S.T Mfg. Co., Ltd.	For Connector X2 (2-pins)
Cable	3-core cable with shield	—	Core diameter AWG24

• Pin disposition of connector, connector X2



(Viewed from cable)

<Remarks>

- Do not connect anything to NC.
- The braided wire of the cable is connected to the shell (housing) of the connector.

• Table for wiring

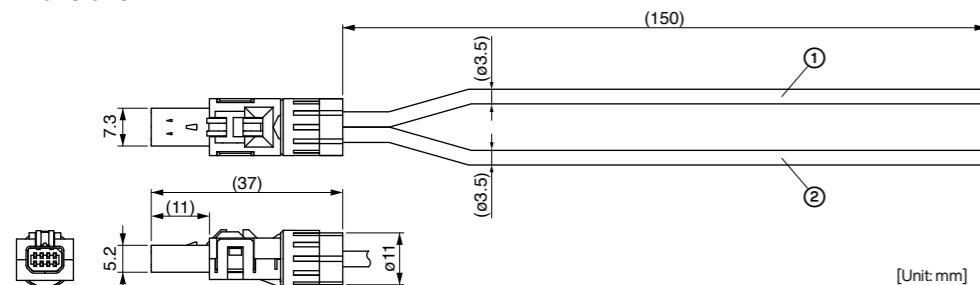
Cable ①

Pin No.	Signal name	Core color
8	485+	Red
7	485-	Yellow
1	GND	White

Cable ②

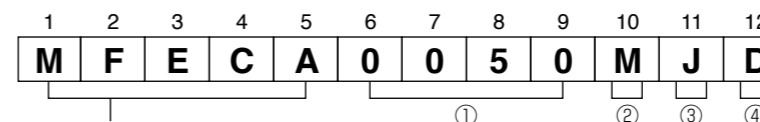
Pin No.	Signal name	Core color
6	485+	Red
5	485-	Yellow
1	GND	White

• Dimensions



[Unit: mm]

**Encoder Cable** For available optional items, please refer to P.309 to P.312.



Type classification

MFECA: Encoder cable

① Cable length

0030	3 m
0050	5 m
0100	10 m
0200	20 m

② Cable type

E	PVC cable with shield by Oki Electric Cable Co., 0.20 mm <sup>2</sup> × 4P(8-wire), 3P(6-wire)
M	Hitachi Cable, Ltd. Highly bendable type
T	Hitachi Cable, Ltd. Standard bendable type

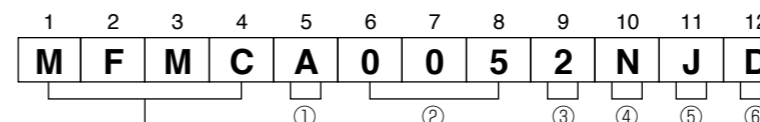
③ Cable end (Encoder side)

A	Tyco Electronics Japan G.K. connector
J	Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)
K	Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)
P	Japan Aviation Electronics Industry, Ltd. plug connector
S	"S" shaped cannonplug
T	Japan Aviation Electronics Industry, Ltd. plug connector

④ Cable end (Driver side)

D	Connector (Without battery box)
E	Connector (With battery box)

**Motor Cable, Brake Cable** For available optional items, please refer to P.309 to P.312.



AC servo motor cable

① Type classification

A	Standard
B	Special
:	Design order

② Cable length

003	3 m
005	5 m
010	10 m
020	20 m

③ Sectional area of cable core

0	0.75 mm <sup>2</sup>
1	1.25 mm <sup>2</sup>
2	2.0 mm <sup>2</sup>
3	3.5 mm <sup>2</sup>
7	0.3 mm <sup>2</sup>

④ Cable type

E	ROBO-TOP® 4-wire by DYDEN CORPORATION
F	ROBO-TOP® 6-wire by DYDEN CORPORATION
G	ROBO-TOP® 2-wire by DYDEN CORPORATION
N	4-wire by Hitachi Cable, Ltd. (Highly bendable type)
P	4-wire by Hitachi Cable, Ltd. (Standard bendable type)
R	2-wire by Hitachi Cable, Ltd. (Highly bendable type)
S	2-wire by Hitachi Cable, Ltd. (Standard bendable type)
U	4-wire for A6 series small motor* (Highly bendable type)
V	6-wire for A6 series small motor* (Highly bendable type)
W	4-wire for A6 series small motor* (Standard bendable type)
X	6-wire for A6 series small motor* (Standard bendable type)

ROBO-TOP® is a trade mark of DYDEN CORPORATION

\* 80 mm sq. or less

⑤ Cable end at motor side

C	S type cannon plug
E	Tyco Electronics Japan G.K. connector
F	Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)
G	Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)
J	Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)
K	Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)
U	Japan Aviation Electronics Industry, Ltd. plug connector

⑥ Cable end at driver side

D	Rod terminal
T	Clamp terminal



# Communication cycle **0.0625 ms**

# Ultra-high-speed network driver

**RTEX**  
Realtime Express

**Realtime Express(RTEX)**  
AC servo motor & driver

## MINAS A6N Series

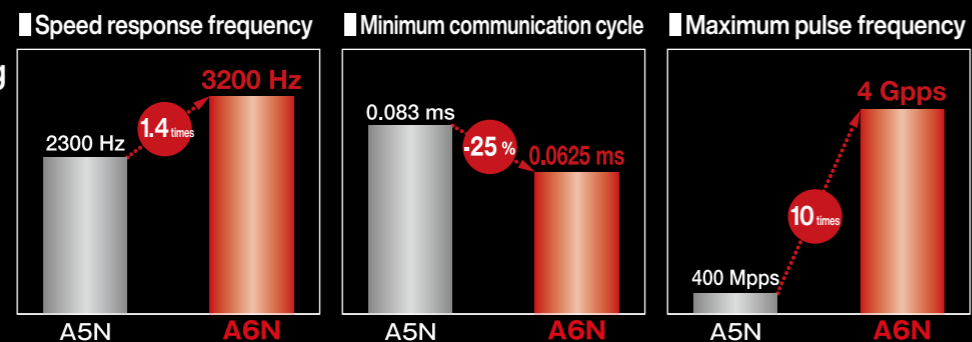


### INDEX

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### Pursuit of ultimate real-time processing

Pursuit of ultimate real-time processing



#### Multifunctional capabilities to match various needs

- ◎ Supports all positions, speeds and torque modes (w/built-in positioning function)
- ◎ High-precision position latch and comparison
- ◎ Communication cycle can be set to any time between 2 ms and 62.5 μs.

● Easy setup with setup support software "PANATERM".

#### Simple network

- ◎ Satisfies both high performance and low cost requirements
- ◎ Synchronization established by communication IC
- ◎ Easier development of compatible equipment

\* For options other than for Interface cable and connector kit for interface, see P.29 to P.42.

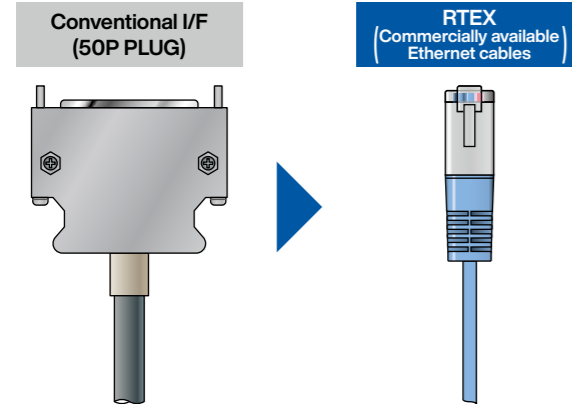
● Realtime Express and RTEX are registered trademarks of Panasonic Holdings Corporation..



●The "Conventional I/F" used in this document means a pulse train and analog I/F.

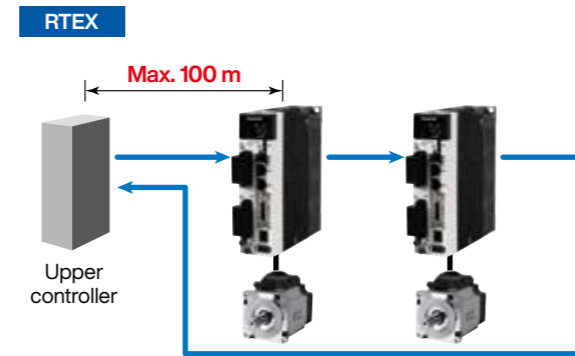
### Wire-saving

Wire-saving reduces various troubles relating to wires. The cables used are widely available Ethernet cables, which are easy to obtain and inexpensive.



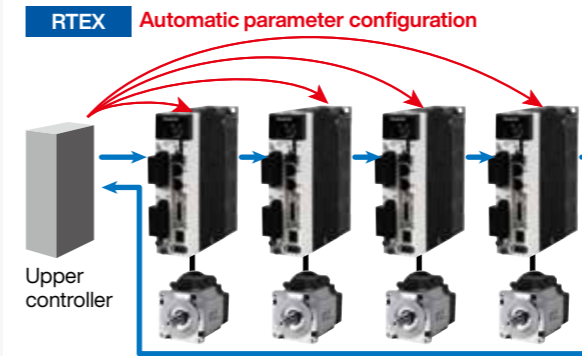
### Maximum length of the node-to-node cable is 100 m.

Flexibility increases in the layout of an upper controller and servo motors. The RTEXs can also support large-scale systems.



### Configurable parameter settings

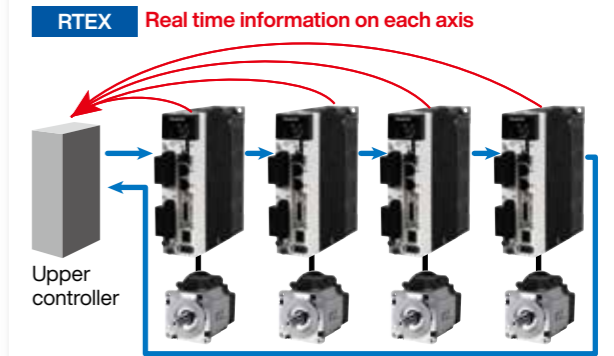
Upper controllers can configure servo parameters. This enables parameters to be configured automatically instead by human at installation.



\* Parameters can be changed even during operation

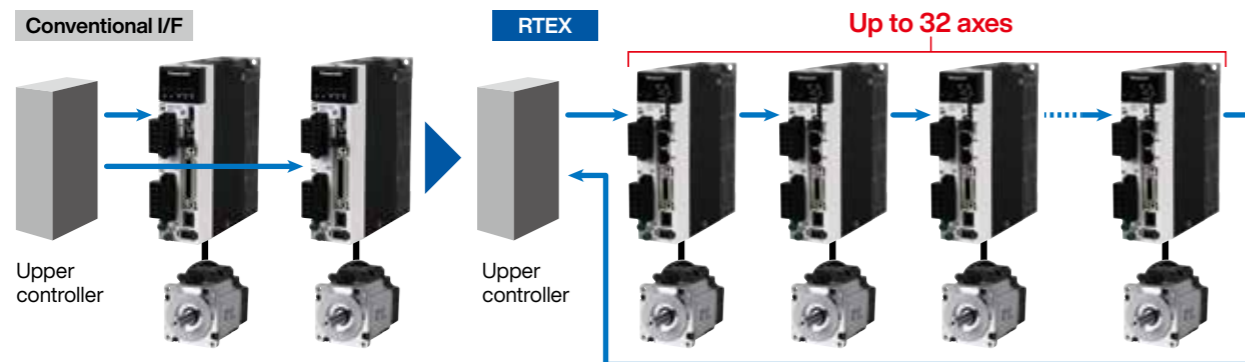
### Real time monitoring is enabled.

Upper controllers can monitor various information, such as position, speed, and torque, etc. in real time. Since alarm codes can also be read out, analysis can be performed promptly at trouble occurrence.



### Up to 32 axes can be controlled.

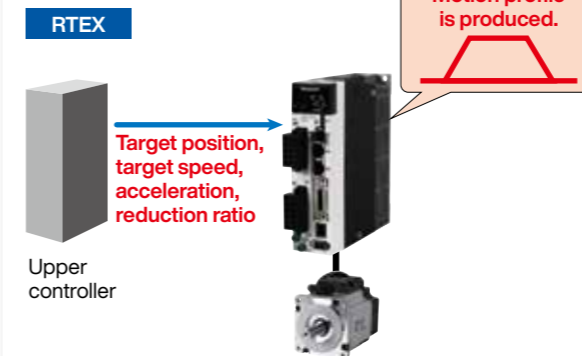
In comparison with conventional I/Fs, the number of axes increases that can be controlled by next upper controllers.



\* If devices other than servo motors are also connected, up to 32 nodes can be connected as entire slaves including the servo motors. Actual number of controllable axes depends on the specification of an upper controller.

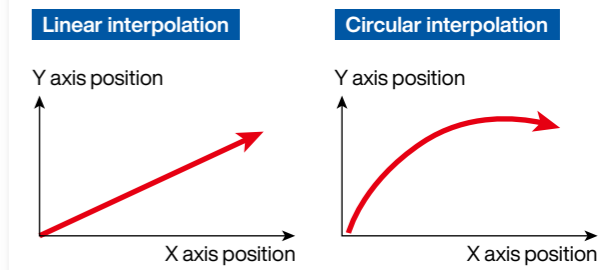
### Profile position mode is supported

Profile position mode is supported for PTP control as well as cyclic position, speed, and torque. The processing done by upper controllers can be simplified.



### High synchronization capability among axes

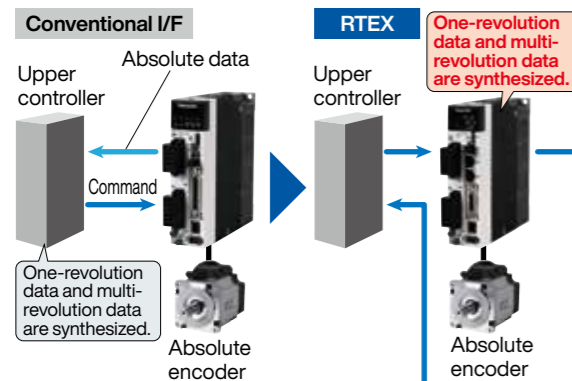
Upper controllers synchronize with entire servo motor axes at high accuracy. With the synchronization capability higher than that of conventional I/F, the RTEX is best suitable for machine tools, robots, gantry systems, and others.



\* Interpolation depends on the specification of upper controllers. This is not the function of individual servo motor.

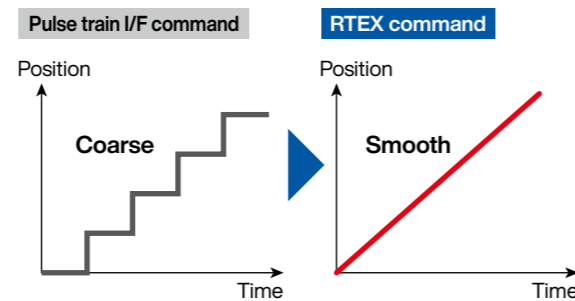
### Absolute system can easily be built.

Conventional I/F requires an additional wire to transmit absolute data, while the RTEX doesn't. Each servo motor synthesizes one-revolution data and multi-revolution data to produce an actual position, so that the amount of work to be done by an upper controller is decreased.



### High resolution command is enabled

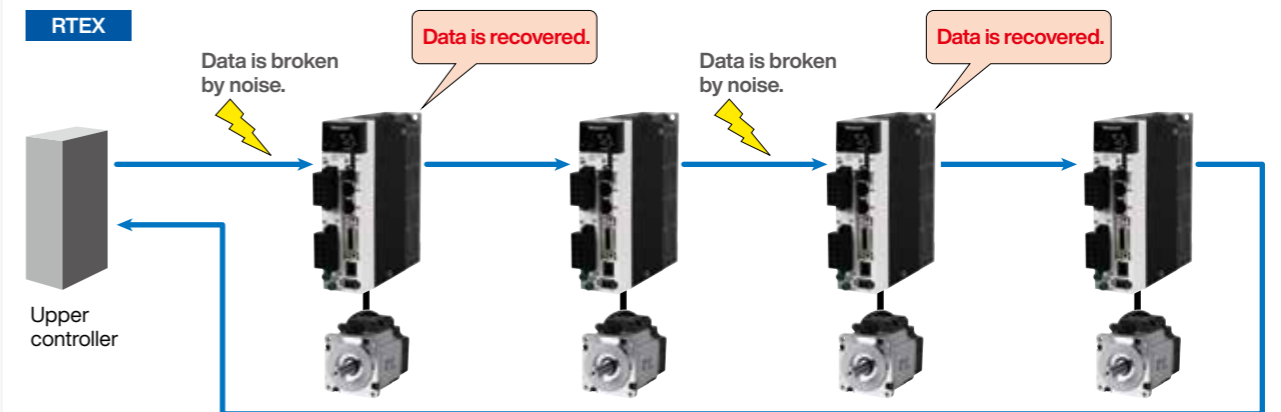
The position command rate of max. 8 Mpps\* in a pulse train I/F is improved to 4 Gpps\* in the RTEX. Vibrations are reduced due to a smooth command sent to a servo motor using the advantage of the high-resolution encoder.



\* Max. 8 Mpps is a rate when A6 servo driver is used. Max. 4 Gpps is a rate when A6N servo driver is used.

### High noise-proof property

With a patented error correction function, noise-proof property is at least 2.5 KV. This conforms to IEC61000-4-4 standard.



\* The error correction function has a limit. Unrecovered broken data causes a communication error.

\* For combination of elements of model number, refer to Index P.448.

Servo Motor

M S M F 5 A Z L 1 A 1 \* ——— Special specifications

① Type

Symbol	Type
MSM	Low inertia (50 W to 5.0 kW)
MQM	Middle inertia (100 W to 400 W)
MDM	Middle inertia (1.0 kW to 22.0 kW)
MGM	Middle inertia (0.85 kW to 5.5 kW)
MHM	High inertia (50 W to 7.5 kW)

② Series

Symbol	Series name
F	A6 Family

⑦ Motor specifications: 80 mm sq. or less MSMF 50 W to 1000 W

Symbol	Shaft	Holding brake		Oil seal		Motor encoder terminal <sup>*1</sup>	
		without	with	without	with	Connector JN	Lead wire
A	1	●	●	●	●	●	●
A	2	●	●	●	●	●	●
B	1	●	●	●	●	●	●
B	2	●	●	●	●	●	●
C	1	●	●	●	●	●	●
C	2	●	●	●	●	●	●
D	1	●	●	●	●	●	●
D	2	●	●	●	●	●	●
S	1	●	●	●	●	●	●
S	2	●	●	●	●	●	●
T	1	●	●	●	●	●	●
T	2	●	●	●	●	●	●
U	1	●	●	●	●	●	●
U	2	●	●	●	●	●	●
V	1	●	●	●	●	●	●
V	2	●	●	●	●	●	●

③ Motor rated output

Symbol	Rated output	Symbol	Rated output	Symbol	Rated output
5A	50 W	13	1.3 kW	44	4.4 kW
01	100 W	15	1.5 kW	50	5.0 kW
02	200 W	18	1.8 kW	55	5.5 kW
04	400 W	20	2.0 kW	75	7.5 kW
08	750 W	24	2.4 kW	C1	11.0 kW
09	0.85 kW, 1000 W (130 mm sq.) (80 mm sq.)	29	2.9 kW	C5	15.0 kW
		30	3.0 kW	D2	22.0 kW
10	1.0 kW	40	4.0 kW		

④ Voltage specifications

Symbol	Specifications
1	100 V
2	200 V
Z	100 V / 200 V common (50 W only)

⑥ Design order

Symbol	Specifications
1	Standard

<Note>  
When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

⑤ Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
L	Absolute	23-bit	8388608	7

⑦ Motor specifications: IP67<sup>2</sup> 100 mm sq. to 220 mm sq. MSMF, MHMF, MDMF, MGMF

Symbol	Shaft		Holding brake		Oil seal		Encoder terminal	
	Round	Key-way	without	with	with	With protective lip	Connector JN2 (Small size)	Connector JL10 (Large size) <sup>*3</sup>
C	5	●	●	●	●	●	●	●
C	6	●	●	●	●	●	●	●
C	7	●	●	●	●	●	●	●
C	8	●	●	●	●	●	●	●
D	5	●	●	●	●	●	●	●
D	6	●	●	●	●	●	●	●
D	7	●	●	●	●	●	●	●
D	8	●	●	●	●	●	●	●
G	5	●	●	●	●	●	●	●
G	6	●	●	●	●	●	●	●
G	7	●	●	●	●	●	●	●
G	8	●	●	●	●	●	●	●
H	5	●	●	●	●	●	●	●
H	6	●	●	●	●	●	●	●
H	7	●	●	●	●	●	●	●
H	8	●	●	●	●	●	●	●

⑦ Motor specifications: 80 mm sq. or less MHMF 50 W to 1000 W MQMF 100 W to 400 W

Symbol	Shaft		Holding brake		Oil seal		Motor encoder terminal <sup>*1</sup>	
	Round	Key-way, center tap	without	with	without	with	With protective lip	Connector JN
A	1	●	●	●	●	●	●	●
A	2	●	●	●	●	●	●	●
B	1	●	●	●	●	●	●	●
B	2	●	●	●	●	●	●	●
C	1	●	●	●	●	●	●	●
C	2	●	●	●	●	●	●	●
C	3	●	●	●	●	●	●	●
C	4	●	●	●	●	●	●	●
D	1	●	●	●	●	●	●	●
D	2	●	●	●	●	●	●	●
D	3	●	●	●	●	●	●	●
D	4	●	●	●	●	●	●	●
S	1	●	●	●	●	●	●	●
S	2	●	●	●	●	●	●	●
T	1	●	●	●	●	●	●	●
T	2	●	●	●	●	●	●	●
U	1	●	●	●	●	●	●	●
U	2	●	●	●	●	●	●	●
U	3	●	●	●	●	●	●	●
U	4	●	●	●	●	●	●	●
V	1	●	●	●	●	●	●	●
V	2	●	●	●	●	●	●	●
V	3	●	●	●	●	●	●	●
V	4	●	●	●	●	●	●	●

\*1 Connector type: IP67, Lead wire type: IP65 \*2 22.0 kW: IP44

\*3 Connector on the motor side encoder. (Also applicable to screwed type.)

Servo Driver

M A D L N 1 5 N E \* \* \* ——— Special specifications

① Frame symbol

Symbol	Frame	Symbol	Frame
MAD	A-Frame	MED	E-Frame
MBD	B-Frame	MFD	F-Frame
MCD	C-Frame	MGD	G-Frame
MDD	D-Frame	MHD	H-Frame

② Series

Symbol	Series name
L	A6 Family

③ Safety Function<sup>\*4</sup>

Symbol	Specifications
N	without the safety function
T	with the safety function

④ Max. current rating

Symbol	Current rating	Symbol	Current rating
0	6 A	9	80 A
1	8 A	A	100 A
2	12 A	B	120 A
3	22 A	C	160 A
4	24 A	E	240 A
5	40 A	F	360 A
8	60 A		

⑤ Supply voltage specifications

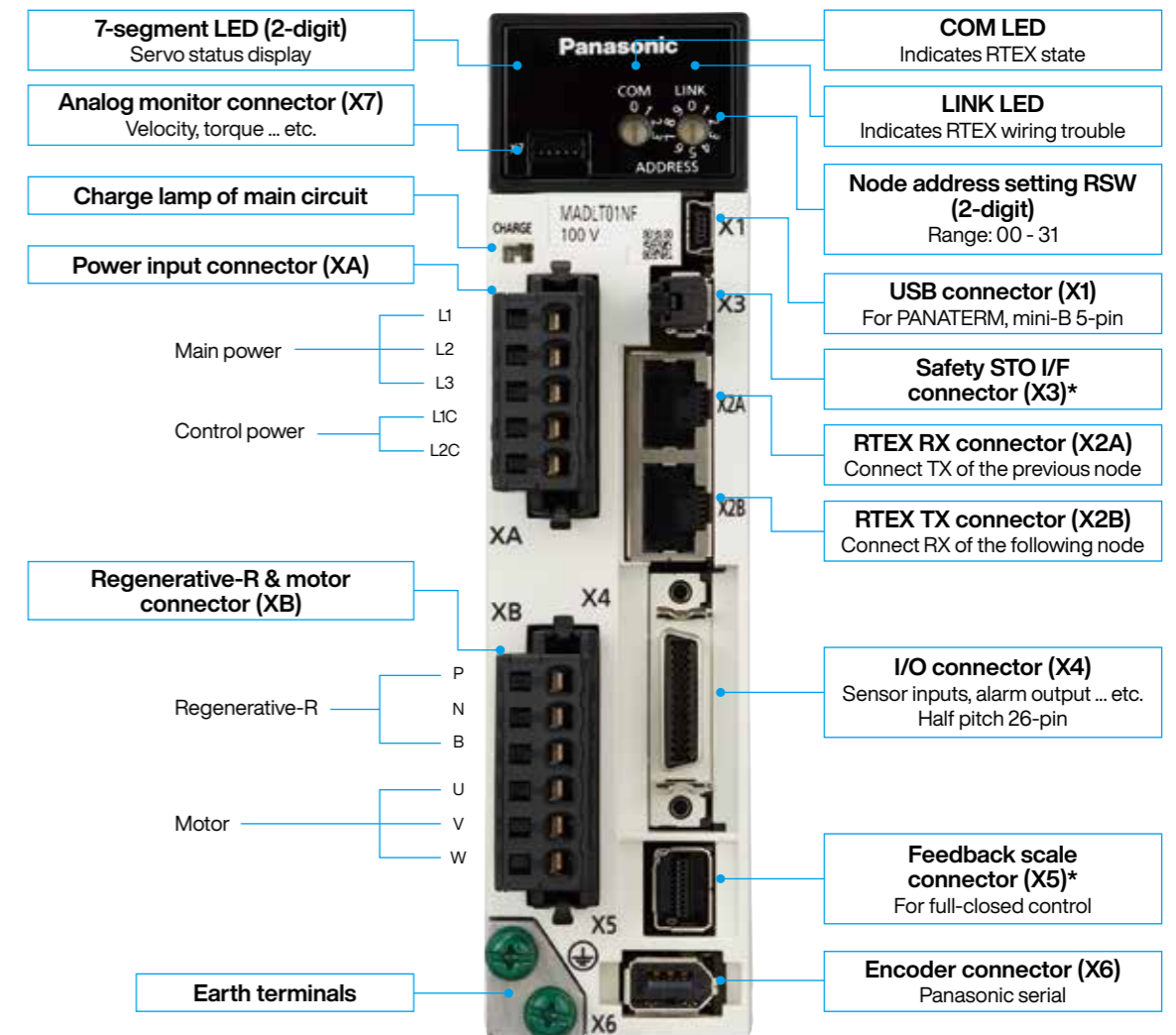
Symbol	Specifications
1	Single phase 100 V
3	3-phase 200 V
5	Single/3-phase 200 V

⑥ I/f specifications

Symbol (specification)	Symbol	Specification
N (RTEX)	E	Standard for rotary motor
	F	Multifunction for rotary motor
	L	Standard for linear/DD motor <b>Special Order Product</b>
	M	Multifunction for linear/DD motor <b>Special Order Product</b>

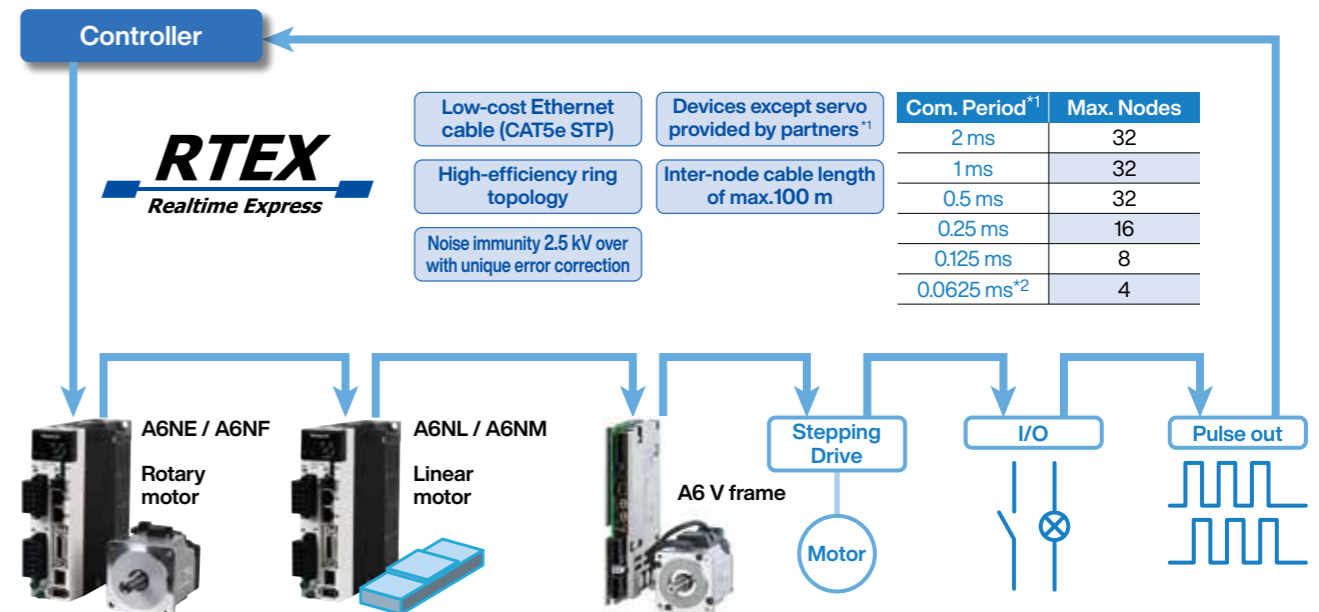
\*4 Standard type (with a part number ending in E or L) has no safety function. Multi-function type (with a part number ending in F or M) has a safety function.

Appearance



\* The photo is A6NF series. There are no X3 and X5 connectors in the A6NE series.

Typical system configuration



\*1: The communication period and connection of slave devices depend on the controller specification.  
\*2: For communication period 0.0625 ms, command update period is 0.125 ms only.

● 80 mm sq. or less 50 W to 1000 W MSMF, MQMF, MHMF Leadwire type IP65

Motor				Driver		Power capacity (at rated load)
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MSMF (Leadwire type) 3000 r/min Low inertia	Single phase 100 V	50	MSMF5AZL1 □ 2	MADL☆01N☆	A-frame	Approx. 0.4 kVA
		100	MSMF011L1 □ 2	MADL☆11N☆		
		200	MSMF021L1 □ 2	MBDL☆21N☆	B-frame	
		400	MSMF041L1 □ 2	MCDL☆31N☆	C-frame	
	Single phase/ 3-phase 200 V	50	MSMF5AZL1 □ 2*	MADL☆05N☆	A-frame	Approx. 0.5 kVA
		100	MSMF012L1 □ 2*			
		200	MSMF022L1 □ 2*	MADL☆15N☆		
		400	MSMF042L1 □ 2*	MBDL☆25N☆	B-frame	
		750	MSMF082L1 □ 2*	MCDL☆35N☆	C-frame	
		1000	MSMF092L1 □ 2*	MDDL☆45N☆	D-frame	
MQMF (Leadwire type) 3000 r/min Middle inertia Flat type	Single phase 100 V	100	MQMF011L1 □ □	MADL☆11N☆	A-frame	Approx. 0.4 kVA
		200	MQMF021L1 □ □	MBDL☆21N☆	B-frame	Approx. 0.5 kVA
		400	MQMF041L1 □ □	MCDL☆31N☆	C-frame	Approx. 0.9 kVA
	Single phase/ 3-phase 200 V	100	MQMF012L1 □ □*	MADL☆05N☆	A-frame	Approx. 0.5 kVA
		200	MQMF022L1 □ □*	MADL☆15N☆		
		400	MQMF042L1 □ □*	MBDL☆25N☆		
MHMF (Leadwire type) 3000 r/min High inertia	Single phase 100 V	50	MHMF5AZL1 □ □	MADL☆01N☆	A-frame	Approx. 0.4 kVA
		100	MHMF011L1 □ □	MADL☆11N☆		
		200	MHMF021L1 □ □	MBDL☆21N☆	B-frame	
		400	MHMF041L1 □ □	MCDL☆31N☆	C-frame	
	Single phase/ 3-phase 200 V	50	MHMF5AZL1 □ □*	MADL☆05N☆	A-frame	Approx. 0.5 kVA
		100	MHMF012L1 □ □*			
		200	MHMF022L1 □ □*	MADL☆15N☆		
		400	MHMF042L1 □ □*	MBDL☆25N☆	B-frame	
		750	MHMF082L1 □ □*	MCDL☆35N☆	C-frame	
		1000	MHMF092L1 □ □*	MDDL☆55N☆	D-frame	

□ ☆ \* : For more information, refer to "Model Designation" on P.353.

● 80 mm sq. or less 50 W to 1000 W MSMF, MQMF, MHMF Connector type IP67

Motor				Driver		Power capacity (at rated load)
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MSMF (Connector type) 3000 r/min Low inertia	Single phase 100 V	50	MSMF5AZL1 □ 1	MADL☆01N☆	A-frame	Approx. 0.4 kVA
		100	MSMF011L1 □ 1	MADL☆11N☆		
		200	MSMF021L1 □ 1	MBDL☆21N☆	B-frame	
		400	MSMF041L1 □ 1	MCDL☆31N☆	C-frame	
	Single phase/ 3-phase 200 V	50	MSMF5AZL1 □ 1	MADL☆05N☆	A-frame	Approx. 0.5 kVA
		100	MSMF012L1 □ 1			
		200	MSMF022L1 □ 1	MADL☆15N☆		
		400	MSMF042L1 □ 1	MBDL☆25N☆	B-frame	
		750	MSMF082L1 □ 1	MCDL☆35N☆	C-frame	
		1000	MSMF092L1 □ 1	MDDL☆45N☆	D-frame	
MQMF (Connector type) 3000 r/min Middle inertia Flat type	Single phase 100 V	100	MQMF011L1 □ □	MADL☆11N☆	A-frame	Approx. 0.4 kVA
		200	MQMF021L1 □ □	MBDL☆21N☆	B-frame	Approx. 0.5 kVA
		400	MQMF041L1 □ □	MCDL☆31N☆	C-frame	Approx. 0.9 kVA
	Single phase/ 3-phase 200 V	100	MQMF012L1 □ □	MADL☆05N☆	A-frame	Approx. 0.5 kVA
		200	MQMF022L1 □ □	MADL☆15N☆		
		400	MQMF042L1 □ □	MBDL☆25N☆		
MHMF (Connector type) 3000 r/min High inertia	Single phase 100 V	50	MHMF5AZL1 □ □	MADL☆01N☆	A-frame	Approx. 0.4 kVA
		100	MHMF011L1 □ □	MADL☆11N☆		
		200	MHMF021L1 □ □	MBDL☆21N☆	B-frame	
		400	MHMF041L1 □ □	MCDL☆31N☆	C-frame	
	Single phase/ 3-phase 200 V	50	MHMF5AZL1 □ □	MADL☆05N☆	A-frame	Approx. 0.5 kVA
		100	MHMF012L1 □ □			
		200	MHMF022L1 □ □	MADL☆15N☆		
		400	MHMF042L1 □ □	MBDL☆25N☆	B-frame	
		750	MHMF082L1 □ □	MCDL☆35N☆	C-frame	
		1000	MHMF092L1 □ □	MDDL☆55N☆	D-frame	

□ ☆ \* : For more information, refer to "Model Designation" on P.353.

**● 100 mm sq. or more 0.85 kW to 5.0 kW MSMF, MDMF, MGMF, MHMF**  
Encoder connector (Large size JL10)<sup>\*1</sup> type IP67

Motor				Driver		Power capacity (at rated load)
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MSMF (Large size JL10 type) 3000 r/min Low inertia IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □□ *	MDDL☆55N☆	D-frame	Approx. 2.9 kVA
		1500	MSMF152L1 □□ *			
	3-phase 200 V	2000	MSMF202L1 □□ *	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		3000	MSMF302L1 □□ *	MFDL☆A3N☆		F-frame
		4000	MSMF402L1 □□ *	MFDL☆B3N☆	Approx. 7.8 kVA	
MDMF (Large size JL10 type) 2000 r/min Middle inertia IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □□ *	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
		1500	MDMF152L1 □□ *	MDDL☆55N☆		Approx. 2.9 kVA
	3-phase 200 V	2000	MDMF202L1 □□ *	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		3000	MDMF302L1 □□ *	MFDL☆A3N☆		F-frame
		4000	MDMF402L1 □□ *	MFDL☆B3N☆	Approx. 7.8 kVA	
MGMF (Large size JL10 type) [Low speed/ High torque type] 1500 r/min Middle inertia IP67	Single phase/ 3-phase 200 V	850	MGMF092L1 □□ *	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
		1300	MGMF132L1 □□ *	MDDL☆55N☆		Approx. 2.9 kVA
	3-phase 200 V	1800	MGMF182L1 □□ *	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		2400	MGMF242L1 □□ *	MEDL☆93N☆		F-frame
		2900	MGMF292L1 □□ *	MFDL☆B3N☆	Approx. 7.8 kVA	
MHMF (Large size JL10 type) 2000 r/min High inertia IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □□ *	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
		1500	MHMF152L1 □□ *	MDDL☆55N☆		Approx. 2.9 kVA
	3-phase 200 V	2000	MHMF202L1 □□ *	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		3000	MHMF302L1 □□ *	MFDL☆A3N☆		F-frame
		4000	MHMF402L1 □□ *	MFDL☆B3N☆	Approx. 7.8 kVA	

□ ☆ \* : For more information, refer to "Model Designation" on P.353.

**● 100 mm sq. or more 0.85 kW to 5.0 kW MSMF, MDMF, MGMF, MHMF**  
Encoder connector (Small size JN2)<sup>\*2</sup> type IP67

Motor				Driver		Power capacity (at rated load)
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MSMF (Small size JN2 type) 3000 r/min Low inertia IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □□	MDDL☆55N☆	D-frame	Approx. 2.9 kVA
		1500	MSMF152L1 □□			
	3-phase 200 V	2000	MSMF202L1 □□	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		3000	MSMF302L1 □□	MFDL☆A3N☆		F-frame
		4000	MSMF402L1 □□	MFDL☆B3N☆	Approx. 7.8 kVA	
MDMF (Small size JN2 type) 2000 r/min Middle inertia IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □□	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
		1500	MDMF152L1 □□	MDDL☆55N☆		Approx. 2.9 kVA
	3-phase 200 V	2000	MDMF202L1 □□	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		3000	MDMF302L1 □□	MFDL☆A3N☆		F-frame
		4000	MDMF402L1 □□	MFDL☆B3N☆	Approx. 7.8 kVA	
MGMF (Small size JN2 type) [Low speed/ High torque type] 1500 r/min Middle inertia IP67	Single phase/ 3-phase 200 V	850	MGMF092L1 □□	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
		1300	MGMF132L1 □□	MDDL☆55N☆		Approx. 2.9 kVA
	3-phase 200 V	1800	MGMF182L1 □□	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		2400	MGMF242L1 □□	MEDL☆93N☆		F-frame
		2900	MGMF292L1 □□	MFDL☆B3N☆	Approx. 7.8 kVA	
MHMF (Small size JN2 type) 2000 r/min High inertia IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □□	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
		1500	MHMF152L1 □□	MDDL☆55N☆		Approx. 2.9 kVA
	3-phase 200 V	2000	MHMF202L1 □□	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		3000	MHMF302L1 □□	MFDL☆A3N☆		F-frame
		4000	MHMF402L1 □□	MFDL☆B3N☆	Approx. 7.8 kVA	

□ ☆ \* : For more information, refer to "Model Designation" on P.353.

**● 176 mm sq. or more 5.5 kW or more MDMF, MGMF, MHMF**  
Encoder connector (Large size JL10)<sup>\*1</sup> type IP67

Motor				Driver		Power capacity (at rated load)
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MDMF (Large size JL10 type) 1500 r/min Middle inertia IP67 <sup>*3</sup>	3-phase 200 V	7500	MDMF752L1 □ 6 *	MGDLTC3NF	G-frame	Approx. 11 kVA
		11000	MDMFC12L1 □ 6	MHDLTE3NF		H-frame
		15000	MDMFC52L1 □ 6	MHDLTE3NF	Approx. 20 kVA	
		22000 <sup>*3</sup>	MDMFD22L1 □ 6	MHDLTF3NF	Approx. 28 kVA	
MGMF (Large size JL10 type) [Low speed/ High torque type] 1500 r/min Middle inertia IP67	3-phase 200 V	5500	MGMF552L1 □ 6 *	MGDLTC3NF	G-frame	Approx. 8.5 kVA
MHMF (Large size JL10 type) 1500 r/min High inertia IP67	3-phase 200 V	7500	MHMF752L1 □ 6 *	MGDLTC3NF	G-frame	Approx. 11 kVA

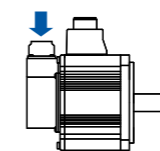
□ ☆ \* : For more information, refer to "Model Designation" on P.353.

**● 176 mm sq. or more 5.5 kW or more MDMF, MGMF, MHMF**  
Encoder connector (Small size JN2)<sup>\*2</sup> type IP67

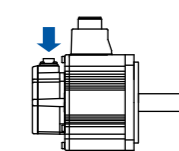
Motor				Driver		Power capacity (at rated load)
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MDMF (Small size JN2 type) 1500 r/min Middle inertia IP67 <sup>*3</sup>	3-phase 200 V	7500	MDMF752L1 □ 5	MGDLTC3NF	G-frame	Approx. 11 kVA
		11000	MDMFC12L1 □ 5	MHDLTE3NF		H-frame
		15000	MDMFC52L1 □ 5	MHDLTE3NF	Approx. 20 kVA	
		22000 <sup>*3</sup>	MDMFD22L1 □ 5	MHDLTF3NF	Approx. 28 kVA	
MGMF (Small size JN2 type) [Low speed/ High torque type] 1500 r/min Middle inertia IP67	3-phase 200 V	5500	MGMF552L1 □ 5	MGDLTC3NF	G-frame	Approx. 8.5 kVA
MHMF (Small size JN2 type) 1500 r/min High inertia IP67	3-phase 200 V	7500	MHMF752L1 □ 5	MGDLTC3NF	G-frame	Approx. 11 kVA

□ ☆ \* : For more information, refer to "Model Designation" on P.353.

\*1: Encoder connector (Large size JL10)



\*2: Encoder connector (Small size JN2)



\*3: 22.0 kW motor is IP44.

Basic Specifications	Input power	100 V	Main circuit	Single phase	100 V <sup>+10 %</sup> <sub>-15 %</sub>	to 120 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz	
			Control circuit	Single phase	100 V <sup>+10 %</sup> <sub>-15 %</sub>	to 120 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz	
		200 V	Main circuit	A-frame to D-frame	Single/3-phase	200 V <sup>+10 %</sup> <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz
				E-frame to H-frame	3-phase	200 V <sup>+10 %</sup> <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz
			Control circuit	A-frame to D-frame	Single phase	200 V <sup>+10 %</sup> <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz
				E-frame to H-frame	Single phase	200 V <sup>+10 %</sup> <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz
	Environment	temperature	Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation*1)					
		humidity	Both operating and storage : 20 %RH to 85 %RH (free from condensation*1)					
		Altitude	Lower than 1000 m					
		Vibration	5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz					
Control method	IGBT PWM Sinusoidal wave drive							
Encoder feedback	23-bit (8388608 resolution) absolute encoder, 7-wire serial * When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to "1" (factory settings).							
External scale feedback	A/B phase, homing signal differential input. Serial communication is also supported. Manufacturers that support serial communication scale: Fagor Automation S.Coop., HEIDENHAIN, Magnescale Co., Ltd., Mitutoyo Corporation Nidec Sankyo Corporation, Renishaw plc							
Interface connector	Control signal	Input	Each 8 input can be assigned by the parameter.					
		Output	Each 3 output can be assigned by the parameter.					
	Analog signal	Output	2 outputs for analog monitors 1 and 2					
Communication	Realtime Express (RTEX)	Communication for transmission of a real-time operation command, the parameter setting, or the status monitoring.						
	USB	USB interface to connect to computers (setup support software PANATERM) for parameter setting or status monitoring.						
Safety terminal	Terminal to support safety function.							
Front panel	(1) 7 segment LED (double digits) (2) Network status LED(LINK,COM) (3) Rotary switch for node address setting (4) Analog monitor output(Analog monitors 1 and 2)							
Regeneration	Size A, B, G and H: Without built-in regenerative resistor (use external resistor) Size C to F: Built-in regenerative resistor (External regenerative resistor is also available)							
Dynamic brake	A to G frame: built-in H frame: External resistor only							
Control mode	(1) Semi-closed control Position control: Profile position control (PP), Cyclic position control (CP) Velocity control: Cyclic velocity control (CV) Torque control: Cyclic torque control (CT) (2) Full-closed control Position control: Profile position control (PP), Cyclic position control (CP) • The two modes, [1] and [2] above are switched by parameters. • Switch PP/CP/CV/CT mode according to the RTEX communication command.							

\*1 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

Position control	Control input	Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, Near home position, etc					
	Control output	Positioning completion etc.					
	Position command input	Input mode	Command type by RTEX command				
		Smoothing filter	Either a primary delay filter or a FIR type filter can be selected against command input.				
	Damping control	Available (Up to 3 frequency settings,out of 4 settings in total,can be used simultaneously.)					
	Model type damping filter	Available (2 filter available used simultaneously)					
	Feed forward function	Available (speed/torque)					
	Load variation suppression control	Available					
	Gain 3 switching function	Available					
	Quadrant glitch inhibit function	Available					
Speed control	Two-degree-of-freedom control mode	Available					
	Motor operatable setup function	Available					
	External scale position information monitor	Available					
	Other available functions	Friction torque compensation, Torque limit switching function, Torque saturation protection function, Single-turn absolute function, Continuous rotating absolute encoder function					
	Control input	Positive direction drive inhibit input , Negative direction drive inhibit, Latch signal, etc					
	Control output	At speed etc.					
	Position command input	Input mode	Command type by RTEX command				
		Smoothing filter	0 s to 10 s / 1000 r/min Acceleration and deceleration can be set separately. S-curve acceleration/deceleration is also available.				
	Soft start/slowdown function	Available (torque)					
	Feed forward function	Available (standard type)					
Load variation suppression control	Available						
Two-degree-of-freedom control mode	Available						
External scale position information monitor	Available						
Other available functions	Friction torque compensation, Torque limit switching function, Torque saturation protection function, Single-turn absolute function, Continuous rotating absolute encoder function						
Torque control	Control input	Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, etc					
	Control output	At speed etc.					
	Position command input	Input mode	Command type by RTEX command				
		Smoothing filter	Speed limit value can be set by parameter. (Switched by RTEX command.)				
	External scale position information monitor	Available					
Other available functions	Single-turn absolute function Continuous rotating absolute encoder function						
Full-closed control	Control input	Positive direction drive inhibit input , Negative direction drive inhibit, Latch signal, Near home position , etc					
	Control output	Positioning completion etc.					
	Position command input	Input mode	Command type by RTEX command				
		Smoothing filter	Either a primary delay filter or a FIR type filter can be selected against command input.				
	Setting range of external scale division/multiplication.	1/40 times to 125200 times Although the ratio of the encoder pulse (numerator) and external scale pulse (denominator) can be set anywhere between the range of 1 to 2 <sup>23</sup> for the numerator and 1 to 2 <sup>30</sup> for the denominator, Please use within the range indicated above.					
	Damping control	Available(Up to 3 frequency settings,out of 4 settings in total,can be used simultaneously.)					
	Feed forward function	Available (speed/torque)					
	Load variation suppression control	Available					
	Gain 3 switching function	Available					
	Hybrid vibration suppression function	Available					
Quadrant glitch inhibit function	Available						
Common	Two-degree-of-freedom control mode	Available (standard type)					
	Motor operatable setup function	Available					
	External scale position information monitor	Available					
	Other available functions	Friction torque compensation, Torque limit switching function, Torque saturation protection function					
	Electronic gear ratio setting	Applicable scaling ratio: 1/1000 to 8000 Although any value of 1 to 2 <sup>30</sup> (numerator) and any value of 1 to 2 <sup>30</sup> (denominator) can be used,resulting value should be within the range shown above.					
	Auto tuning	Identifies the load inertia real-time and automatically sets up the gain that meets the stiffness setting when the motor is running with upper and internal operation commands.					
	Notch filter	Available (5 filters available)					
	Gain switching function	Available					
	2-step torque filter	Available					
	Position comparison output function	Available					
Protective function	Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current, encoder error, excess position deviation, EEPROM error etc.						
Alarm data trace back function	Tracing back of alarm data is available						
Deterioration diagnosis function	Available						

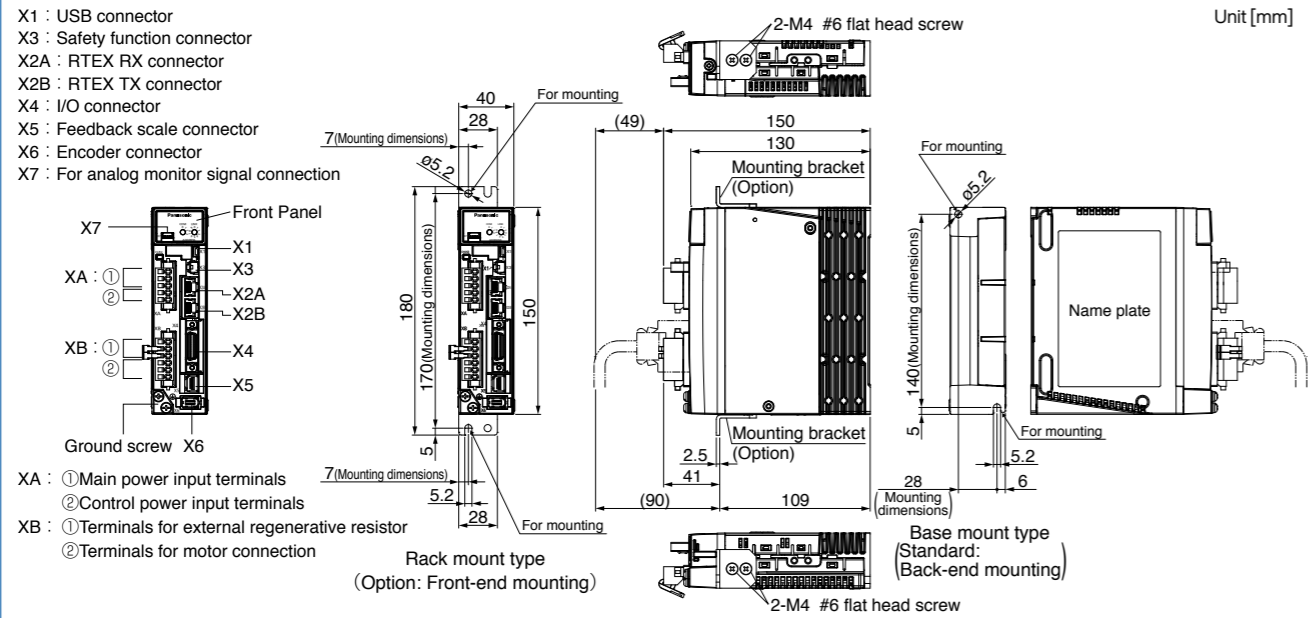
Basic Specifications	Input power	100 V	Main circuit	Single phase	100 V <sup>+10 %</sup> <sub>-15 %</sub>	to 120 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz	
			Control circuit	Single phase	100 V <sup>+10 %</sup> <sub>-15 %</sub>	to 120 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz	
		200 V	Main circuit	A-frame to D-frame	Single/3-phase	200 V <sup>+10 %</sup> <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz
				E-frame, F-frame	3-phase	200 V <sup>+10 %</sup> <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz
			Control circuit	A-frame to D-frame	Single phase	200 V <sup>+10 %</sup> <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz
				E-frame, F-frame	Single phase	200 V <sup>+10 %</sup> <sub>-15 %</sub>	to 240 V <sup>+10 %</sup> <sub>-15 %</sub>	50 Hz / 60 Hz
	Environment	temperature	Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation*1)					
		humidity	Both operating and storage : 20 %RH to 85 %RH (free from condensation*1)					
		Altitude	Lower than 1000 m					
		Vibration	5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz					
Control method		IGBT PWM Sinusoidal wave drive						
Encoder feedback		23-bit (8388608 resolution) absolute encoder, 7-wire serial * When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to "1" (factory settings).						
Interface connector	Control signal	Input	Each 8 input can be assigned by the parameter.					
		Output	Each 3 output can be assigned by the parameter.					
	Analog signal	Output	2 outputs for analog monitors 1 and 2					
	Pulse signal	Output	Line driver output for encoder pulses (A/B phase signal).					
Communication	Realtime Express (RTEX)	Communication for transmission of a real-time operation command, the parameter setting, or the status monitoring.						
	USB	USB interface to connect to computers (setup support software PANATERM) for parameter setting or status monitoring.						
Front panel		(1) 7 segment LED (double digits) (2) Network status LED(LINK,COM) (3) Rotary switch for node address setting (4) Analog monitor output(Analog monitors 1 and 2)						
Regeneration		Size A and B: Without built-in regenerative resistor (use external resistor) Size C to F: Built-in regenerative resistor (External regenerative resistor is also available)						
Dynamic brake		A to F frame: built-in						
Control mode		(1) Semi-closed control Position control: Profile position control (PP), Cyclic position control (CP) Velocity control: Cyclic velocity control (CV) Torque control: Cyclic torque control (CT) • Switch PP/CP/CV/CT mode according to the RTEX communication command.						

\*1 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

Position control	Control input		Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, Near home position , etc	
	Control output		Positioning completion etc.	
	Position command input	Input mode	Command type by RTEX command	
		Smoothing filter	Either a primary delay filter or a FIR type filter can be selected against command input.	
	Damping control		Available(Up to 3 frequency settings,out of 4 settings in total,can be used simultaneously.)	
	Model type damping filter		Available(2 filter available used simultaneously)	
	Feed forward function		Available (speed/torque)	
	Load variation suppression control		Available	
	Gain 3 switching function		Available	
	Quadrant glitch inhibit function		Available	
Two-degree-of-freedom control mode		Available		
Motor operatable setup function		Available		
Other available functions		Friction torque compensation, Torque limit switching function, Torque saturation protection function, Single-turn absolute function, Continuous rotating absolute encoder function		
Speed control	Control input		Positive direction drive inhibit input , Negative direction drive inhibit, Latch signal, etc	
	Control output		At speed etc.	
	Position command input	Input mode	Command type by RTEX command	
		Soft start/slowdown function	0 s to 10 s / 1000 r/min Acceleration and deceleration can be set separately. S-curve acceleration/deceleration is also available.	
	Feed forward function		Available (torque)	
	Load variation suppression control		Available	
Two-degree-of-freedom control mode		Available (standard type)		
Other available functions		Friction torque compensation, Torque limit switching function, Torque saturation protection function, Single-turn absolute function, Continuous rotating absolute encoder function		
Torque control	Control input		Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, etc	
	Control output		At speed etc.	
	Position command input	Input mode	Command type by RTEX command	
		Speed limit function	Speed limit value can be set by parameter. (Switched by RTEX command.)	
Other available functions		Single-turn absolute function Continuous rotating absolute encoder function		
Common	Electronic gear ratio setting		Applicable scaling ratio: 1/1000 to 8000 Although any value of 1 to 2 <sup>30</sup> (numerator) and any value of 1 to 2 <sup>30</sup> (denominator) can be used,resulting value should be within the range shown above.	
	Auto tuning		Identifies the load inertia real-time and automatically sets up the gain that meets the stiffness setting when the motor is running with upper and internal operation commands.	
	Notch filter		Available (5 filters available)	
	Gain switching function		Available	
	2-step torque filter		Available	
	Position comparison output function		Available	
	Protective function		Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current, encoder error, excess position deviation, EEPROM error etc.	
	Alarm data trace back function		Tracing back of alarm data is available	
	Deterioration diagnosis function		Available	

\* All dimensions shown in this catalog are for the A6NF series, but outer dimensions are the same as the A6NE series.

A-frame

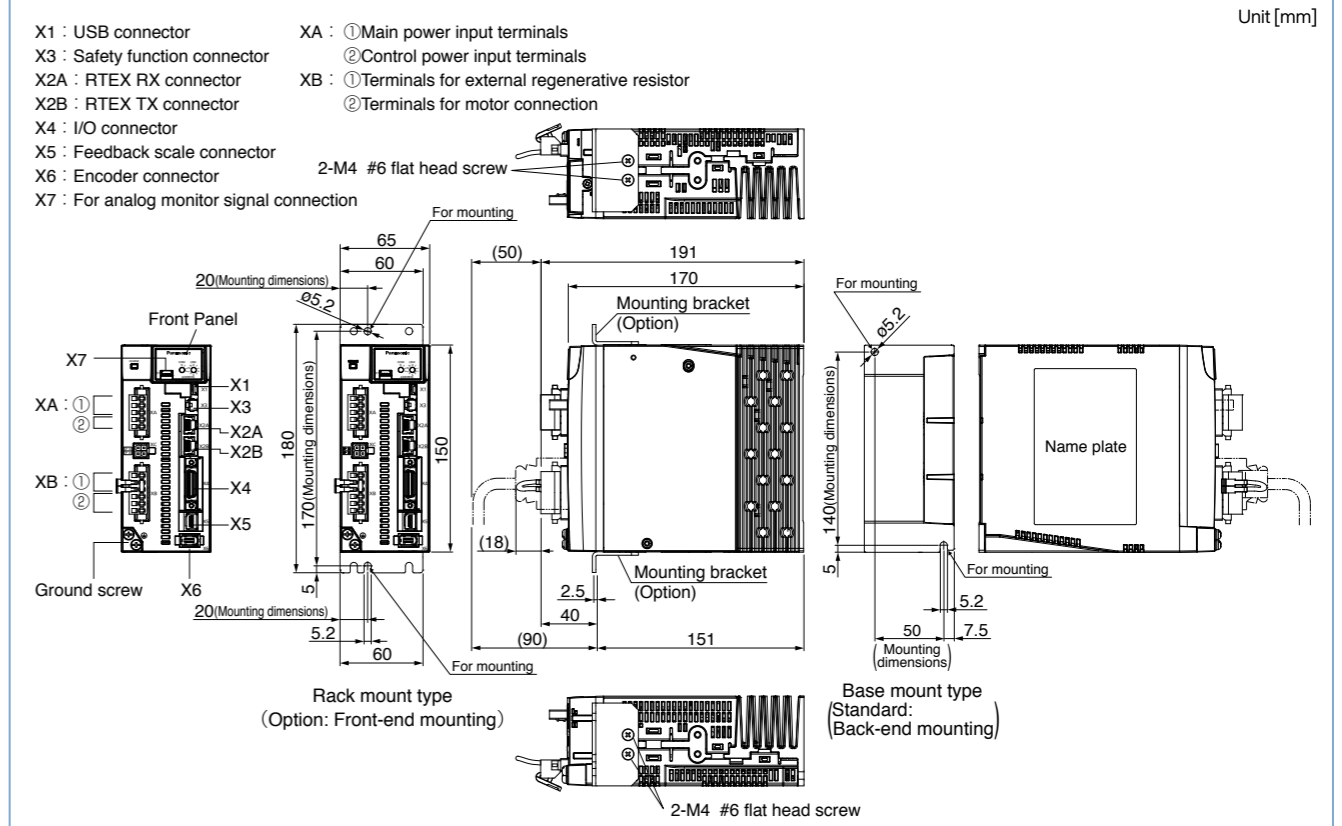


A-frame: Connector of driver side			Multifunction type	Basic type
Connector XA	S05B-F32SK-GGXR (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector XB	S06B-F32SK-GGXR (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X1	UB-M5BR-S14-4S (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X3	CIF-HS08SS-071-TB (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	-
Connector X2A	MOD-WRJ88LY1G-TP+ (or equivalent)	HTK	●	●
Connector X2B	MOD-WRJ88LY1G-TP+ (or equivalent)	HTK	●	●
Connector X4	DF02R026NA2 (or equivalent)	Japan Aviation Electronics Ind.	●	●
Connector X5	MUF-RS10SK-GKX-TB (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	-
Connector X6	3E106-2230KV (or equivalent)	Sumitomo 3M	●	●
Connector X7	53398-8605 (5pin)	Molex	●	●

Mass: 0.8 kg

<Attached to the driver>  
 Connector of power and motor side  
 Connector XA 05JFAT-SAXGGKK-A J.S.T. Mfg. Co., Ltd.  
 Connector XB 06JFAT-SAXGGKK-A J.S.T. Mfg. Co., Ltd.

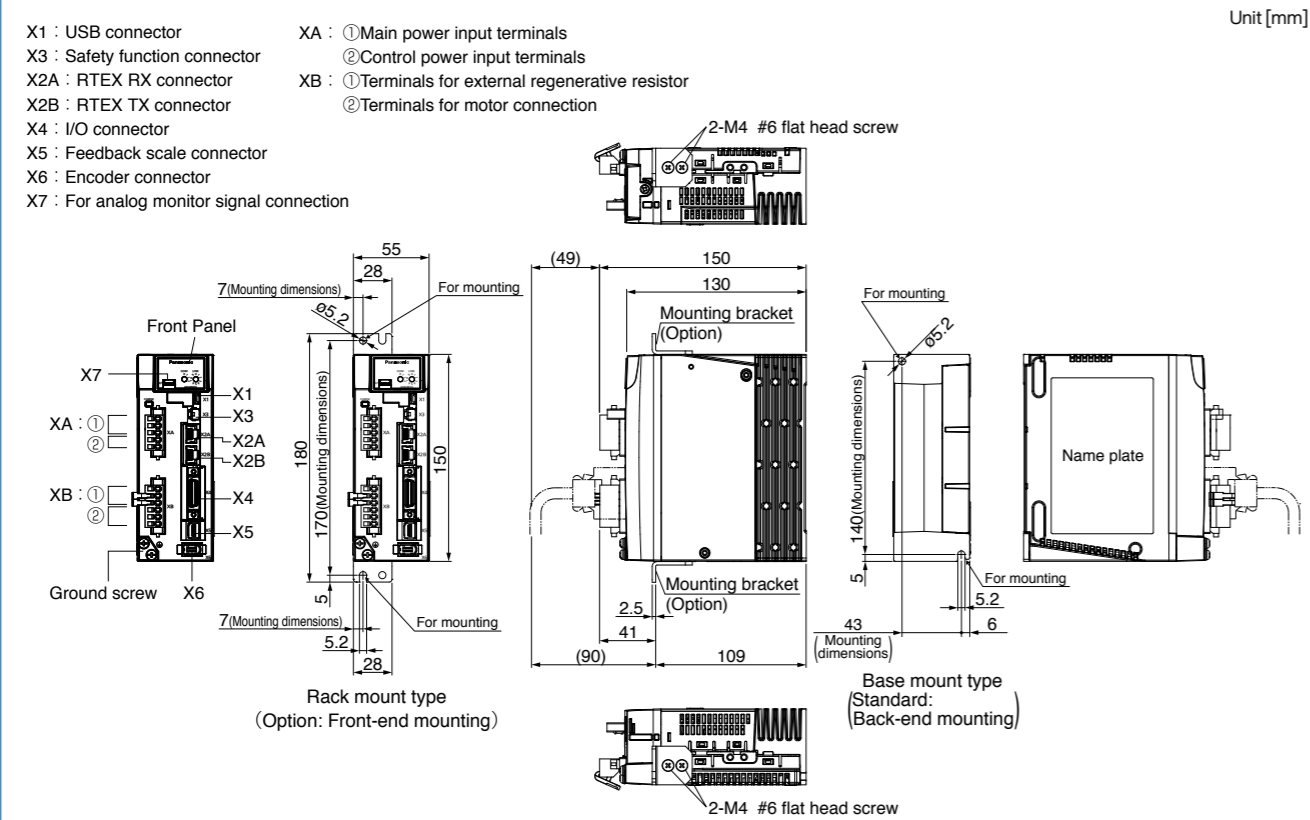
C-frame



\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

Mass: 1.6 kg

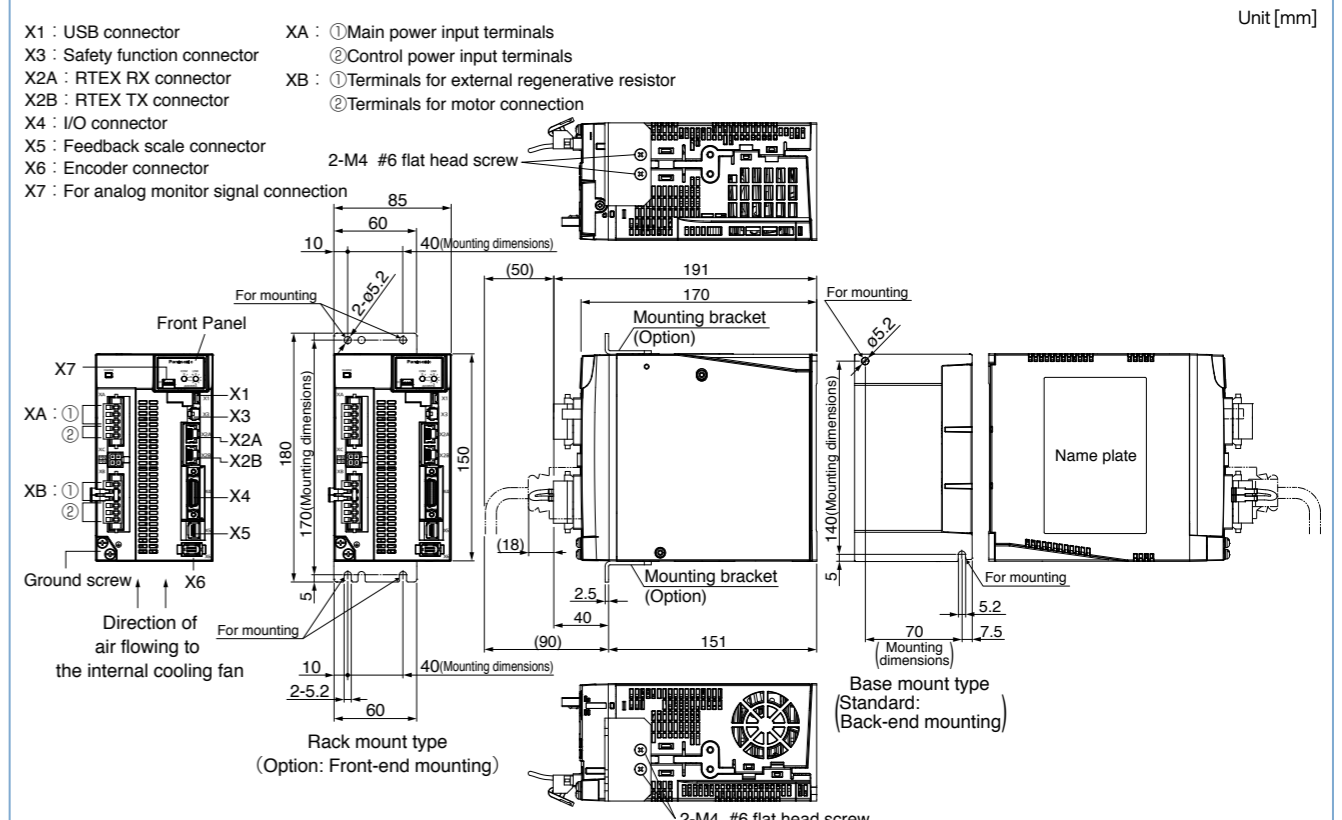
B-frame



\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

Mass: 1.0 kg

D-frame (200 V)



\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

Mass: 2.1 kg

E-frame (200 V)

Unit [mm]

X1 : USB connector  
 X3 : Safety function connector  
 X2A : RTEX RX connector  
 X2B : RTEX TX connector  
 X4 : I/O connector  
 X5 : Feedback scale connector  
 X6 : Encoder connector  
 X7 : For analog monitor signal connection

XA : ① Main power input terminals  
 ② Control power input terminals  
 XB : Terminals for motor connection  
 XC : Terminals for external regenerative resistor

2-M4 #6 flat head screw

Mounting bracket (If re-positioned from front end)

196.5

85 (Mounting dimensions)

50

2-5.2

For mounting

198 (Mounting dimensions)

168

70

2.5

3.5

160

2.5

33

70

Name plate

52

18

216

Mounting bracket (If re-positioned from front end)

2-M4 #6 flat head screw

Direction of air flowing to the internal cooling fan

Ground screw

E-frame: Connector of driver side		
Connector XA	S05B-JTSLSK-GSANXR (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector XB	S03B-JTSLSK-GSANXR (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector XC	S04B-JTSLSS-GSANXR (or equivalent)	J.S.T. Mfg. Co., Ltd.

<Attached to the driver>

E-frame: Connector of power and motor side		
Connector XA	05JFAT-SAXGSA-L (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector XB	03JFAT-SAXGSA-L (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector XC	04JFAT-SAXGSA-L (or equivalent)	J.S.T. Mfg. Co., Ltd.

\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

Mass: 2.7 kg

F-frame (200 V)

Unit [mm]

X1 : USB connector  
 X3 : Safety function connector  
 X2A : RTEX RX connector  
 X2B : RTEX TX connector  
 X4 : I/O connector  
 X5 : Feedback scale connector  
 X6 : Encoder connector  
 X7 : For analog monitor signal connection

① Main power input terminals  
 ② Control power input terminals  
 ③ Terminals for external regenerative resistor  
 ④ Terminals for motor connection

2-M4 #6 flat head screw

Mounting bracket (If re-positioned from front end)

219.5

100 (Mounting dimensions)

130

2-5.2

For mounting

250 (Mounting dimensions)

220

20

2.5

3.5

169

47

2.5

20

Name plate

2.5

67

169

Mounting bracket (If re-positioned from front end)

2-M4 #6 flat head screw

Direction of air flowing to the internal cooling fan

①

②

③

④

X7

X1

X3

X2A

X2B

X4

X5

X6

2-5.2

100 (Mounting dimensions)

2-5.2

100

2.5

47

169

2-M4 #6 flat head screw

Mass: 5.2 kg

G-frame (200 V) (A6NE series are not available.)

Unit [mm]

X1 : USB connector  
 X3 : Safety function connector  
 X2A : RTEX RX connector  
 X2B : RTEX TX connector  
 X4 : I/O connector  
 X5 : Feedback scale connector  
 X6 : Encoder connector  
 XE : Connector for external dynamic brake signal  
 XS : Built-in dynamic brake switch

X7 : For analog monitor signal connection

Control power input terminals

Main power input terminals

Terminals for external regenerative resistor

Terminals for motor connection

3-M4 #6 flat head screw

3-M4 #6 flat head screw

3-M4 #6 flat head screw

3-M4 #6 flat head screw

Front Panel

184

90 (Mounting dimensions)

47

2-6.2

For mounting

257

50

2.5

Mounting bracket (If re-positioned from front end)

197

56

50

Name plate

2.5

106

199

Mounting bracket (If re-positioned from front end)

257

241 (Mounting dimensions)

220

8

2-6.2

47

90 (Mounting dimensions)

For mounting

3-M4 #6 flat head screw

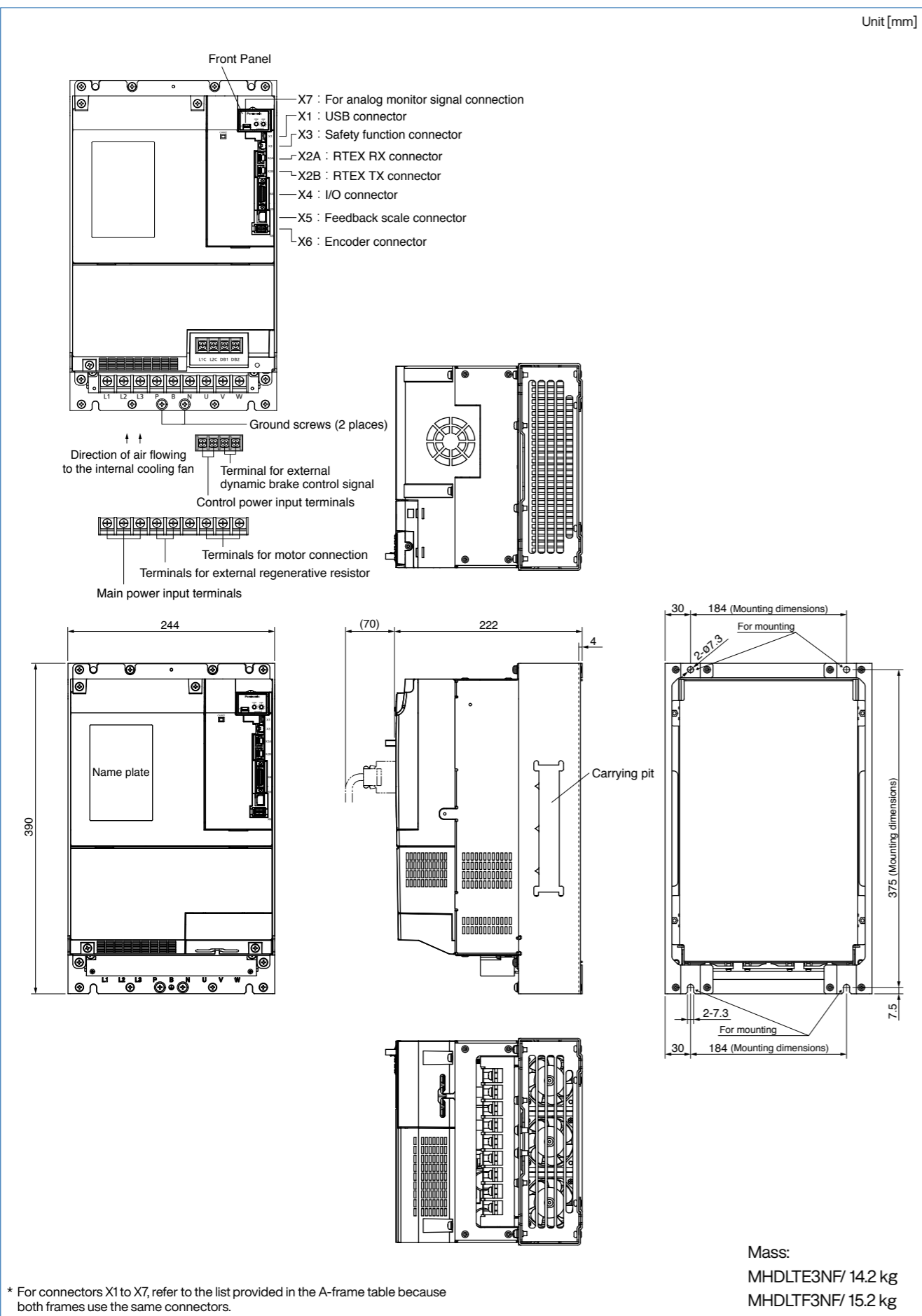
Connector of driver side	Control side (customer prepares)
Connector XE : 5569-04A2-210 (MOLEX)	Connector : 5557-04R-210 (MOLEX)
	Pin : 5556PBT

\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

Mass: 8.2 kg



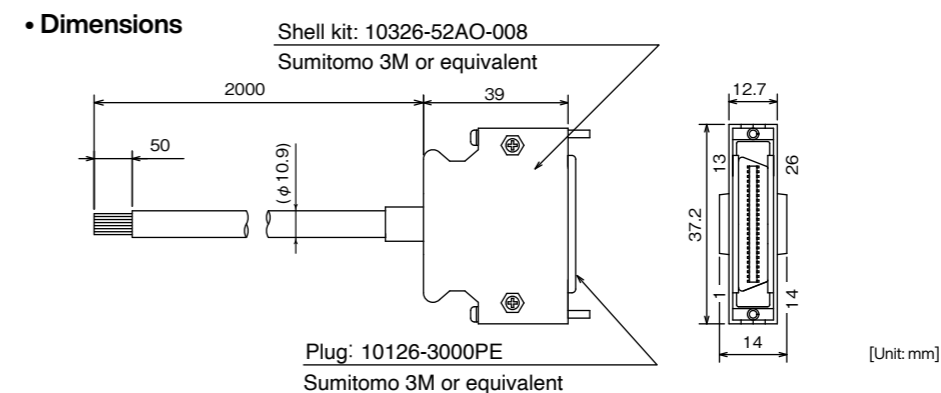
H-frame (200 V) (A6NE series are not available.)



Refer to P.29 to P.42 for other options than the interface cable and interface connector kit.

Cable for Interface

Part No. DVOP0800 Cable length 2 m, core wire AWG 26 is connected.



• Table for wiring

Pin No.	Signal name	color	Pin No.	Signal name	color	Pin No.	Signal name	color
1*	BRK-OFF+	Orange (Red1)	10*	HOME	Pink (Black1)	19	OB-/OCMP2-	Pink (Red2)
2*	BRK-OFF-	Orange (Black1)	11*	EXT2	Orange (Red2)	20	OB+/OCMP2+	Pink (Black2)
3*	ALM+	Gray (Red1)	12*	EXT3	Orange (Black2)	21	OCMP3+	Orange (Red3)
4*	ALM-	Gray (Black1)	13*	SI-MON4	Gray (Red2)	22	OCMP3-	Gray (Red3)
5*	SI-MON5	White (Red1)	14	BTP-I	Gray (Black2)	23	-	Gray (Black3)
6	I-COM	White (Black1)	15	BTN-I	White (Red2)	24	-	White (Red3)
7*	POT	Yellow (Red1)	16	GND	White (Black2)	25*	EX-OUT1+	White (Black3)
8*	NOT	Yellow (Black1)	17	OA+/OCMP1+	Yellow (Red2)	26*	EX-OUT1-	Orange (Black3)
9*	SI-MON1	Pink (Red1)	18	OA-/OCMP1-	Yellow (Black2)			

The signals allocated to the pin No. with "\*" in the table are factory default.

<Remarks>

Color designation of the cable e.g.) Pin-1 Cable color : Orange (Red1) : One red dot on the cable

<Caution>

The shield of this cable is not connected to the terminal of the connector.  
The shielded wire of the cable is connected to the connector shell of the cable, and is connected to the FG via the connector shell on the Driver side. When connecting the shielded wire of the cable to GND, use the connector kit DVOP0770 for the interface. At that time, please note that if you connect the shield and the connector shell on the cable side and process it, FG and GND will be connected.

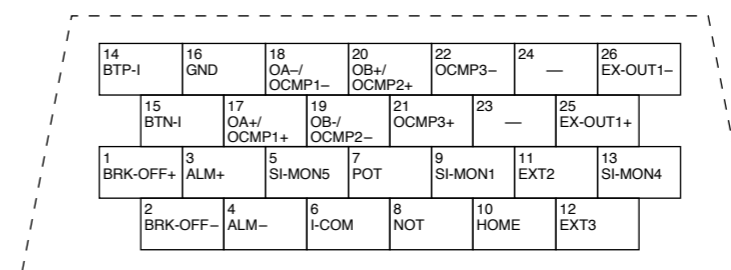
Connector Kit for Interface

Part No. DVOP0770

• Components

Title	Part No.	Number	Manufacturer	Note
Connector	10126-3000PE	1	Sumitomo 3M	For CN X4 (26-pins)
Connector cover	10326-52AO-008	1	(or equivalent)	

• Pin disposition: Connector X4 (26 pins) (viewed from the soldering side)



<Remarks>

1. Check the stamped pin-No. on the connector body while making a wiring.
2. For the symbols representing the signal names or the functions of the signals in the figure above, refer to the operation manual.

# Servo driver with EtherCAT open network

EtherCAT  **EtherCAT**  
AC servo motor & driver

**MINAS A6B Series** Special Order Product



A6BE Series  
A6BF Series

**Quickly**

Response frequency 3200 Hz & communication rate 100 Mbps enable fast and highly accurate operation.  
Configurable even for motors with a maximum rotating speed 6500 r/min.\*

\* MHMF and MQMF types with a maximum wattage 400 W

**Wisely**

New algorithm “Two-degree-of-freedom control method” is used to improve machining accuracy and productivity.

**Easily**

Easy and speedy set-up with set-up support software “PANATERM”

- Fully-featured EtherCAT application (7 control modes, 32 origin-return modes, 2 synchronous modes, and an asynchronous mode.)
- Capable of system upgrade with various slaves.
- Capable of establishing PC-based systems without needing dedicated hardware.
- Planned to pass official EtherCAT Conformance Test.
- A6BF with safety I/F\*2 corresponding to international standard, and A6BL/A6BM supporting linear motors

\*2 : IEC61800-5-2 STO, IEC61508 SIL3.

\* The EtherCAT is a registered trademark of patented technology licensed from Beckhoff Automation GmbH in Germany.

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MINAS A6B Series

Model Designation Special Order Product

For more information, please visit our website or request to our distributors separately.

■ Servo Driver

**M A D L N 1 5 B E \* \* \*** Special specifications

### ① Frame symbol

Symbol	Frame	Symbol	Frame
MAD	A-Frame	MED	E-Frame
MBD	B-Frame	MFD	F-Frame
MCD	C-Frame	MGD	G-Frame
MDD	D-Frame	MHD	H-Frame

### ② Series

Symbol	Series name
L	A6 Family

### ③ Safety Function\*1

Symbol	Specifications
N	without the safety function
T	with the safety function

### ④ Max. current rating

Symbol	Current rating	Symbol	Current rating
0	6 A	9	80 A
1	8 A	A	100 A
2	12 A	B	120 A
3	22 A	C	160 A
4	24 A	E	240 A
5	40 A	F	360 A
8	60 A		

### ⑤ Supply voltage specifications

Symbol	Specifications
1	Single phase 100 V
3	3-phase 200 V
5	Single/3-phase 200 V

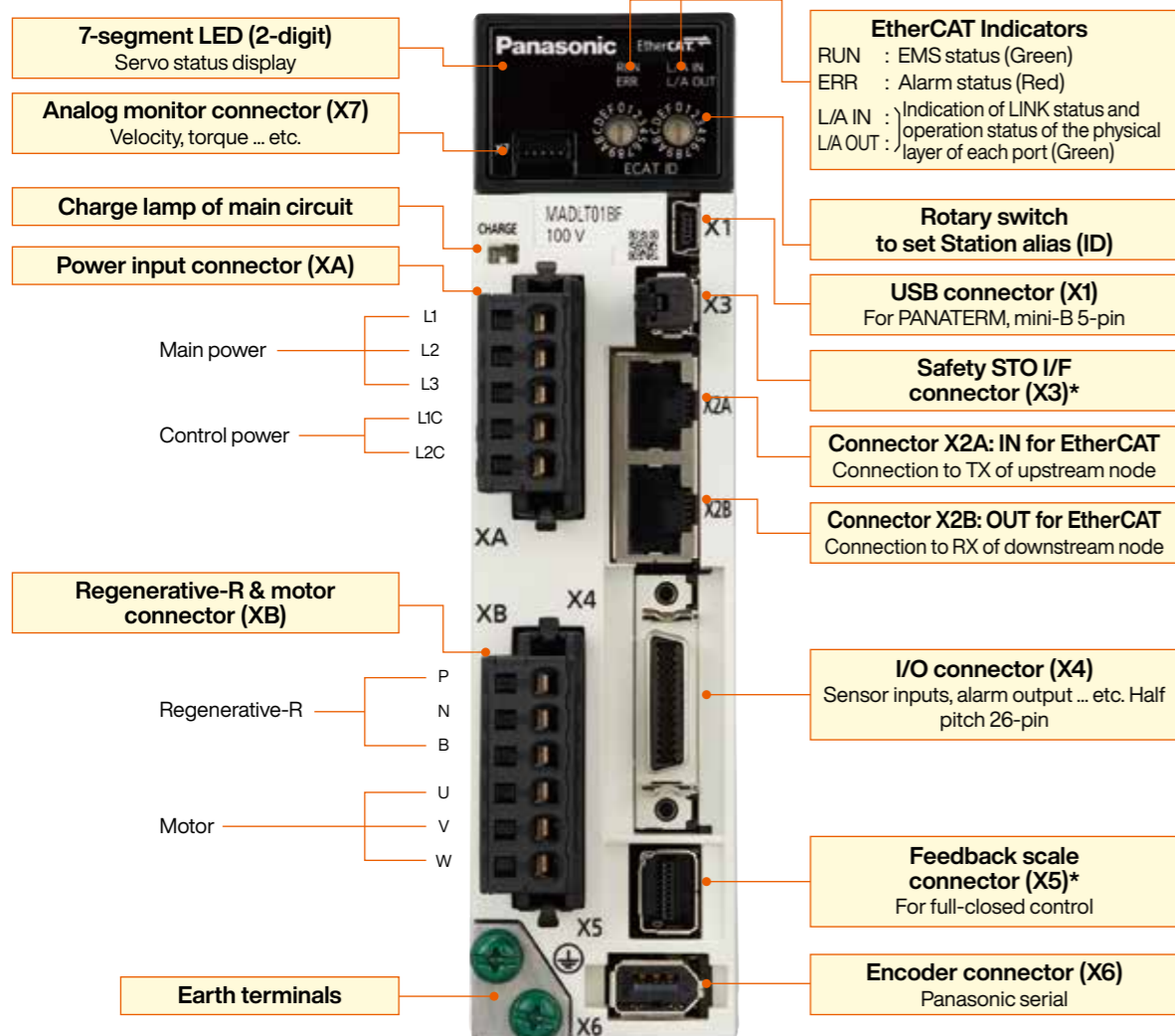
### ⑥ I/f specifications

Symbol (specification)	Symbol	Specification
B (EtherCAT)	E	Standard for rotary motor <span style="border: 1px solid black; padding: 2px;">Special Order Product</span>
	F	Multifunction for rotary motor <span style="border: 1px solid black; padding: 2px;">Special Order Product</span>
	L	Standard for linear/ DD motor <span style="border: 1px solid black; padding: 2px;">Special Order Product</span>
	M	Multifunction for linear/ DD motor <span style="border: 1px solid black; padding: 2px;">Special Order Product</span>

### ⑦ Classification of type\*1

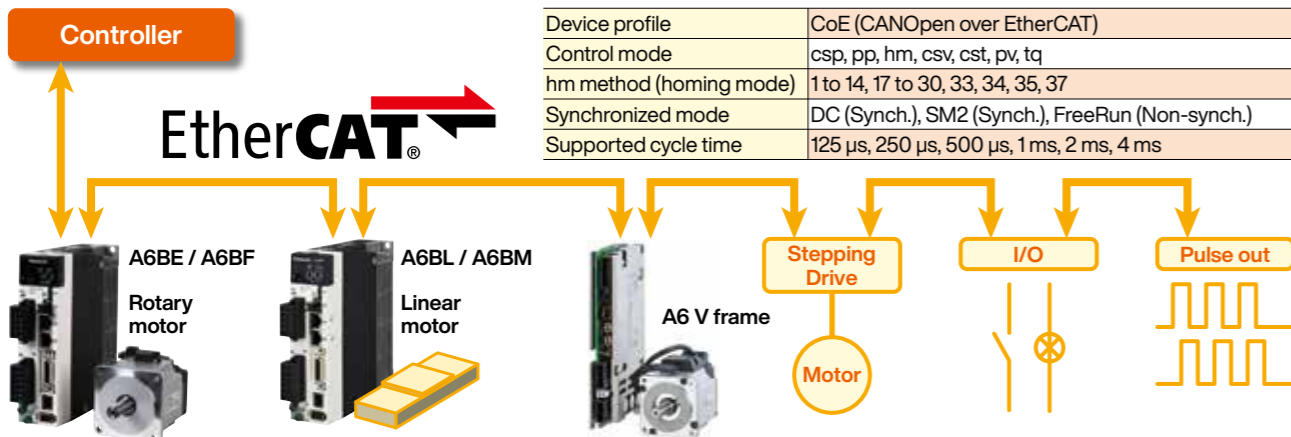
\*1 Standard type (with a part number ending in E or L) has no safety function.  
Multi-function type (with a part number ending in F or M) has a safety function.

Appearance



\* The photo is A6BF series. There are no X3 and X5 connectors in the A6BE series.

Typical system configuration



**Applicable motor** Please refer to P.29 to P.42 of the A6 series.

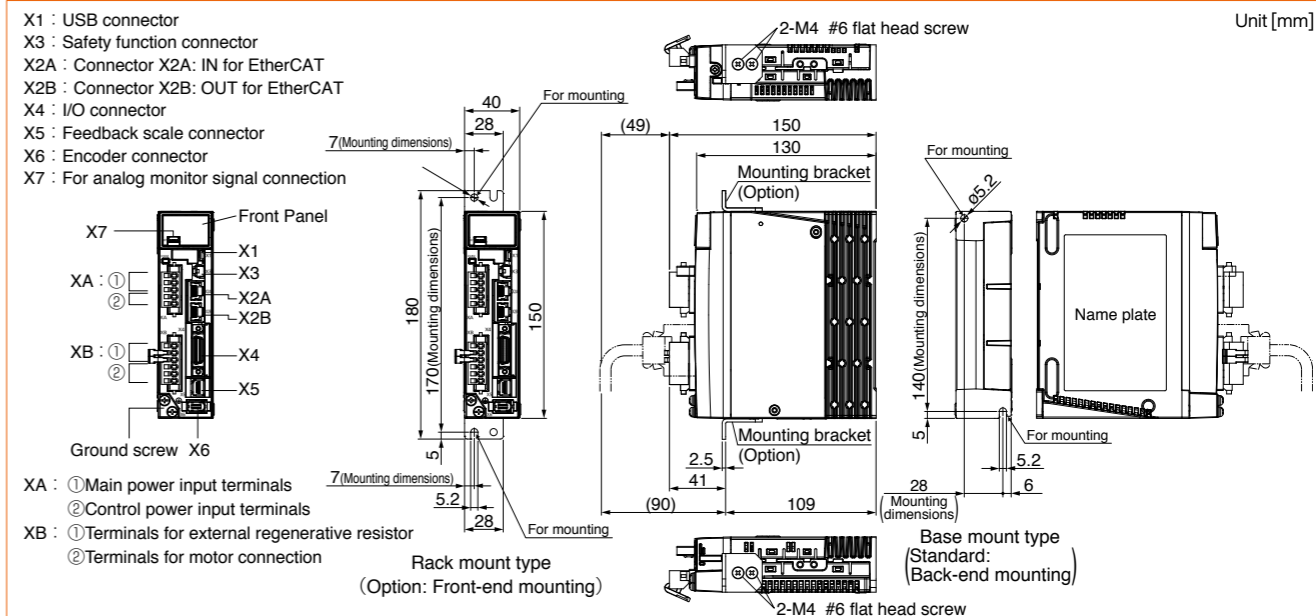
Applicable option

Interface cable	DV0P0800
Interface connector kit	DV0P0770
Options other than interface cables and interface connectors	Please refer to P.29 to P.42 of the A6 series.

\* Refer to P.368 of the A6N series for the "parallel I/O connector (X4)" option. The "signal names" and "pin assignments" for the parallel I/O connector (X4) option "interface cable" and "interface connector kit" are different from those described on P.368. For details, please refer to the specifications of the A6B series.

\* All dimensions shown in this catalog are for the A6BF series, but outer dimensions are the same as the A6BE series.

A-frame



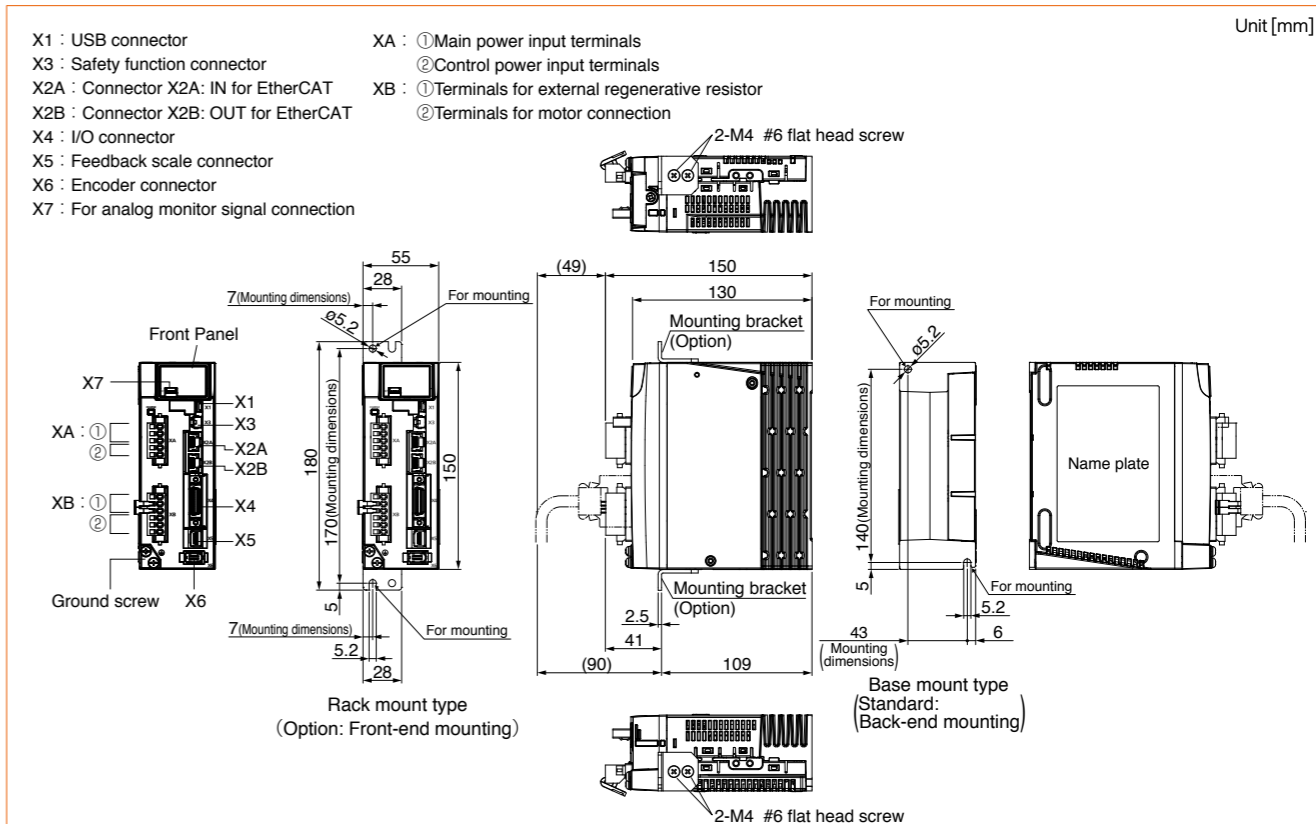
A-frame: Connector of driver side			Multifunction type	Basic type
Connector XA	S05B-F32SK-GGXR (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector XB	S06B-F32SK-GGXR (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X1	UB-M5BR-S14-4S (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X3	CIF-HS08SS-071-TB (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	-
Connector X2A	MOD-WRJ88LY1G-TP+ (or equivalent)	HTK	●	●
Connector X2B	MOD-WRJ88LY1G-TP+ (or equivalent)	HTK	●	●
Connector X4	DF02R026NA2 (or equivalent)	Japan Aviation Electronics Ind.	●	●
Connector X5	MUF-RS10SK-GKX-TB (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	-
Connector X6	3E106-2230KV (or equivalent)	Sumitomo 3M	●	●
Connector X7	53398-8605 (5pin)	Molex	●	●

Mass: 0.8 kg

**<Attached to the driver>**

Connector of power and motor side		
Connector XA	05JFAT-SAXGGKK-A	J.S.T. Mfg. Co., Ltd.
Connector XB	06JFAT-SAXGGKK-A	J.S.T. Mfg. Co., Ltd.

B-frame



\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

Mass: 1.0 kg

**C-frame**

Unit [mm]

X1 : USB connector  
X3 : Safety function connector  
X2A : Connector X2A: IN for EtherCAT  
X2B : Connector X2B: OUT for EtherCAT  
X4 : I/O connector  
X5 : Feedback scale connector  
X6 : Encoder connector  
X7 : For analog monitor signal connection

XA : ① Main power input terminals  
② Control power input terminals  
XB : ① Terminals for external regenerative resistor  
② Terminals for motor connection

2-M4 #6 flat head screw

For mounting

Front Panel

X7

XA : ①  
②

X3

X2A

X2B

X4

X5

Ground screw

X6

20(Mounting dimensions)

65

60

180

170(Mounting dimensions)

150

5.2

5

2.5

40

90

151

For mounting

Mounting bracket (Option)

170

191

5.2

7.5

50

For mounting

1.40(Mounting dimensions)

5

For mounting

0.5

5.2

7.5

50

For mounting

Mounting bracket (Option)

Name plate

Base mount type  
Standard:  
Back-end mounting

Rack mount type  
(Option: Front-end mounting)

2-M4 #6 flat head screw

Mass: 1.6 kg

\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

**E-frame (200 V)**

Unit [mm]

X1 : USB connector  
X3 : Safety function connector  
X2A : Connector X2A: IN for EtherCAT  
X2B : Connector X2B: OUT for EtherCAT  
X4 : I/O connector  
X5 : Feedback scale connector  
X6 : Encoder connector  
X7 : For analog monitor signal connection

XA : ① Main power input terminals  
② Control power input terminals  
XB : Terminals for motor connection  
XC : Terminals for external regenerative resistor

2-M4 #6 flat head screw

For mounting

Front Panel

X7

XA : ①  
②

X3

X2A

X2B

X4

X5

Ground screw

X6

20(Mounting dimensions)

85

50

For mounting

2-5.2

198

188(Mounting dimensions)

168

5

2.5

50

For mounting

2-5.2

50

For mounting

Mounting bracket

Mounting bracket (If re-positioned from front end)

70

196.5

2.5

160

2.5

33

70

3.5

52

18

216

For mounting

Mounting bracket (If re-positioned from front end)

Name plate

Base mount type  
Standard:  
Back-end mounting

Rack mount type  
(Option: Front-end mounting)

2-M4 #6 flat head screw

Mass: 2.7 kg

**E-frame: Connector of driver side**

Connector XA	S05B-JTSLSK-GSANXR (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector XB	S03B-JTSLSK-GSANXR (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector XC	S04B-JTSLSS-GSANXR (or equivalent)	J.S.T. Mfg. Co., Ltd.

**<Attached to the driver>**

Connector XA	05JFAT-SAXGSA-L (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector XB	03JFAT-SAXGSA-L (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector XC	04JFAT-SAXGSA-L (or equivalent)	J.S.T. Mfg. Co., Ltd.

Direction of air flowing to the internal cooling fan

\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

**D-frame (200 V)**

Unit [mm]

X1 : USB connector  
X3 : Safety function connector  
X2A : Connector X2A: IN for EtherCAT  
X2B : Connector X2B: OUT for EtherCAT  
X4 : I/O connector  
X5 : Feedback scale connector  
X6 : Encoder connector  
X7 : For analog monitor signal connection

XA : ① Main power input terminals  
② Control power input terminals  
XB : ① Terminals for external regenerative resistor  
② Terminals for motor connection

2-M4 #6 flat head screw

For mounting

Front Panel

X7

XA : ①  
②

X3

X2A

X2B

X4

X5

Ground screw

X6

20(Mounting dimensions)

85

60

40(Mounting dimensions)

180

170(Mounting dimensions)

150

5.2

5

2.5

40

90

151

For mounting

Mounting bracket (Option)

170

191

5.2

7.5

70

For mounting

1.40(Mounting dimensions)

5

For mounting

0.5

5.2

7.5

70

For mounting

Mounting bracket (Option)

Name plate

Base mount type  
Standard:  
Back-end mounting

Rack mount type  
(Option: Front-end mounting)

2-M4 #6 flat head screw

Mass: 2.1 kg

\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

**F-frame (200 V)**

Unit [mm]

X1 : USB connector  
X3 : Safety function connector  
X2A : Connector X2A: IN for EtherCAT  
X2B : Connector X2B: OUT for EtherCAT  
X4 : I/O connector  
X5 : Feedback scale connector  
X6 : Encoder connector  
X7 : For analog monitor signal connection

① Main power input terminals  
② Control power input terminals  
③ Terminals for external regenerative resistor  
④ Terminals for motor connection

2-M4 #6 flat head screw

For mounting

Front Panel

X7

X1

X3

X2A

X2B

X4

X5

X6

20

219.5

2.5

169

47

2.5

20

3.5

2.5

47

67

169

For mounting

Mounting bracket (If re-positioned from front end)

Name plate

Mounting bracket (If re-positioned from front end)

Base mount type  
Standard:  
Back-end mounting

Rack mount type  
(Option: Front-end mounting)

2-M4 #6 flat head screw

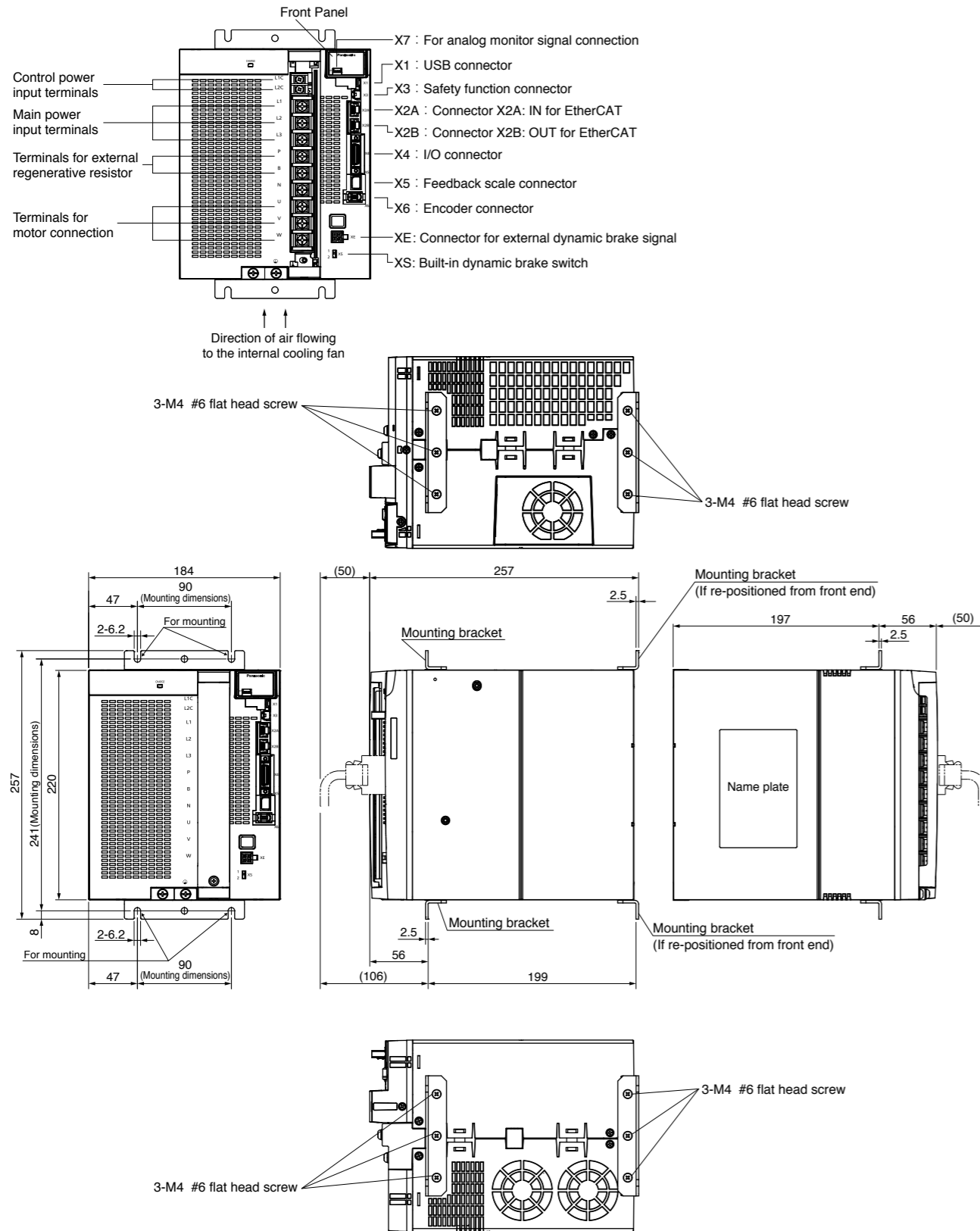
Mass: 5.2 kg

Direction of air flowing to the internal cooling fan

\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

**G-frame (200 V)** (A6BE series are not available.)

Unit [mm]



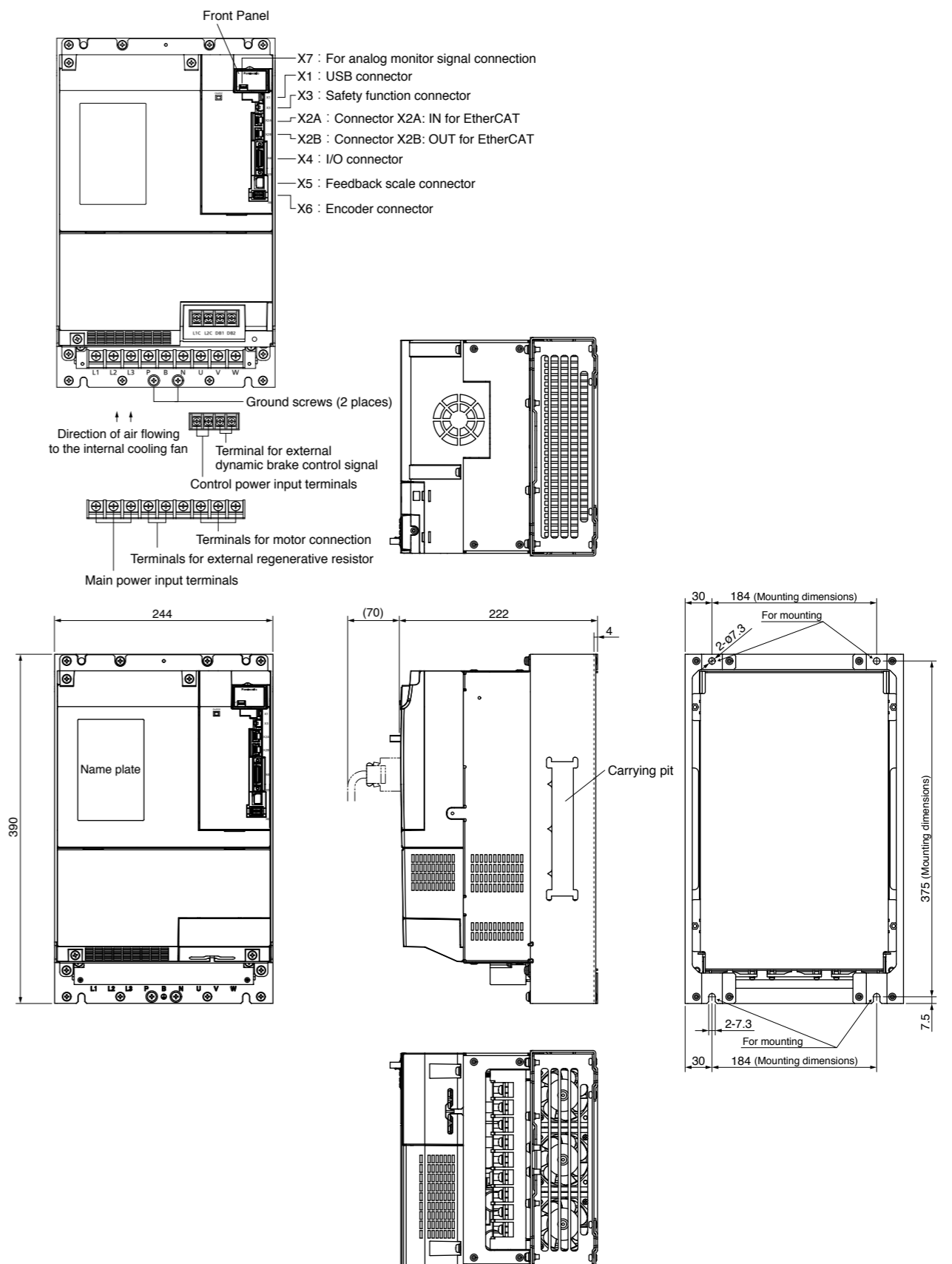
Connector of driver side	Controlor side (customer prepares)
Connector XE : 5569-04A2-210 (MOLEX)	Connector : 5557-04R-210 (MOLEX) Pin : 5556PBT

\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

Mass: 8.2 kg

**H-frame (200 V)** (A6BE series are not available.)

Unit [mm]



Mass:  
MHDLTE3BF/ 14.2 kg  
MHDLTF3BF/ 15.2 kg

\* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

# Compact Servo Only for

# Position Control.

Ultra compact  
position control type

## MINAS E Series

Last Order Date: April 30, 2025  
After this date, we will no longer  
accept new orders for the product.



### 1 Best Fit to Small Drives

- Further evolution in down-sizing, by 47% in size. <sup>(Note)</sup>
- Exclusively designed for position control.

(Note) Compared to MUDS043A1

### 2 Easy to Handle, Easy to Use

- DIN-rail mounting unit (option) improves handling/installation.
- User-friendly Console makes the setup easy.
- High functionality Real-Time Auto-Gain Tuning enables adjustment-free operation.



### 3 High-Speed Positioning with Resonance Suppression Filters

- Built-in notch filter suppresses resonance of the machine.
- Built-in adaptive filter detect resonance frequency and suppress vibration.

### 4 Smoother operation for Low Stiffness Machine

- Damping control function suppresses vibration during acceleration/deceleration

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# 1. Easy to Handle, Easy to Use

## High-functionality Real-Time Auto-Gain Tuning (Note 1)

- Offers real automatic gain tuning for low and high stiffness machines with a combination of an adaptive filter.
- Supports the vertical axis application where the load torque is different in rotational direction.

## DIN-rail mounting unit (option)

- DIN-rail mounting unit allows parallel mounting with small control devices such as PLC.
- Easy to mount and easy to dismount.

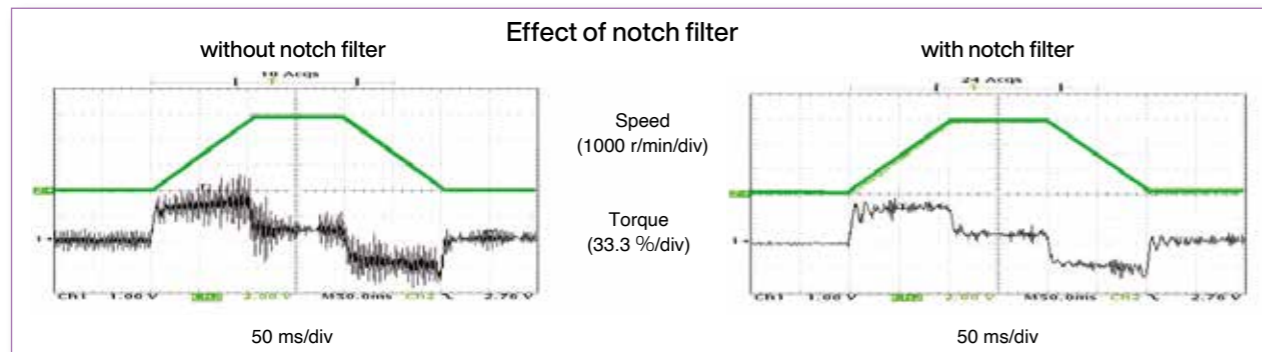
# 2. Further Reduction of Vibration

## Adaptive filter (Note1)

- Makes the notch filter frequency automatically follow the machine resonance frequency in real-time auto-gain tuning.
- Suppression of "Judder" noise of the machine, which is caused by variation of the machines or resonance frequency due to aging, can be expected.

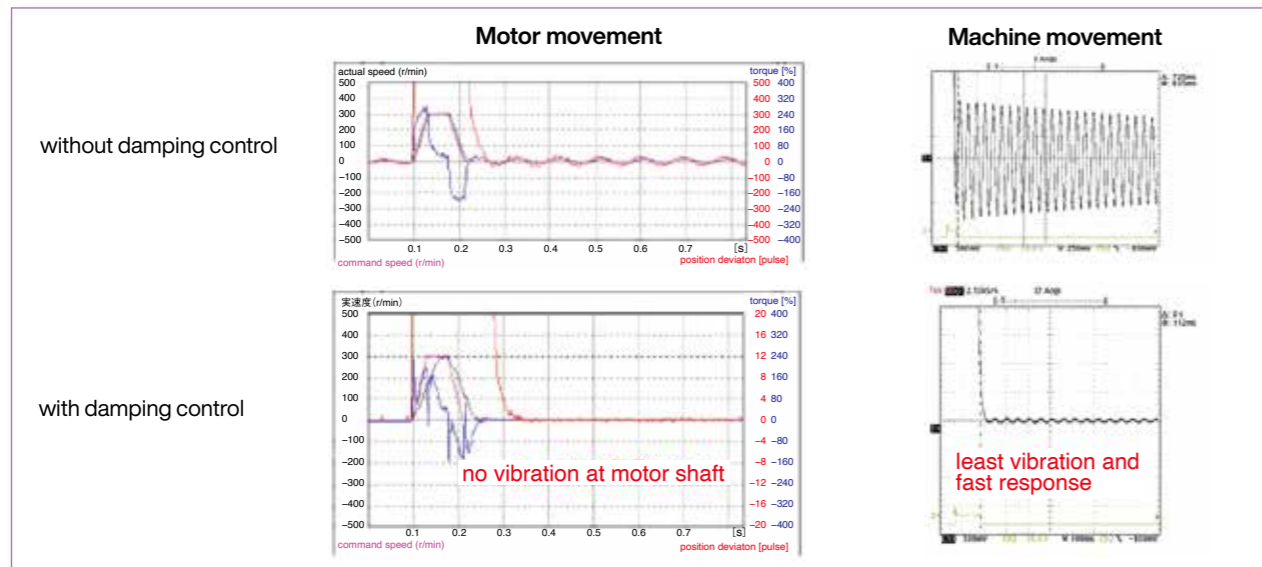
## Notch filter (Note1)

- 1-channel notch filter is equipped in the driver independent from adaptive filter.
- Each of 2 filters can set up frequency and notch width, and frequency in 1Hz unit. Suppression of "Judder" noise of the machine which has multiple resonance points can be expected.



## Damping control (Note1)

- You can suppress vibration occurring at both starting and stopping in low stiffness machine, by manually setting up vibration frequency in 0.1 Hz unit. Note) Only applies to manual adjustment



(Note1) Select at positioning action mode.  
 • At high speed positioning mode (Pr02=0) Select either one of notch filter, damping control or high-functionality real-time auto-gain tuning. Not possible to use them all at the same time. Adaptive filter cannot be used.  
 • At high-functionality positioning mode (Pr02=1) All of notch filter, damping control, high-functionality real-time auto-gain tuning and adaptive filter can be used at the same time.

# 3. Further Flexibility and Multiplicity

## Console (Option)

- You can set up parameters, copy and make a JOG run.
- Convenient for maintenance at site.
- Refer to P.403, Options.

## Command control modes

- Offers 2 command modes, "Position control" and "Internal velocity control".
- You can make a 4-speed running at preset values with parameter at internal velocity control mode.

## Inrush current suppressing function

- Inrush suppressing resistor, which prevent the circuit breaker shutdown of the power supply caused by inrush current at power-on, is equipped in this driver.
- Prevents unintentional shutdown of the power supply circuit breaker in multi axis application and does not give load to the power line.

## Regeneration discharging function

- Discharges the regenerative energy with external resistor, where energy is generated while stopping the load with large moment of inertia, or use in up-down operation, and is returned to the driver from the motor.
- No regenerative resistor is installed in the driver.
- It is highly recommended to install an external regenerative resistor (option).

## Built-in dynamic brake

- You can select the dynamic brake action which short the servo motor windings of U, V and W, at Servo-OFF, CW/CCW over-travel inhibition, power shutdown and trip.
- You can select the action sequence depending on the machine requirement.

## Setup support software (Option)

- With the setup support software, "PANATERM" via RS232 / RS485 communication port, you can monitor the running status of the driver and set up parameters. Note) Refer to P.398 for setup support software.

## Key-way shaft and tapped shaft end

- Easy pulley attachment and easy maintenance
- Attache screw to the tapped shaft to prevent key or pulley from being pulled out.

## Wave-form graphic function

- With the setup support software, "PANATERM", you can monitor the "Command speed", "Actual speed", "Torque", "Position deviation" and "Positioning complete signal".
- Helps you to analyze the machine and shorten the setup time. Note) Refer to P.398 for setup support software.

## Frequency analyzing function

- You can confirm the response frequency characteristics of total machine mechanism including the servo motor with the setup support software, "PANATERM".
- Helps you to analyze the machine and shorten the setup time. Note) Refer to P.398 for setup support software.

## Torque limit switching function

- You can select 2 preset torque limit value from external input.
- Use this function for tension control or press-hold control.

## Conformity to CE and UL Standards




Subject	Standard conformed		
Motor	IEC60034-1	IEC60034-5 UL1004 CSA22.2 No.100	Conforms to EU Low Voltage Directives/UK Low Voltage Regulation
		UL508C CSA22.2 No. 14	
Motor and driver	EN55011	Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment	Conforms to references by EU EMC Directives/UK EMC Regulation
	EN61000-6-2	Immunity for Industrial Environments	
	EC61000-4-2	Electrostatic Discharge Immunity Test	
	IEC61000-4-3	Radio Frequency Electromagnetic Field Immunity Test	
	IEC61000-4-4	Electric High-Speed Transition Phenomenon/Burst Immunity Test	
	IEC61000-4-5	Lightening Surge Immunity Test	
	IEC61000-4-6	High Frequency Conduction Immunity Test	
IEC61000-4-11	Instantaneous Outage Immunity Test		

IEC : International Electrotechnical Commission  
 EN : Europaischen Normen  
 EMC : Electromagnetic Compatibility  
 UL : Underwriters Laboratories  
 CSA : Canadian Standards Association

Pursuant to at the directive 2004/108/EC, article 9(2)

\* When exporting this product, follow statutory provisions of the destination country.

Motor series	Rated output (kW)	Rated rotational speed (Max. speed) (r/min)	Rotary encoder		Brake	Gear	UL/CSA	Enclosure	Features	Applications
			2500 P/r incremental	17bit absolute/incremental	Holding	High precision				
<b>MUMA</b>  	<b>0.05 to 0.4</b>	3000 (5000)	○	—	○	○	○	IP65 Except shaft throughhole and connector	Small capacity Ultra low inertia	SMT machines Inserters High repetitive positioning application
	0.05		○	—	○	○	○			
	0.1		○	—	○	○	○			
	0.2		○	—	○	○	○			
	0.4		○	—	○	○	○			

■ Servo Motor

**M U M A 5 A Z P 1 S \* \***

Symbol	Series
MUMA	Ultra low inertia (50 W to 400 W)

Motor rated output

Symbol	Rated output
5A	50 W
01	100 W
02	200 W
04	400 W

Voltage specifications

Symbol	Specifications
1	100 V
2	200 V
Z	100 V/200 V common (50 W only)

Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500 P/r	10000	5

Special specifications

Motor structure

Symbol	Shaft	Holding brake		Oil seal	
	Key-way, center tap	without	with	without	with*
S	●	●		●	
T	●		●	●	

\* Motor with oil seal is manufactured by order.

Design order

Symbol	Specifications
1	Standard

See P.389 for motor specifications

■ Motor with gear reducer

**M U M A 0 1 1 P 3 1 N**

Symbol	Series
MUMA	Ultra low inertia (100 W to 400 W)

Motor rated output

Symbol	Rated output
01	100 W
02	200 W
04	400 W

Voltage specifications

Symbol	Specifications
1	100 V
2	200 V

Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500 P/r	10000	5

Gear reduction ratio, gear type

Symbol	Gear reduction ratio	Motor output (W)			Gear type
		100	200	400	
1N	1/5	●	●	●	For high accuracy
2N	1/9	●	●	●	
4N	1/25	●	●	●	

Motor structure

Symbol	Shaft	Holding brake	
	Key-way	without	with
3	●	●	
4	●		●

See P.394 for motor with gear reducer specifications

■ Servo Driver

**M K D E T 1 3 1 0 P \* \***

Frame symbol

Symbol	Frame
MKDE	E series, K-frame
MLDE	E series, L-frame

Power device Max. current rating

Symbol	Current rating
T1	10 A
T2	15 A

Supply voltage specifications

Symbol	Specifications
1	Single phase, 100 V
2	Single phase, 200 V
3	3-phase, 200 V
5	Single/3-phase, 200 V

Special specifications

Control mode

Symbol	Specifications
P	Pulse train

Current detector current rating

Symbol	Current rating
05	5 A
10	10 A

See P.385 for driver specifications



**- Wiring of main circuit**

**Circuit Breaker (MCCB)**  
Protects the power lines. Shuts off the circuit when overcurrent passes.

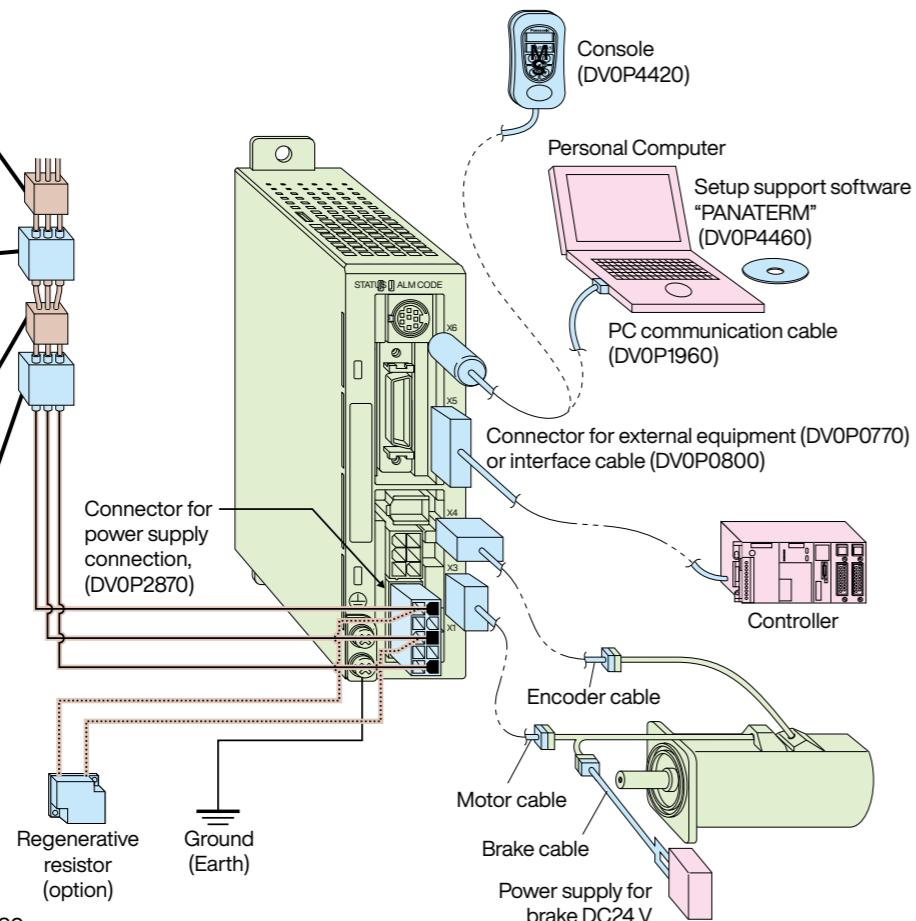
**Noise Filter (NF)**  
Prevents external noise from the power lines. And reduces an effect of the noise generated by the servo driver.

**Magnetic Contactor (MC)**  
Turns on/off the main power of the servo driver. Surge absorber to be used together with this.

**Reactor (L)**  
Reduces harmonic current of the main power.

**Pin-5 and Pin-3 of CN POWER**

Connect an external regenerative resistor (option) between P(pin-5) and B(pin-3) of connector, CN X1, when regenerative energy is large. (Refer to P.404 for regenerative resistor.)



Motor	to P.389
Driver	to P.385
Option	to P.398
Recommended equipments	
Parts customer to prepare	

**List of recommended peripheral devices**

Power supply	Motor		Power capacity (at rated output)	Circuit Breaker (Rated current)	Noise Filter	Magnetic Contactor Contact Composition	Wire diameter (L1, L2, L3, U, V and W)
	Series	Output					
Single phase, 100 V	MUMA	50 W	0.3 kVA	5 A	DV0P4160	10 A (3P+1a)	0.75 mm <sup>2</sup> to 0.85 mm <sup>2</sup> AWG18
		100 W	0.4 kVA	10 A			
		200 W	0.5 kVA	10 A			
Single phase, 200 V	MUMA	50 W	0.3 kVA	5 A	DV0P4160	15 A (3P+1a)	0.75 mm <sup>2</sup> to 0.85 mm <sup>2</sup> AWG18
		100 W	0.3 kVA	5 A			
		200 W	0.5 kVA	10 A			
3-phase 200 V	MUMA	50 W	0.3 kVA	5 A	DV0P4160	10 A (3P+1a)	0.75 mm <sup>2</sup> to 0.85 mm <sup>2</sup> AWG18
		100 W	0.3 kVA	5 A			
		200 W	0.5 kVA	10 A			

- \* Select the single and 3-phase common specifications corresponding to the power supplies.
- To conform to EU Directives/UK Regulation, install a circuit breaker which conforms to IEC and UL Standards (Listed, marked) between noise filter and power supply.
- For details of the noise filters, refer to 416.

**<Remarks>**

- Use a copper conductor cables with temperature rating of 60 °C or higher for main power connector and ground terminal wiring. Use a cable for ground with diameter of 2.0 mm<sup>2</sup> (AWG14) or larger.

**Fastening torque list**

Ground terminal screw		Connector to host controller[X5]	
Nominal size	Fastening torque (N·m) <sup>(Note 3)</sup>	Nominal size	Fastening torque (N·m) <sup>(Note 3)</sup>
M4	0.7~0.8	M2.6	0.2±0.05

**(Note 3) <Caution>**

- Applying fastening torque larger than the maximum value may result in damage to the product.

**<Remarks>**

- To check for looseness, conduct periodic inspection of fastening torque once a year.

**Carrying page**

Options	Part No.	Carrying page	
Console	DV0P4420	403	
Setup Support Software, PANATERM	Japanese	398	
	English		
RS232 Communication Cable (for Connection with PC)	DV0P1960	403	
Interface Cable	DV0P0800	403	
Connector Kit for Interface	DV0P0770	402	
Connector Kit for Motor and Encoder	DV0P3670	401	
Connector Kit for Driver Power Supply	DV0P2870	401	
Encoder Cable	MFECA0 * * 0EAM	400	
Motor Cable	MFMCA0 * * 0AEB	400	
Brake Cable	MFMCB0 * * 0GET	400	
Cable Set (3 m) <sup>(Note 4)</sup>	DV0P37300	400	
Cable Set (5 m) <sup>(Note 4)</sup>	DV0P39200	400	
DIN Rail Mount Unit	DV0P3811	404	
External Regenerative Resistor	100 V 50 Ω 10 W	DV0P2890	404
	200 V 100 Ω 10 W	DV0P2891	
Reactor	100 V	DV0P227	405
		DV0P228	
	200 V	DV0P220	
Noise Filter		DV0P4160	416
Surge Absorber	Single phase 100 V, 200 V	DV0P4190	416
	3-phase 200 V	DV0P1450	
Ferrite core		DV0P1460	416

(Note 4) Cable set (3 m) contains,

- 1) Interface cable: DV0P0800
- 2) Encoder cable (3 m): MFECA0030EAM
- 3) Motor cable (3 m): MFMCA0030AEB
- 4) Connector kit for driver power supply connection: DV0P2870

Cable set (5 m) contains,

- 1) Interface cable: DV0P0800
- 2) Encoder cable (5 m): MFECA0050EAM
- 3) Motor cable (5 m): MFMCA0050AEB
- 4) Connector kit for driver power supply connection: DV0P2870

**Table of Part Numbers and Options**

Power supply	Output (W)	2500P/r, Incremental				Option															
		Motor <sup>Note 1</sup>	Rating/Spec. (page)	Driver	Dimensions (Frame symbol)	Encoder Cable <sup>Note 2</sup>	Motor Cable <sup>Note 2</sup>	Brake Cable <sup>Note 2</sup>	External Regenerative Resistor	Reactor	Noise Filter										
Single phase 100 V	50	MUMA5AZP1 □	389	MKDET1105P	388 (K)	MFECA0 * * 0EAM	MFMCA0 * * 0AEB		DV0P2890	DV0P227	DV0P4160										
	100	MUMA011P1 □	389	MKDET1110P	388 (K)																
	200	MUMA021P1 □	389	MLDET2110P	388 (L)																
Single phase 200 V	50	MUMA5AZP1 □	391	MKDET1505P	388 (K)					MFECA0 * * 0EAM		MFMCA0 * * 0AEB		DV0P2891	DV0P220	DV0P4160					
	100	MUMA012P1 □	391	MKDET1505P	388 (K)																
	200	MUMA022P1 □	391	MLDET2210P	388 (L)																
	400	MUMA042P1 □	391	MLDET2510P	388 (L)																
3-phase 200 V	50	MUMA5AZP1 □	391	MKDET1505P	388 (K)										MFECA0 * * 0EAM		MFMCA0 * * 0AEB		DV0P2891	DV0P220	DV0P4160
	100	MUMA012P1 □	391	MKDET1505P	388 (K)																
	200	MUMA022P1 □	391	MKDET1310P	388 (K)																
	400	MUMA042P1 □	391	MLDET2510P MLDET2310P	388 (L)																

Note) 1 Motor model number suffix: □

S: Key way with center tap, without brake

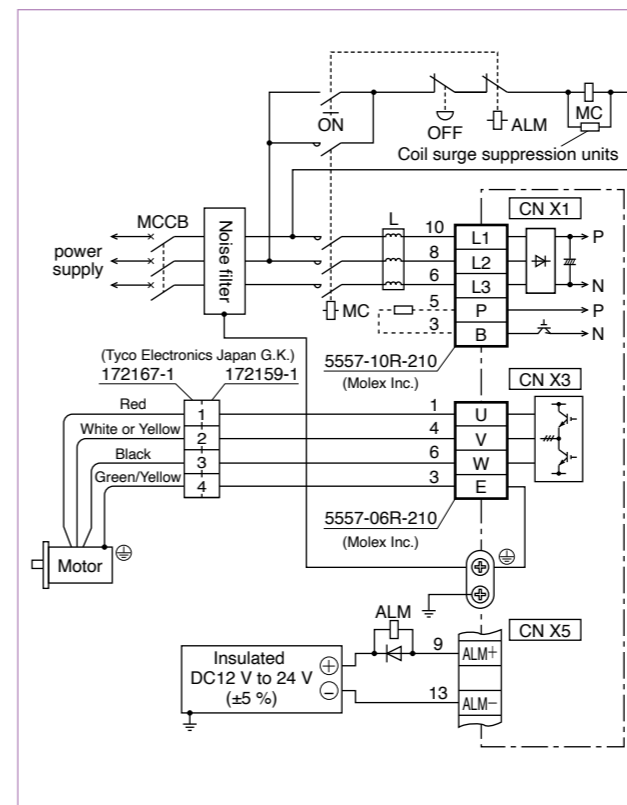
T: Key way with center tap, with brake

Note) 2 \* \* represents cable length. For details, refer to P.399.

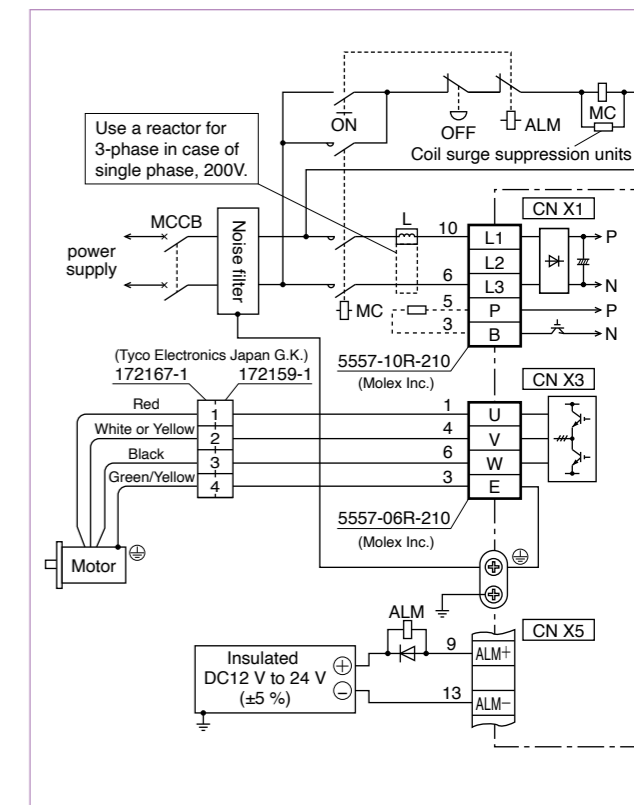
Basic Specifications	Input power	Single phase, 100 V	Single phase, 100 V to 115 V +10% -15%	50 Hz/60 Hz	
		Single phase, 200 V	Single phase, 200 V to 240 V +10% -15%	50 Hz/60 Hz	
		3-phase, 200 V	3-phase, 200 V to 240 V +10% -15%	50 Hz/60 Hz	
	Environment	Temperature	Operating : 0 °C to 55 °C, Storage : -20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <Normal temperature>)		
		Humidity	Both operating and storage : 90 %RH or less (free from condensation)		
		Altitude	1000 m or lower		
		Vibration	5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz (No continuous use at resonance frequency)		
	Withstand voltage	Should be 1500 VAC (Sensed current: 20 mA) for 1 minute between Primary and Ground.			
	Control method	IGBT PWM Sinusoidal wave drive			
	Encoder feedback	2500 P/r (10000 resolution) incremental encoder			
	Control signal	Input	7 inputs (1) Servo-ON, (2) Alarm clear and other inputs vary depending on the control mode.		
		Output	4 outputs (1) Servo alarm, (2) Alarm, (3) Release signal of external brake and other outputs vary depending on the control mode.		
	Pulse signal	Input	2 inputs Supports both line driver I/F and open collector I/F.		
		Output	4 outputs Feed out the encoder pulse (A, B and Z-phase) in line driver. Z-phase pulse is also feed out in open collector.		
Communication function	RS232	1 : 1 communication to a host with RS232 interface is enabled.			
Display LED	(1) Status LED (STATUS), (2) Alarm code LED (ALM-CODE)				
Regeneration	No built-in regenerative resistor (external resistor only)				
Dynamic brake	Built-in				
Control mode	3 modes of (1) High-speed position control, (2) Internal velocity control and (3) High-functionality positioning control are selectable with parameter.				
Position control	Control input	(1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Deviation counter clear, (4) Gain switching, (5) Electronic gear switching			
	Control output	(1) Positioning complete (In-position)			
	Pulse input	Max. command pulse frequency	Line driver : 500 kpps, Open collector : 200 kpps		
		Type of input pulse train	Differential input. Selectable with parameter, ((1) CW/CCW, (2) A and B-phase, (3) Command and Direction)		
		Electronic gear (Division/Multiplication) of command pulse	Setup of electronic gear ratio Setup range of $(1-10000) \times 2^{(0-17)} / (1-10000)$		
Smoothing filter	Primary delay filter or FIR type filter is selectable to the command input.				
Internal speed control	Control input	(1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Selection 1 of internal command speed, (4) Selection 2 of internal command speed, (5) Speed zero clamp			
	Control output	(1) Speed arrival (at-speed)			
	Internal speed command	Internal 4-speed is selectable with control input.			
	Soft-start/down function	Individual setup of acceleration and deceleration are enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled.			
Auto-gain tuning	Zero-speed clamp	0-clamp of internal speed command with speed zero clamp input is enabled.			
	Real-time	Estimates the load inertia in real-time in actual operation and sets up the gain automatically corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control.			
Common	Normal mode	Estimates the load inertia with an action command inside of the driver, and sets up the gain automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control.			
	Masking of unnecessary input	Masking of the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching			
		Division of encoder feedback pulse	1 P/r to 2500 P/r (encoder pulses count is the max.).		
	Protective function	Hardware error	Over-voltage, under-voltage, over-speed over-load, over-heat, over-current and encoder error etc.		
		Software error	Excess position deviation, command pulse division error, EEPROM error etc.		
	Traceability of alarm data	Traceable up to past 14 alarms including the present one.			
	Damping control function	Manual setup with parameter			
	Setup	Manual	Console		
		Setup support software	PANATERM (Supporting OS : Windows98, Windows ME, Windows2000, and WindowsXP)		

Standard Wiring Example of Main Circuit

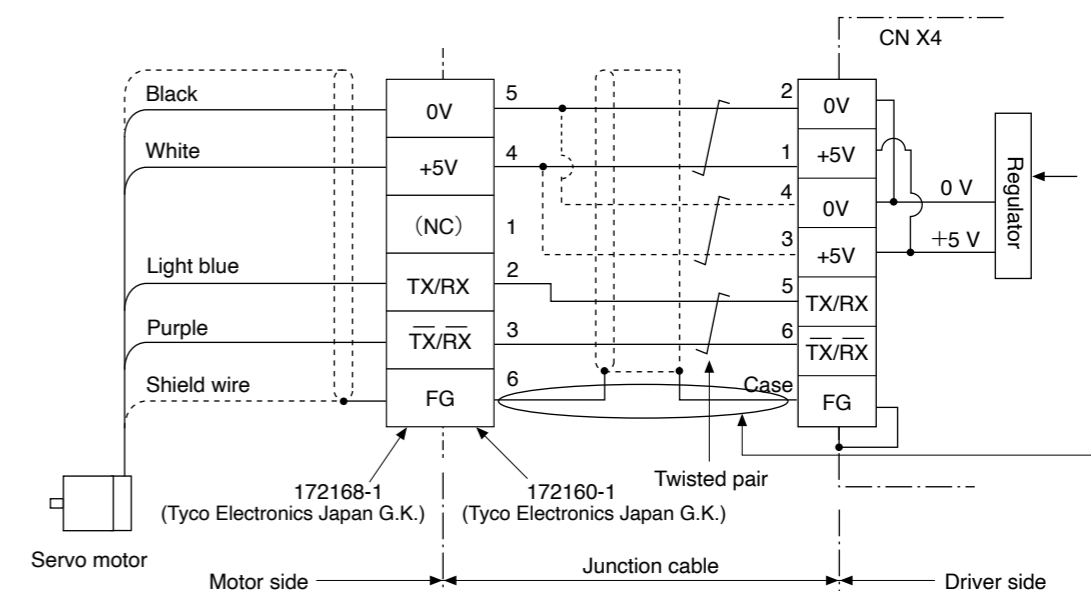
3-Phase, 200 V



Single Phase, 100 V / 200 V



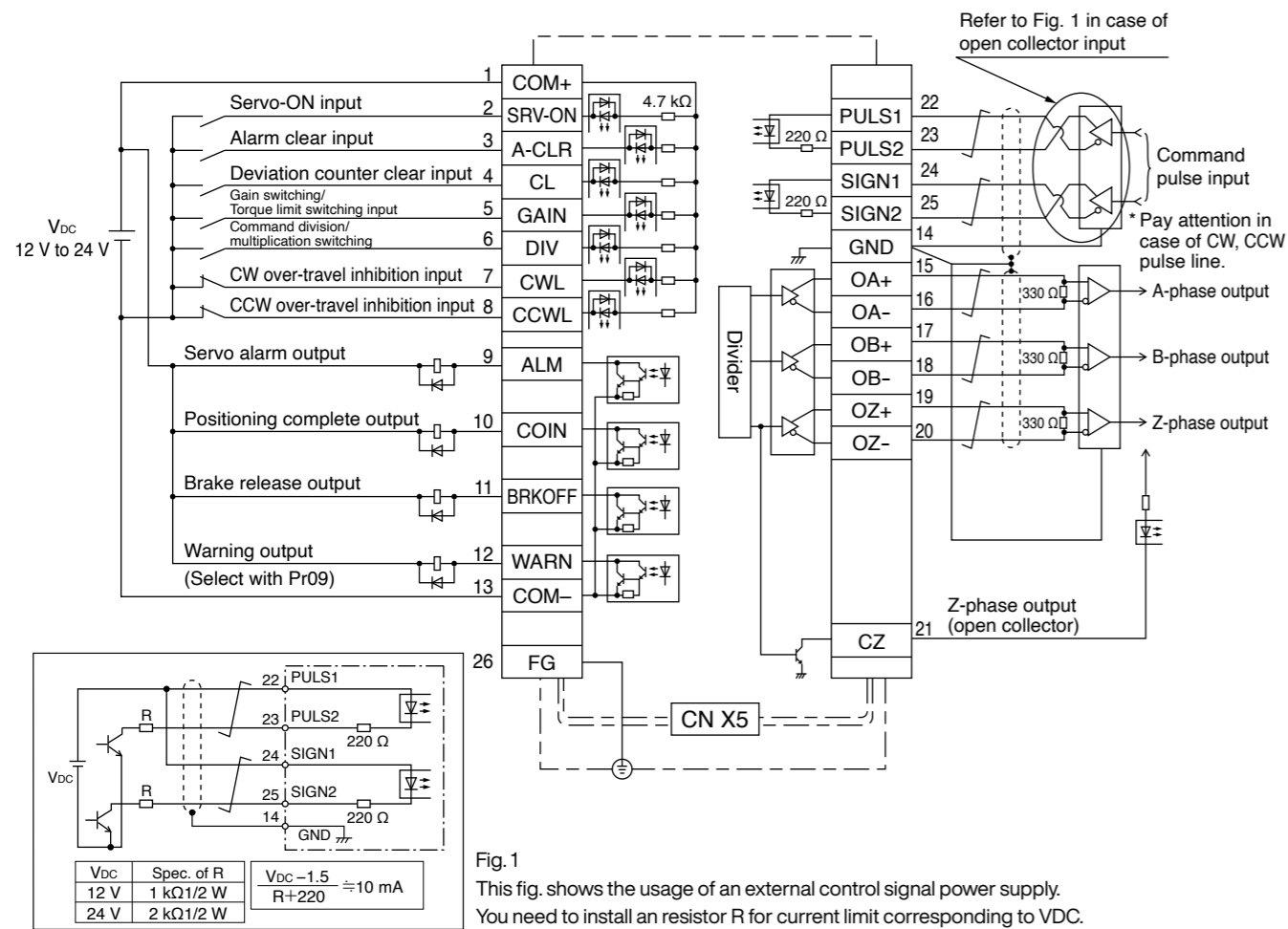
Encoder Wiring Diagram



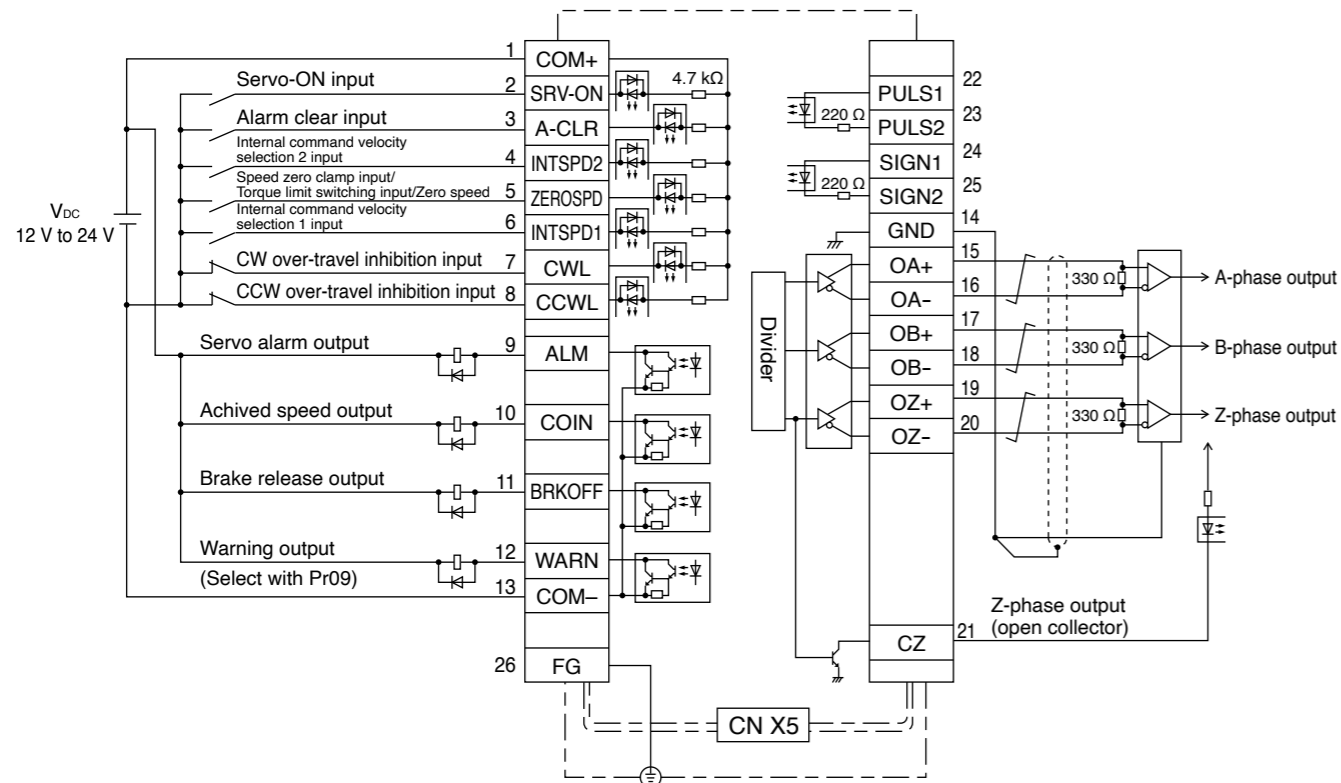
When you make your own junction cable for encoder (Refer to P.401, P.402 "Options" for connector.)

- 1) Refer the wiring diagram.
- 2) Use the twisted pair wire with shield, with core diameter of 0.18 mm<sup>2</sup> (AWG24) or larger, with higher bending resistance.
- 3) Use the twisted pair wire for the corresponding signal and power supply.
- 4) Shielding  
Connect the shield of the driver to the case of CN X4.  
Connect the shield of the motor to Pin-6.

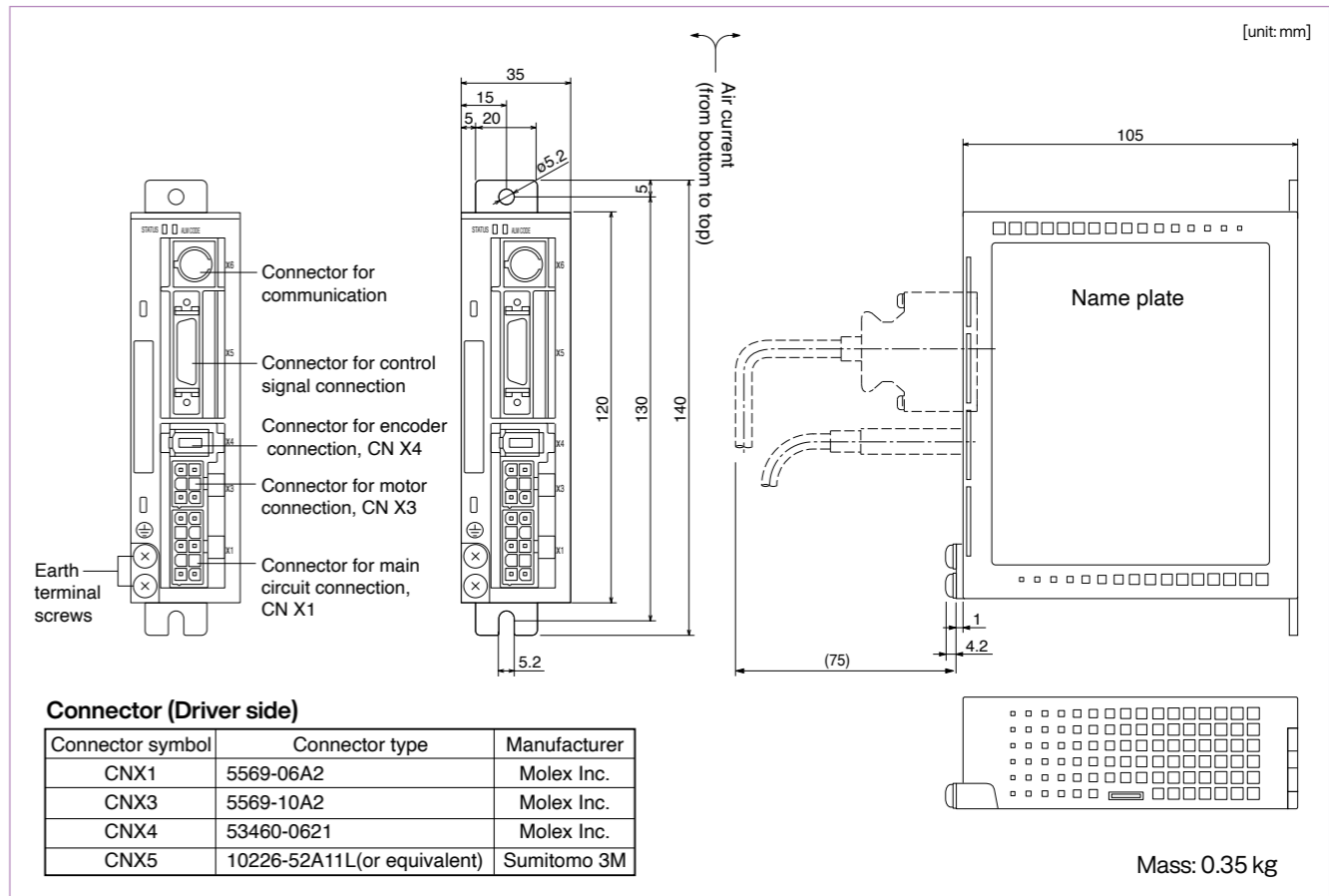
CN X 5 Wiring Example at Position Control Mode



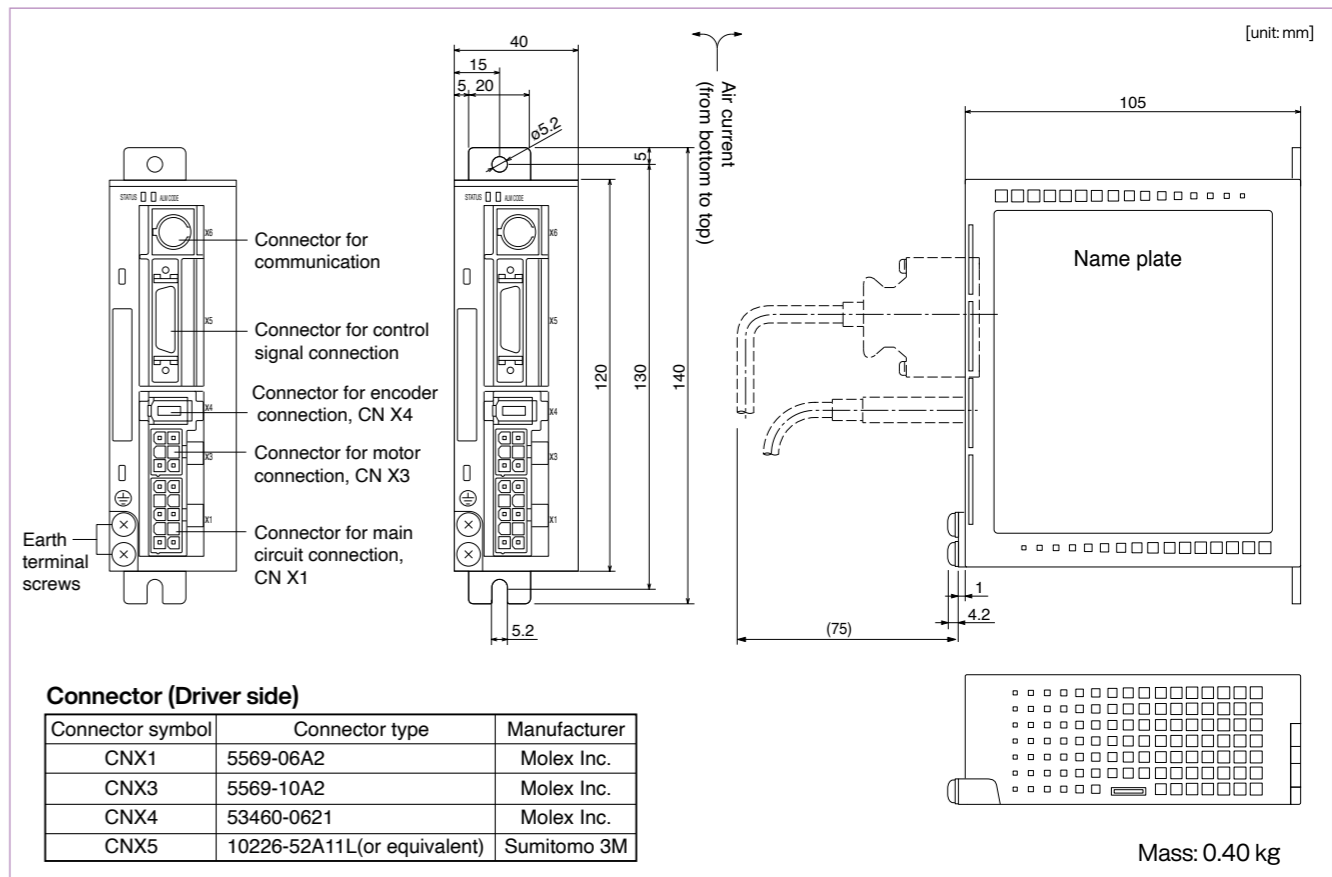
CN X 5 Wiring Example at Internal Velocity Control Mode



Frame K



Frame L



		AC100 V			
Motor model		MUMA	5AZP1□	011P1□	021P1□
Applicable driver	Model No.	MKDET1105P	MKDET1110P	MLDET2110P	
	Frame symbol	Frame K		Frame L	
Power supply capacity (kVA)		0.3	0.4	0.5	
Rated output (W)		50	100	200	
Rated torque (N·m)		0.16	0.32	0.64	
Momentary Max. peak torque (N·m)		0.48	0.95	1.91	
Rated current (Arms)		1.0	1.6	2.5	
Max. current (Ao-p)		4.3	6.9	11.7	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2			
	DV0P2890	No limit Note)2			
Rated rotational speed (r/min)		3000			
Max. rotational speed (r/min)		5000			
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.021	0.032	0.10	
	With brake	0.026	0.036	0.13	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less			
Rotary encoder specifications		2500 P/r			
		Incremental			
Resolution per single turn		10000			
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)			
Environment	Ambient temperature	0 °C to 40 °C (free from freezing), Storage : -20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal humidity>)			
	Ambient humidity	85 %RH or lower (free from condensing)			
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust			
	Altitude	1000 m or lower			
	Vibration resistance	49 m/s <sup>2</sup> or less			
Mass (kg), ( ) represents holding brake type		0.4 (0.6)	0.5 (0.7)	0.96 (1.36)	

**Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)**

Static friction torque (N·m)	0.29	1.27
Engaging time (ms)	25	50
Releasing time (ms) Note)4	20 (30)	15 (100)
Exciting current (DC) (A)	0.26	0.36
Releasing voltage	DC 1 V or more	
Exciting voltage	DV 24 V ±10 %	

Permissible load			
During assembly	Radial load P-direction (N)	147	392
	Thrust load A-direction (N)	88	147
	Thrust load B-direction (N)	117	196
During operation	Radial load P-direction (N)	68	245
	Thrust load A-direction (N)	58	98
	Thrust load B-direction (N)	58	98

For motor dimensions, refer to P.393, and for the driver, refer to P.388.

**Model Designation**

e.g.) **M U M A 5 A Z P 1 S**

Symbol	Series
MUMA	Ultra low inertia (50 W to 200 W)

Motor rated output	
Symbol	Rated output
5A	50 W
01	100 W
02	200 W

Voltage specifications	
Symbol	Specifications
1	100 V
Z	100/200 V (50 W only)

Design order 1: Standard

**Motor structure**

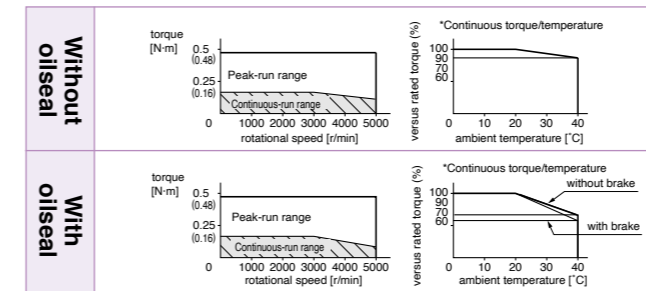
Symbol	Shaft	Holding brake		Oil seal	
	Key-way, center tap	without	with	without	with
S	●	●		●	
T	●		●	●	

**Rotary encoder specifications**

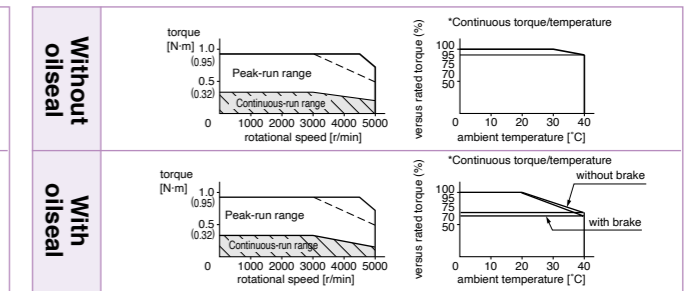
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500 P/r	10000	5

**Torque Characteristics** [at AC100 V of power voltage (Dotted line represents the torque at 10 % less supply voltage.)]

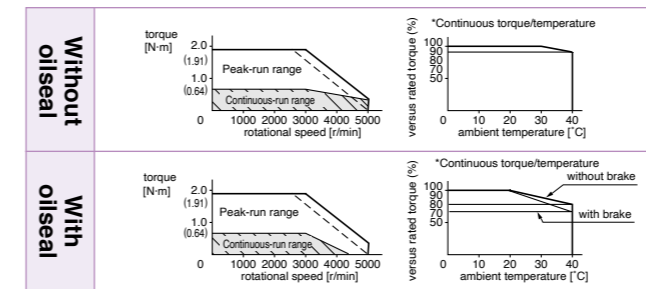
**MUMA5AZP1□**



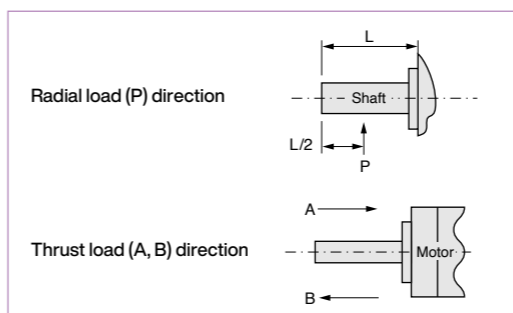
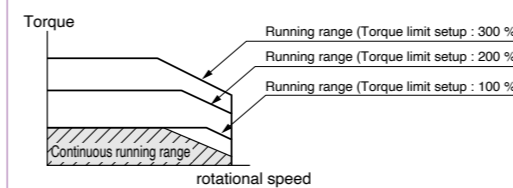
**MUMA011P1□**



**MUMA021P1□**



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m = (\text{load moment of inertia}) / (\text{rotor moment of inertia})$ .
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC115 V (at 100 V of the main voltage). If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.
  - When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
2. If the effective torque is within the rated torque, there is no limit in regenerative brake.
  3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
  4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by SEMITEC Corporation or equivalent). ( ) represents the actually measured value using a diode (200 V, 1 A or equivalent)

		AC200 V			
Motor model	MUMA	5AZP1□	012P1□	022P1□	042P1□
Applicable driver	Model No.	MKDET1505P		MKDET1310P	MLDET2310P
	Frame symbol	Frame K		Frame K Frame L	Frame L
Power supply capacity (kVA)		0.3	0.3	0.5	0.9
Rated output (W)		50	100	200	400
Rated torque (N · m)		0.16	0.32	0.64	1.3
Momentary Max. peak torque (N · m)		0.48	0.95	1.91	3.8
Rated current (Arms)		1.0	1.0	1.6	2.5
Max. current (A <sub>o-p</sub> )		4.3	4.3	7.5	11.7
Regenerative brake frequency (times/min)	Without option	No limit Note)2		No limit Note)2	
	Note)1 DV0P2891	No limit Note)2		No limit Note)2	
Rated rotational speed (r/min)		3000			
Max. rotational speed (r/min)		5000			
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )	Without brake	0.021	0.032	0.10	0.17
	With brake	0.026	0.036	0.13	0.20
Recommended moment of inertia ratio of the load and the rotor	Note)3	30 times or less			
Rotary encoder specifications		2500 P/r Incremental			
	Resolution per single turn	10000			
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)			
Environment	Ambient temperature	0 °C to 40 °C (free from freezing), Storage : -20 °C to 65 °C (Max. temperature guarantee 80 °C for 72 hours <normal humidity>)			
	Ambient humidity	85 %RH or lower (free from condensing)			
	Installation location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust			
	Altitude	1000 m or lower			
Vibration resistance		49 m/s <sup>2</sup> or less			
Mass (kg), ( ) represents holding brake type		0.4 (0.6)	0.5 (0.7)	0.96 (1.36)	1.5 (1.9)

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)		
Static friction torque (N · m)	0.29	1.27
Engaging time (ms)	25	50
Releasing time (ms) Note)4	20 (30)	15 (100)
Exciting current (DC) (A)	0.26	0.36
Releasing voltage	DC 1 V or more	
Exciting voltage	DV 24 V ±10 %	

Permissible load			
During assembly	Radial load P-direction (N)	147	392
	Thrust load A-direction (N)	88	147
	Thrust load B-direction (N)	117	196
During operation	Radial load P-direction (N)	68	245
	Thrust load A-direction (N)	58	98
	Thrust load B-direction (N)	58	98

For motor dimensions, refer to P.393, and for the driver, refer to P.388.  
 Note) Driver for 50 W and 100 W has a common power supply of single phase and 3-phase 200 V.  
 Driver for 200 W, the upper row is the power supply of 3-phase 200 V, and lower is the power supply of single-phase 200 V.  
 Driver for 400 W, the upper row is the power supply of 3-phase 200 V, and lower is the common power supply of single-phase and 3-phase 200 V.

### Model Designation

e.g.) **M U M A 5 A Z P 1 S**

Symbol	Series
MUMA	Ultra low inertia (50 W to 400 W)

Symbol	Rated output
5A	50 W
01	100 W
02	200 W
04	400 W

Symbol	Specifications
2	200 V
Z	100/200 V (50 W only)

Design order 1: Standard

#### Motor structure

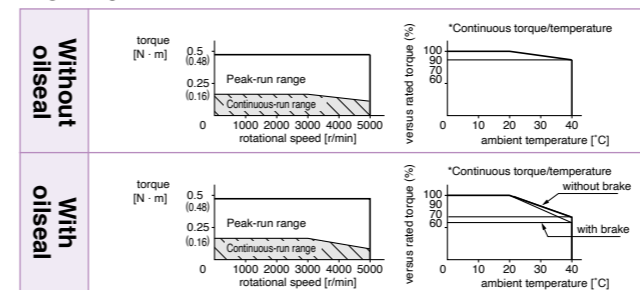
Symbol	Shaft	Holding brake		Oil seal	
	Key-way, center tap	without	with	without	with
S	●	●		●	
T	●		●	●	●

#### Rotary encoder specifications

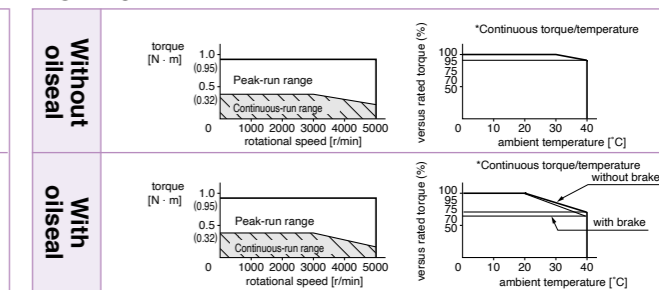
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500 P/r	10000	5

### Torque Characteristics [at AC200 V of power voltage (Dotted line represents the torque at 10 % less supply voltage.)]

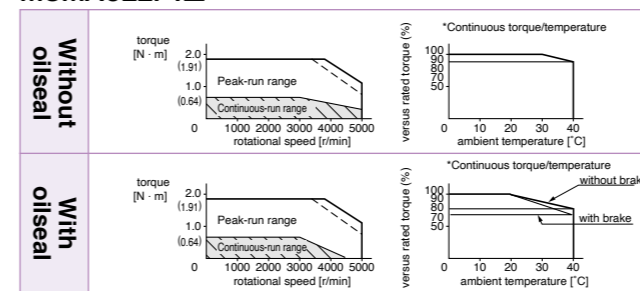
#### MUMA5AZP1□



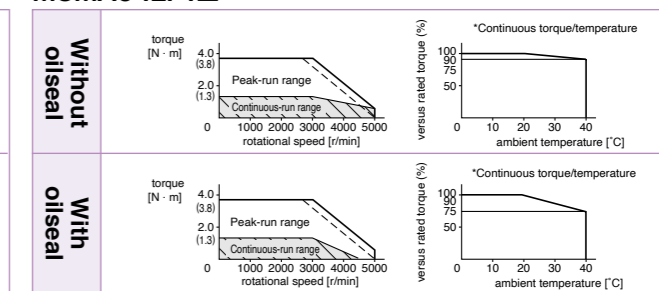
#### MUMA012P1□



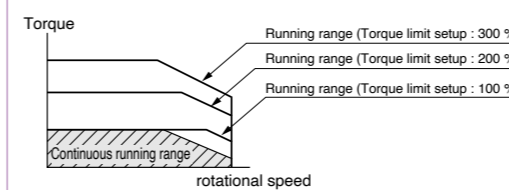
#### MUMA022P1□



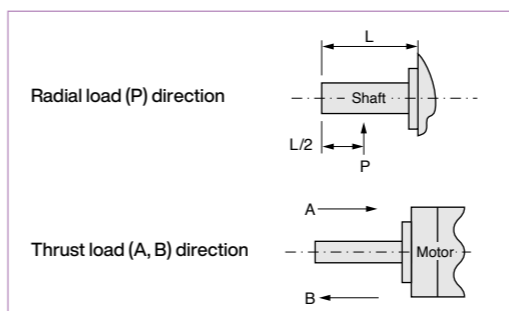
#### MUMA042P1□

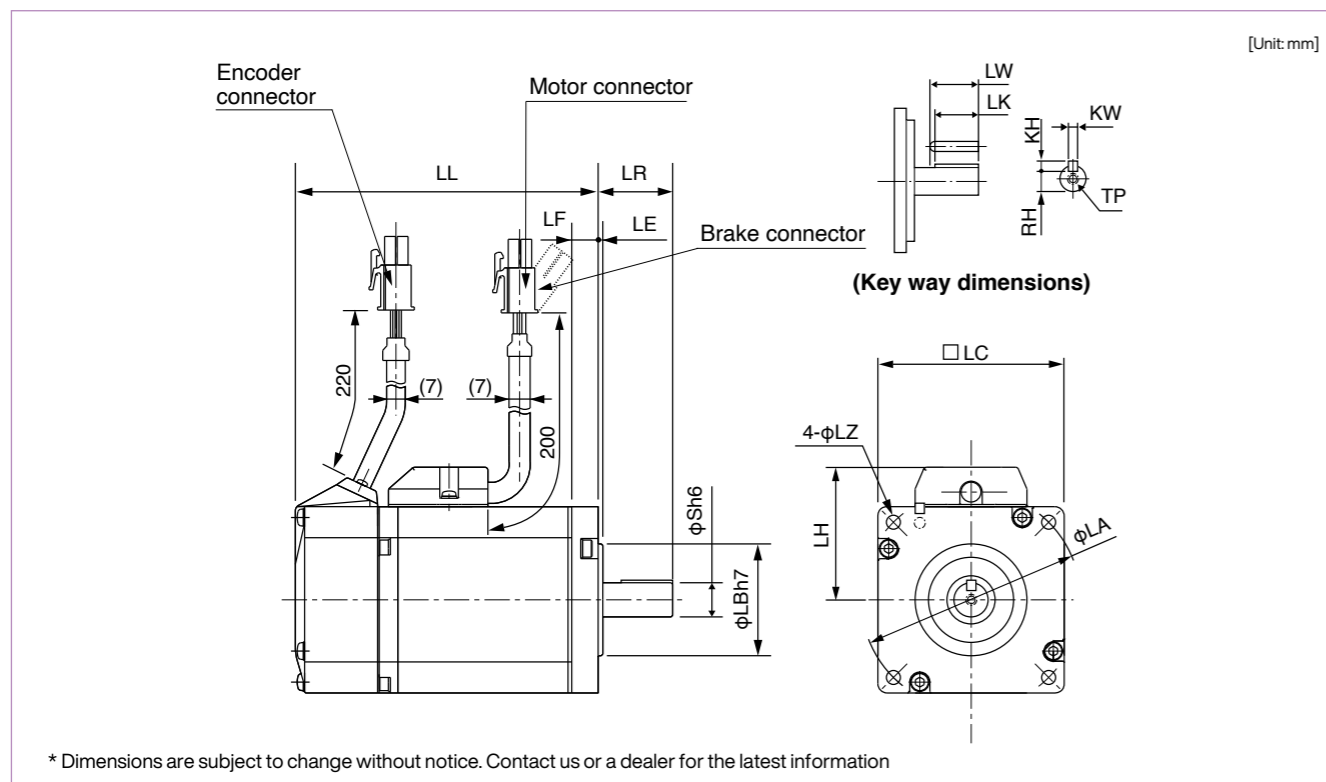


\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as 1/(m+1), where m = (load moment of inertia) / (rotor moment of inertia).
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC240 V (at 200 V of the main voltage). If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/240) relative to the value in the table.
  - When regeneration occurs continuously such as running speed frequently changes or vertical feeding, consult us or a dealer.
- If the effective torque is within the rated torque, there is no limit in regenerative brake.
  - Consult us or a dealer if the load moment of inertia exceeds the specified value.
  - Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by SEMITEC Corporation or equivalent).
- ( ) represents the actually measured value using a diode (200 V, 1 A or equivalent)





		MUMA series (Ultra low inertia)			
Motor output		50 W	100 W	200 W	400 W
Motor model	<b>MUMA</b>	<b>5A□P1□</b>	<b>01□P1□</b>	<b>02□P1□</b>	<b>04□P1□</b>
Rotary encoder specifications		2500 P/r Incremental	2500 P/r Incremental	2500 P/r Incremental	2500 P/r Incremental
LL	Without brake	75.5	92.5	96	123.5
	With brake	107	124	129	156.5
LR		24	24	30	30
S		8	8	11	14
LA		48	48	70	70
LB		22	22	50	50
LC		42	42	60	60
LE		2	2	3	3
LF		7	7	7	7
LH		34	34	43	43
LZ		3.4	3.4	4.5	4.5
Key way	LW	14	14	20	25
	LK	12.5	12.5	18	22.5
	KW	3h9	3h9	4h9	5h9
	KH	3	3	4	5
	RH	6.2	6.2	8.5	11
	TP	M3 x 6 (depth)	M3 x 6 (depth)	M4 x 8 (depth)	M5 x 10 (depth)
Mass (kg)	Without brake	0.40	0.50	0.96	1.5
	With brake	0.60	0.70	1.36	1.9
Connector/Plug specifications		refer to Options, P.401, P.402.			

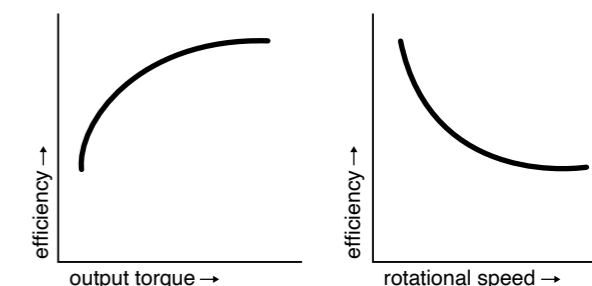
**<Cautions>**  
 Reduce the moment of inertia ratio if high speed response operation is required.  
 Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

# MINAS E Series Motors with Gear Reducer

## Motor Types with Gear Reducer

Reduction ratio	Motor output (W)			Type of reducer
	100	200	400	
1/5	●	●	●	For high precision
1/9	●	●	●	
1/25	●	●	●	

Efficiency of the gear reducer shows the following inclination in relation to output torque and rotational speed.



## Model No. Designation

e.g.) **M U M A 0 1 1 P 3 1 N**

Symbol	Series
MUMA	Low inertia (100 to 400 W)

Motor rated output	
Symbol	Rated output
01	100 W
02	200 W
04	400 W

Voltage specifications	
Symbol	Specifications
1	100 V
2	200 V

Rotary encoder specifications				
Symbol	Format	Pulse counts	Pulse counts	Wire
P	Incremental	2500 P/r	10000	5

Motor types with gear reducer					
Symbol	Reduction ratio	Motor output			Type of reducer
		100	200	400	
1N	1/5	●	●	●	For High precision
2N	1/9	●	●	●	
4N	1/25	●	●	●	

Motor structure			
Symbol	Shaft	Holding brake	
	Key-way	without	with
3	●	●	
4	●		●

## Specifications of Motor with Gear Reducer

Motor series		MUMA
Gear reducer	Backlash	3 minutes or smaller (initial value) at output shaft of the reducer
	Composition of gear	Planetary gear
	Gear efficiency	65 % to 85 %
	Rotational direction at output shaft (of reducer)	Same direction as the motor output shaft
	Composition of gear	Planetary gear
	Mounting method	Flange mounting
Environment	Permissible moment of inertia of the load (conversion to the motor shaft)	10 times or smaller than rotor moment of inertia of the motor
	Protective structure	IP44 (at gear reducer)
	Ambient temperature	0 °C to 40 °C
	Ambient humidity	85 %RH (free from condensation) or less
	Vibration resistance	49 m/s <sup>2</sup> or less (at motor frame)
	Impact resistance	98 m/s <sup>2</sup> or less

Table of Motor with Gear Reducer Specifications

Model	Motor		MUMA with gear reducer										
	Output (W)	Reduction ratio	Output (W)	Rated speed (r/min)	Max. speed (r/min)	Rated torque (N·m)	Peak max. torque (N·m)	Moment of inertia (motor + reducer/converted to motor shaft) (J (× 10 <sup>-4</sup> kg·m <sup>2</sup> ))		Mass (kg)		Permissible radial load (N)	Permissible thrust load (N)
								w/o brake	w/ brake	w/o brake	w/ brake		
MUMA01□P□1N	100	1/5	75	600	1000	1.18	3.72	0.072	0.076	1.05	1.25	490	245
MUMA01□P□2N		1/9	80	333	555	2.25	6.86	0.0663	0.0703	1.05	1.25	588	294
MUMA01□P□4N		1/25	80	120	200	6.27	19.0	0.0645	0.0685	2.20	2.40	1670	833
MUMA02□P□1N	200	1/5	170	600	1000	2.65	8.04	0.218	0.248	1.68	2.08	490	245
MUMA02□P□2N		1/9	132	333	555	3.72	11.3	0.368	0.398	2.66	3.06	1180	588
MUMA02□P□4N		1/25	140	120	200	11.1	33.3	0.388	0.418	2.66	3.06	1670	833
MUMA042P□1N	400	1/5	340	600	1000	5.39	16.2	0.533	0.563	3.2	3.6	980	490
MUMA042P□2N		1/9	332	333	555	9.51	28.5	0.438	0.468	3.2	3.6	1180	588
MUMA042P□4N		1/25	332	120	200	26.4	79.2	0.470	0.500	4.7	5.1	2060	1030

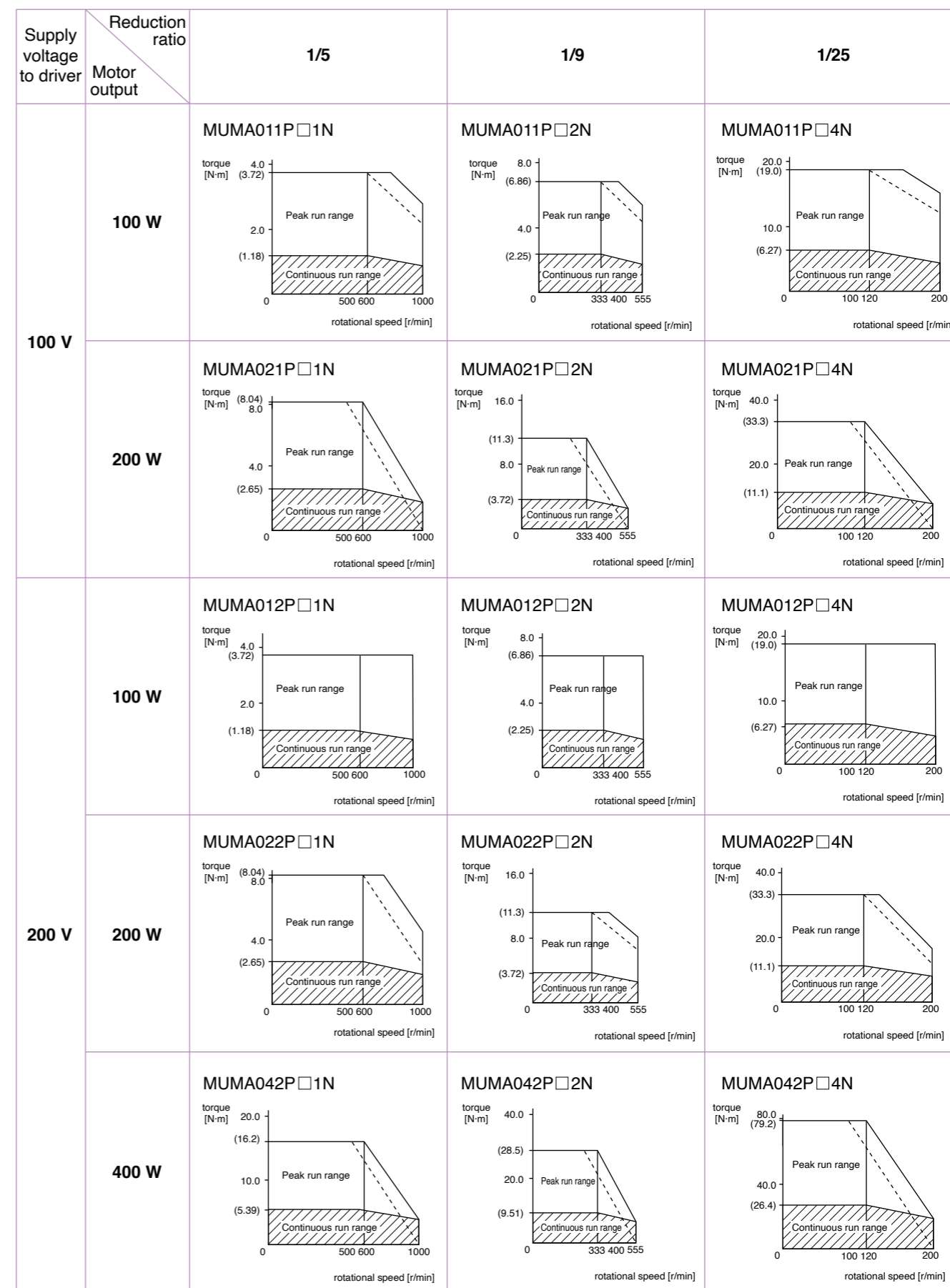
For dimensions, refer to P.397.

The Combination of the Driver and the Motor with Gear Reducer

Combination with driver		100 V			200 V		
Encoder	Motor output	Part No. of motor with gear reducer	Single phase, 100 V	Part No. of motor with gear reducer	3-phase, 200 V	Single phase, 200 V	
			Part No. of driver		Part No. of driver	Part No. of driver	
2500 P/r Incremental	100 W	MUMA011P□□N	MKDET1110P	MUMA012P□□N	MKDET1505P	MKDET1505P	
	200 W	MUMA021P□□N	MLDET2110P	MUMA022P□□N	MKDET1310P	MLDET2210P	
	400 W	-	-	MUMA042P□□N	MLDET2510P MLDET2310P	MLDET2510P	

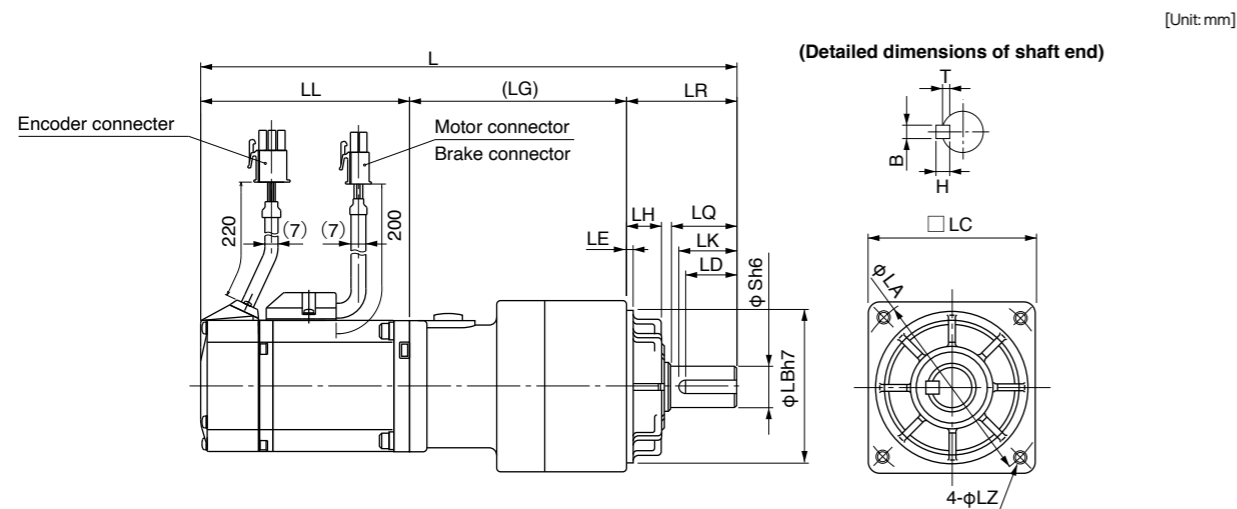
For dimensions of driver, refer to P.388.

For High Precision (MUMA Series 100 W to 400 W)



Dotted line represents the torque at 10 % less supply voltage.

MUMA series with Gear Reducer



2500 P/r Encoder

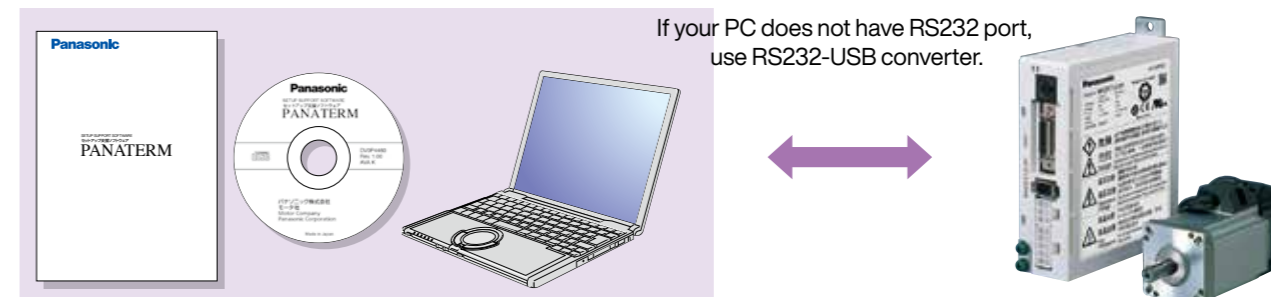
Model	Motor output	Reduction ratio	L	LL	LR	LQ	LC	LB	LA	S	LH	LZ	LK	(LG)	LE	Key way BxHxLD	T	
MUMA01□P□1N	100 W	1 / 5	192	92.5	32	20	52	50	60	12	10	M5 (Depth: 12)	18	67.5	3	4x4x16	2.5	
			223.5	124														
MUMA01□P□2N		1 / 9	192	92.5	50	30	78	70	90	19	17	M6 (Depth: 20)	26	92	3	6x6x22	3.5	
			223.5	124														
MUMA01□P□4N		1/25	234.5	92.5	266	124												
MUMA02□P□1N		200 W	1 / 5	200.5	96	32	20	52	50	60	12	10	M5 (Depth: 12)	18	72.5	3	4x4x16	2.5
	233.5			129														
MUMA02□P□2N	1 / 9		235.5	96	50	30	78	70	90	19	17	M6 (Depth: 20)	26	89.5	3	6x6x22	3.5	
		268.5	129															
MUMA02□P□4N	1/25	246	96	279	129													
MUMA042P□1N	400 W	1 / 5	263	123.5	61	40	98	90	115	24	18	M8 (Depth: 20)	35	104	5	8x7x30	4	
			296	156.5														
MUMA042P□2N		1 / 9	263	123.5	61	40	98	90	115	24	18	M8 (Depth: 20)	35	104	5	8x7x30	4	
			296	156.5														
MUMA042P□4N	1/25	288.5	123.5	321.5	156.5													

Upper column : without brake  
Lower column : with brake

Setup Support Software "PANATERM" for MINAS series AC Servo Motor & Driver

Part No. DV0P4460 (Japanese/English version)

The PANATERM assists users in setting parameters, monitoring control conditions, setup support, and analyzing mechanical operation data on the PC screen, when installed in a commercially available personal computer, and connected to the MINAS A4 series, E series through the RS232 serial interface.



If your PC does not have RS232 port, use RS232-USB converter.

Basic Function

Parameter setup

- After a parameter is defined on the screen, it will be sent to the driver immediately.
- Once you register parameters you frequently use, they can be easily set up on the screen.

Monitoring Control Conditions

Monitor

- Control conditions: Control mode, velocity, torque, error and warning
- Driver input signal
- Load conditions: Total count of command/feedback pulses, Load ratio, Regenerative resistor load ratio

Alarm

- Displays the numbers and contents of the current alarm and up to 14 error events in the past.
- Clears the numbers and contents of the current alarm and up to 14 error events in the past.

Setup

Auto tuning

- Gain adjustment and inertia ratio measurement

Graphic waveform display

- The graphic display shows command velocity, actual velocity, torque, and error waveforms.

Absolute encoder setup

- Clears absolute encoder at the origin.
- Displays single revolution/multi-revolution data.
- Displays absolute encoder status.

Analysis of Mechanical Operation Data

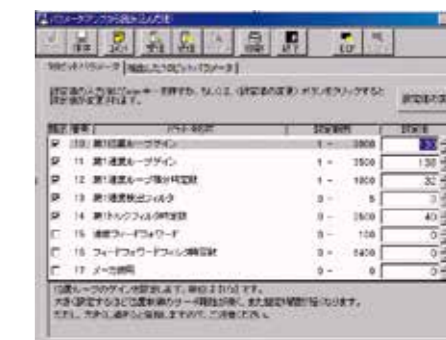
Frequency analysis

- Measures frequency characteristics of the machine, and displays Bode diagram.

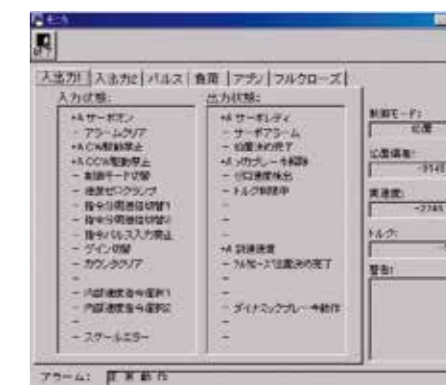
Can not use with A5, A6 Family.

Hardware configuration

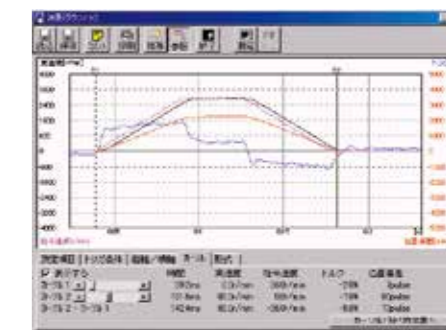
- Personal computer** : CPU : Pentium 100MHz or more • Memory : 16 MB or more (32 MB recommended)
- Hard disk capacity (vacancy of 25 MB or more recommended) • OS : Windows® 98, Windows® Me, Windows® 2000, Windows® XP (US version)
- Communication speed of serial communication port : 2400 bps or more (The software may not operate normally using USB-to-Serial adapter.)
- Display** : Resolution : 640\*480 (VGA) or more (desirably 1024\*768) • Number of colors : 256 colors or more
- CD-ROM drive** : CD-ROM drive operable on the above-mentioned personal computer



Parameter



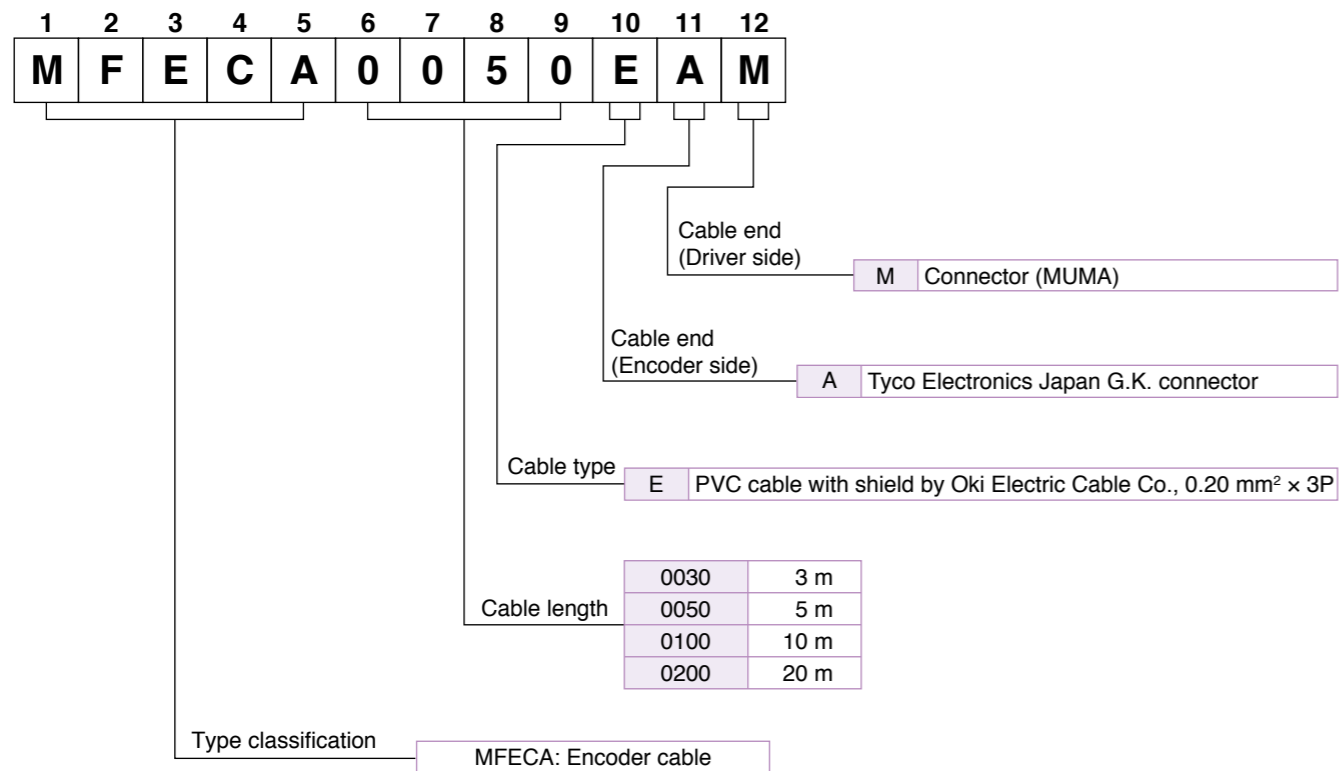
Monitor



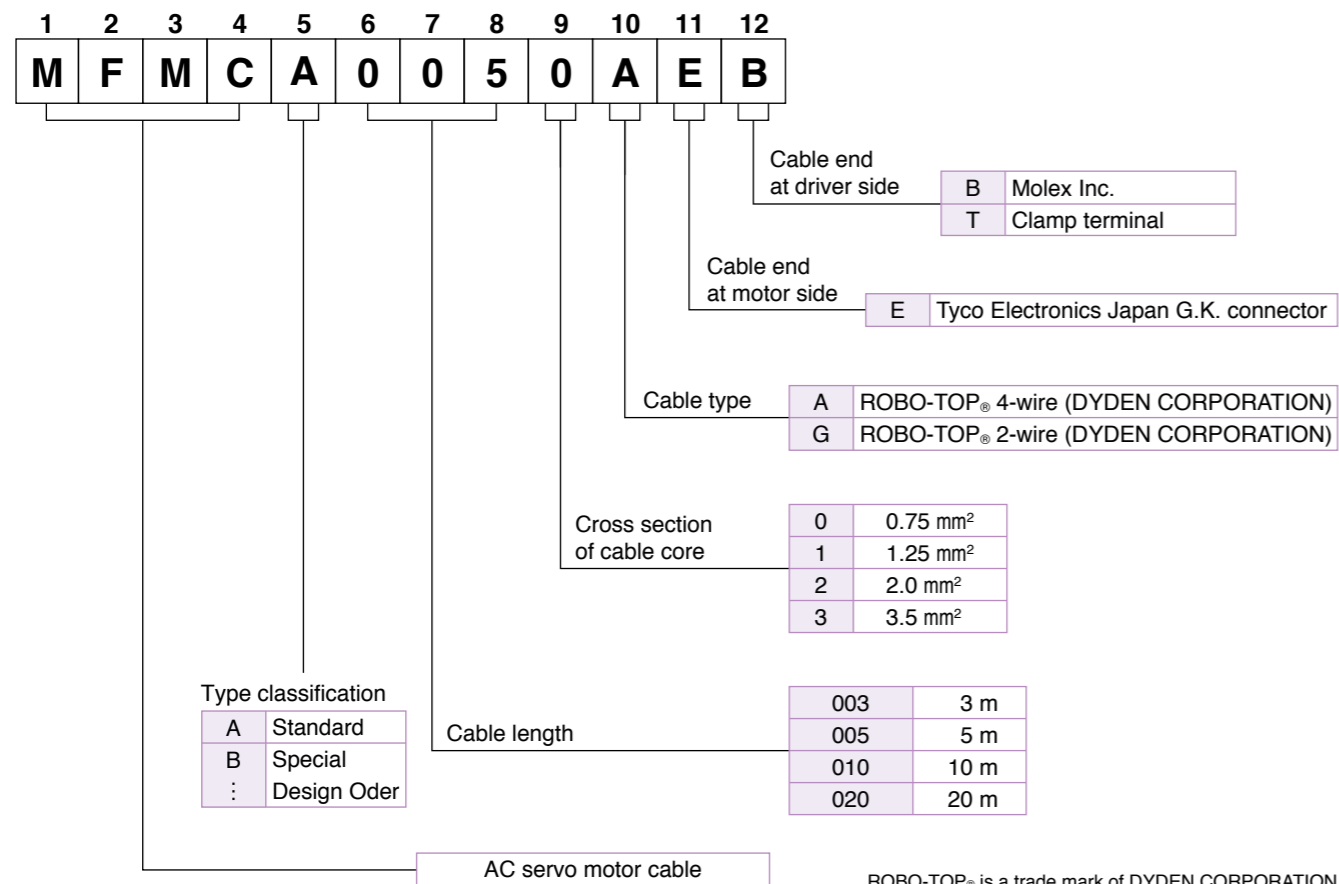
Graphic waveform display



**Encoder Cable** For available optional items, please refer to P.400.

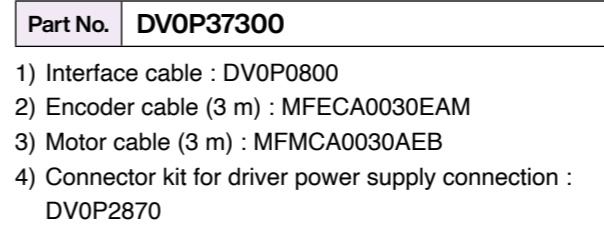


**Motor Cable, Brake Cable** For available optional items, please refer to P.400.

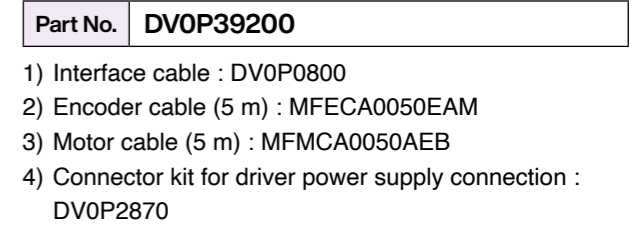


ROBO-TOP® is a trade mark of DYDEN CORPORATION

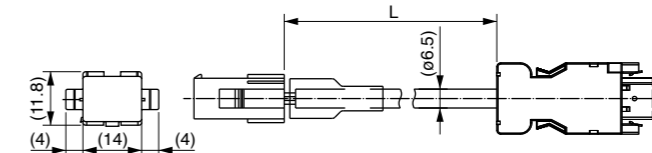
**Cable Set (3 m)**



**Cable Set (5 m)**



**Encoder Cable**

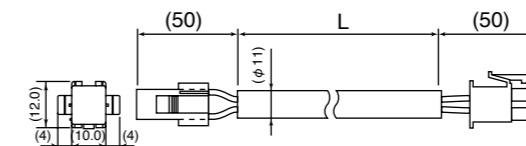
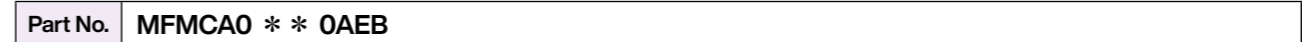


[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.
Connector (Driver side)	3E206-0100KV	Sumitomo 3M	3	MFECA0030EAM
Shell kit	3E306-3200-008	or equivalent	5	MFECA0050EAM
Connector	172160-1	Tyco Electronics	10	MFECA0100EAM
Connector Pin	170365-1		20	MFECA0200EAM
Cable	0.20 mm <sup>2</sup> × 3P	Oki Electric Cable Co., Ltd.		

**Motor Cable (ROBO-TOP® 105 °C 600 V . DP)**

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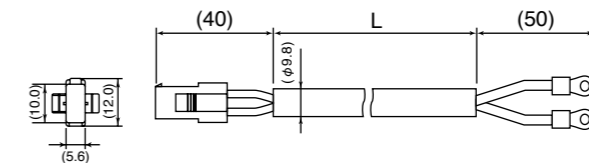


[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.
Connector	172159-1	Tyco Electronics	3	MFMCA0030AEB
Connector Pin	170362-1, 170366-1		5	MFMCA0050AEB
Connector	5557-06R-210	Molex Inc	10	MFMCA0100AEB
Connector Pin	5556T		20	MFMCA0200AEB
Cable	ROBO-TOP 600 V 0.75 mm <sup>2</sup>	Daiden Co.,Ltd.		

**Brake Cable (ROBO-TOP® 105 °C 600V . DP)**

ROBO-TOP® is a trade mark of DYDEN CORPORATION



[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.
Connector	172157-1	Tyco Electronics	3	MFMCB0030GET
Connector Pin	170362-1, 170366-1		5	MFMCB0050GET
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100GET
Cable	ROBO-TOP 600 V 0.75 mm <sup>2</sup>	Daiden Co.,Ltd.	20	MFMCB0200GET

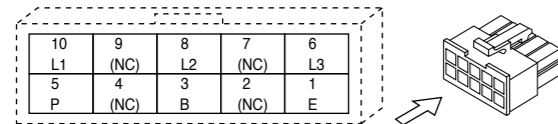
## Connector Kit for Power Supply Connection

Part No. DV0P2870

## ● Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector (10 pins)	5557-10R-210	1	Molex Inc.	For connector, CN X1 (10 pins)
Connector pin	5556PBTL	6		

## ● Pin configuration of connector CN X1



## ● Recommended manual crimping tool (to be prepared by customer)

Part No.	Cable material
57026-5000	UL1007
57027-5000	UL1015

## &lt;Cautions&gt;

- The above pin disposition is shown when viewed from the terminal inserting direction. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- Refer to P.386 for wiring and connection.
- Do not connect anything to pins marked "NC".

## Connector Kit for Motor/Encoder Connection

Part No. DV0P3670 (Incremental 2500 pulse, 5-wire)

This option is required when you make your own encoder cable and motor cable. (Brake cable is required for brake.)

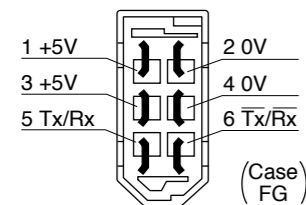
## ● Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For connector, CN X4 (6 pins)
Shell kit	3E306-3200-008	1	or equivalent	
Connector (6 pins)	172160-1	1	Tyco Electronics	For junction to encoder cable (6 pins)
Connector pin	170365-1	6		
Connector (4 pins)	172159-1	1	Tyco Electronics	For junction to motor power cable (4 pins)
Connector pin	170366-1	4		
Connector (6 pins)	5557-06R-210	1	Molex Inc.	For connector, CN X3 (6 pins)
Connector pin	5556PBTL	4		

## &lt;Remarks&gt;

We may use parts equivalent to the above for shell and connector cover.

## ● Pin configuration of connector CN X4 plug



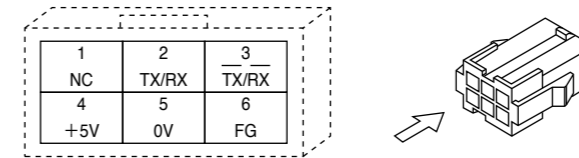
## ● Recommended manual crimping tool (to be prepared by customer)

Title	Part No.	Manufacturer	Cable material
For encoder cable junction	755330-1	Tyco Electronics	—
For motor power cable junction	755331-1		
For Connector CN X3	57026-5000	Molex Inc.	UL1007
	57027-5000		UL1015

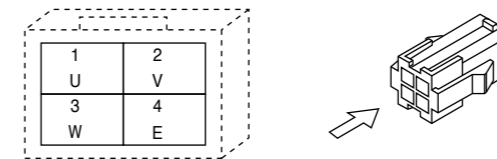
## &lt;Remarks&gt;

- The above pin configuration is shown when viewed from the pin-soldering direction. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- Connect the shield of the wire to the case (FG) without fail.
- For wiring and connection, refer to P.386.

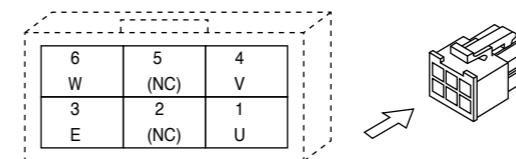
## ● Pin configuration of encoder cable junction



## ● Pin configuration of motor power cable junction



## ● Pin configuration of mating connector to CN X3 connector



## &lt;Cautions&gt;

- The above pin configuration is shown when viewed from the terminal inserting direction. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- Refer to P.386 for wiring and connection.

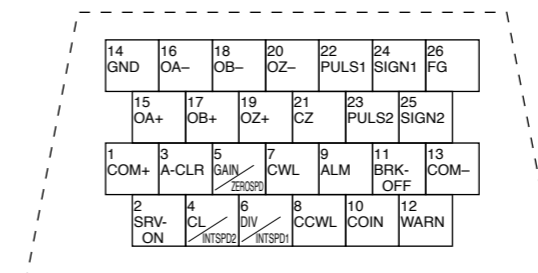
## Connector Kit for Interface

Part No. DV0P0770

## ● Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector	10126-3000PE	1	Sumitomo 3M	For connector, CN X5 (26 pins)
Connector cover	10326-52A0-008	1	or equivalent	

## ● Pin configuration of connector CN X5 (26 pins) (viewed from the soldering side)



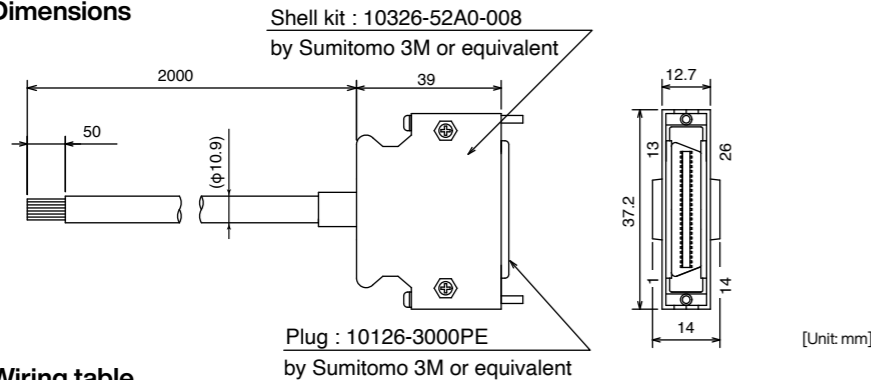
## &lt;Cautions&gt;

- Make a correct wiring by checking the stamped pin numbers on the connector itself.
- Refer to P.387 for symbols and functions of the above signals.

Interface Cable

Part No. DV0P0800 Cable of 2 m is connected.

● Dimensions



● Wiring table

Pin No.	Title of signal	Color or cable	Pin No.	Title of signal	Color or cable	Pin No.	Title of signal	Color or cable
1	COM+	Orange (Red 1)	10	COIN	Pink (Black 1)	19	OZ+	Pink (Red 2)
2	SRV-ON	Orange (Black 1)	11	BRK-OFF	Orange (Red 2)	20	OZ-	Pink (Black 2)
3	A-CLR	Gray (Red 1)	12	WARN	Orange (Black 2)	21	CZ	Orange (Red 3)
4	CL/INTSPD2	Gray (Black 1)	13	COM-	Gray (Red 2)	22	PULS1	Gray (Red 3)
5	GAIN/ZEROSPD	White (Red 1)	14	GND	Gray (Black 2)	23	PULS2	Gray (Black 3)
6	DIV/INTSPD1	White (Black 1)	15	OA+	White (Red 2)	24	SIGN1	White (Red 3)
7	CWL	Yellow (Red 1)	16	OA-	White (Black 2)	25	SIGN2	White (Black 3)
8	CCWL	Yellow (Black 1)	17	OB+	Yellow (Red 2)	26	FG	Orange (Black 3)
9	ALM	Pink (Red 1)	18	OB-	Yellow (Black 2)			

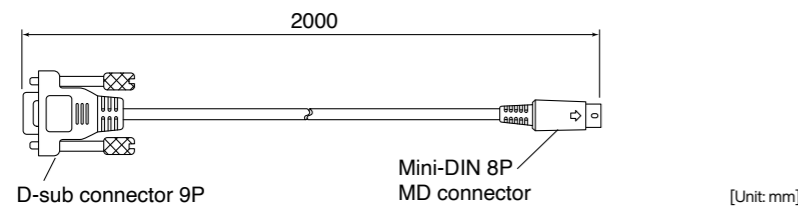
<Notes>  
e. g. of Pin No. designation :  
Pin No. 1... Wire color is orange, and one red dot.  
Pin No. 12... Wire color is orange, and two black dot.

<Caution>

Cable pin No. 26 is not connected to the connector shell (housing) or shielded wire (net wire).  
Pin No. 26 of the Driver is connected to the shell (housing) of the connector.  
The shielded wire (net wire) of the cable is connected to the shell (housing) of the connector of the cable, and by connecting the connector of the optional cable to the Driver, pin No. 26 of the cable and the shielded wire (net wire) of the cable gets connected via the Driver.

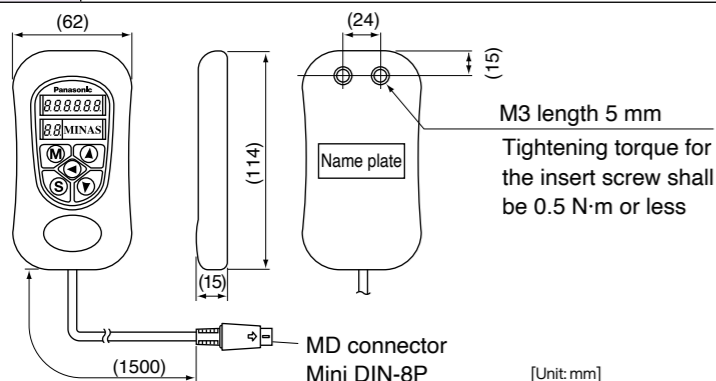
Communication Cable (For Connection with PC)

Part No. DV0P1960



Console

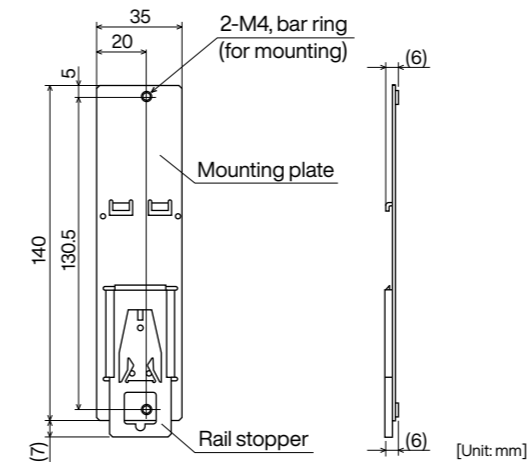
Part No. DV0P4420



DIN Rail Mounting Unit

Part No. DV0P3811

● Dimensions

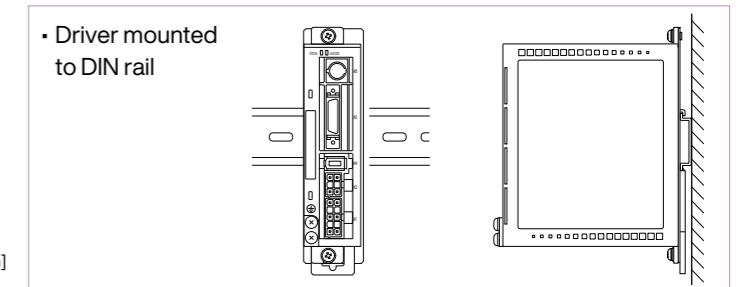


<Notes>

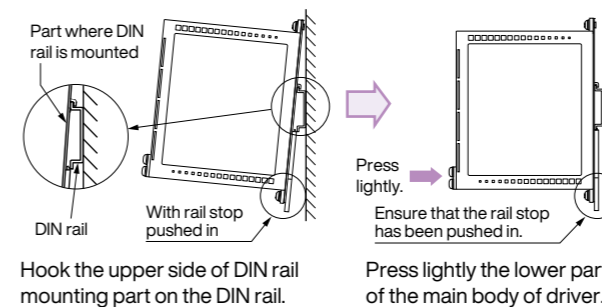
2 mounting screws (M4 X L8, Pan head) are attached.  
Rail stopper can be extended to max. 10 mm.

<Cautions>

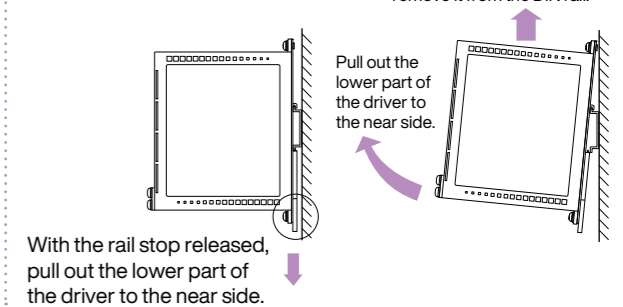
Please read carefully operation manual before using this product.  
In addition, please do not apply excessive stress to the product.



• How to Install



• Removing from DIN Rail

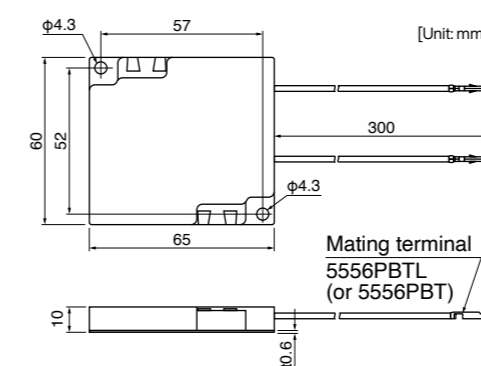


External Regenerative Resistor

Part No.	Manufacturer's Part No.	Specifications			Note (Input Power of drive)
		Resistance	Rated power	Activation temperature of built-in fuse	
DV0P2890	45M03	50 Ω	10 W	137 <sup>+3</sup> / <sub>-2</sub> °C	Single phase, 100 V
DV0P2891	45M03	100 Ω	10 W	137 <sup>+3</sup> / <sub>-2</sub> °C	Single/3-phase, 200 V

Manufactured by Iwaki Musen Kenkyusho Co., Ltd.

● Dimensions



<Caution of when using external regeneration resistor>

Since it becomes high temperature, external regeneration resistor must be installed according to the contents shown below.

- Attach to incombustibles, such as metal.
  - Install in the place which cannot touch directly by covering with incombustibles etc.
  - Do not install near the combustibles.
- Although the thermal cutoff is built in external regeneration resistor, the skin temperature of regeneration resistor may become high exceeding the operating temperature of thermal cutoff by the time the thermal cutoff operates in driver failure.  
The thermal cutoff is for preventing ignition of the regeneration resistor in driver failure, and is not for controlling the skin temperature of resistor.

<Remarks>

Thermal fuse is installed for safety.  
The thermal fuse may blow due to heat dissipating condition, working temperature, supply voltage or load fluctuation.  
Make it sure that the surface temperature of the resistor may not exceed 100 °C at the worst running conditions with the machine, which brings large regeneration (such case as high supply voltage, load inertia is large or deceleration time is short) Please carry out air cooling if needed.

## Reactor

Frame symbol of driver	Power supply specifications	Rated output	Part No.	Fig.
MKDE	Single phase, 100 V	50 W to 100 W	DV0P227	1
	Single phase, 200 V	50 W to 100 W	DV0P220	2
	3-phase, 200 V	50 W to 200 W		
MLDE	Single phase, 100 V	200 W	DV0P228	1
	Single phase, 200 V	200 W to 400 W	DV0P220	2
	3-phase, 200 V	400 W		

Fig.1

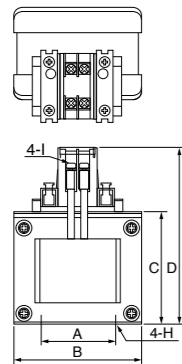
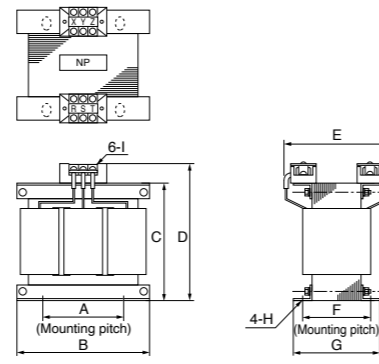
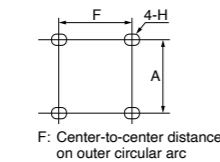
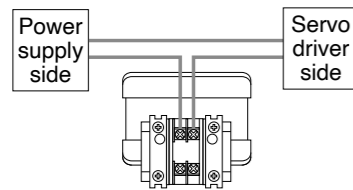


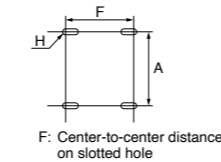
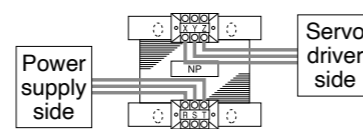
Fig.2



## • Wiring of the reactor &lt;Single phase&gt;



## • Wiring of the reactor &lt;3-Phase&gt;



[Unit: mm]

	Part No.	A	B	C	D	E(Max)	F	G	H	I	Inductance (mH)	Rated current (A)
Fig.1	DV0P227	55±0.7	76.5±1	66.5±1	110 Max	90	43.6±2	56±2	4-5φ×10	M4	4.02	5
	DV0P228	55±0.7	76.5±1	66.5±1	110 Max	95	48.0±2	61±2	4-5φ×10	M4	2	8
Fig.2	DV0P220	65±1	125±1	(93)	136 Max	155	70+3/-0	85±2	4-7φ×12	M4	6.81	3

## Harmonic restraint

Harmonic restraint measures are not common to all countries. Therefore, prepare the measures that meet the requirements of the destination country.

When installing a product for Japan, refer to the instruction manual available on our website.

[Panasonic Industry Co., Ltd. web site]

[industrial.panasonic.com/ac/e/](http://industrial.panasonic.com/ac/e/)

## &lt;Remarks&gt;

When using a reactor, be sure to install one reactor to one servo driver.

## ■ Recommended devices

## Surge Absorber for Motor Brake

Motor	Surge absorber for motor brake	
	Part No. (Manufacturer's)	Manufacturer
MUMA 50 W to 400 W	Z15D151	SEMITEC Corporation

## List of Peripheral Devices

Manufacturer	Tel No. / Home Page	Peripheral devices
Iwaki Musen Kenkyusho Co., Ltd.	+81-44-833-4311 <a href="http://www.iwakimusen.co.jp/">http://www.iwakimusen.co.jp/</a>	Regenerative resistor
SEMITEC Corporation	+81-3-3621-2703 <a href="http://www.semitec.co.jp/english2/">http://www.semitec.co.jp/english2/</a>	Surge absorber for motor brake
TDK Corporation	+81-3-5201-7229 <a href="http://www.global.tdk.com/">http://www.global.tdk.com/</a>	Ferrite core
Okaya Electric Industries Co. Ltd.	+81-3-4544-7040 <a href="http://www.okayaelec.co.jp/english/index.html">http://www.okayaelec.co.jp/english/index.html</a>	Surge absorber Noise filter
Sumitomo 3M	+81-3-5716-7290 <a href="http://solutions.3m.com/wps/portal/3M/ja_JP/WW2/Country/">http://solutions.3m.com/wps/portal/3M/ja_JP/WW2/Country/</a>	Connector
Tyco Electronics Japan G.K.	+81-44-844-8052 <a href="http://www.te.com/ja/home.html">http://www.te.com/ja/home.html</a>	
Japan Molex Inc.	+81-462-65-2313 <a href="http://www.molex.co.jp">http://www.molex.co.jp</a>	Cable
DYDEN CORPORATION	+81-3-5805-5880 <a href="http://www.dyden.co.jp/english/index.htm">http://www.dyden.co.jp/english/index.htm</a>	

\* The above list is for reference only. We may change the manufacturer without notice.

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MEMO

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### EU Directives/ UK Regulation

The EU Directives/ UK Regulation apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products. However, our AC servos meet the relevant EU Directives for EU Low Voltage Directives/UK Low Voltage Regulation Equipment so that the machine or equipment comprising our AC servos can meet EU Directives.

### EU EMC Directives/UK EMC Regulation

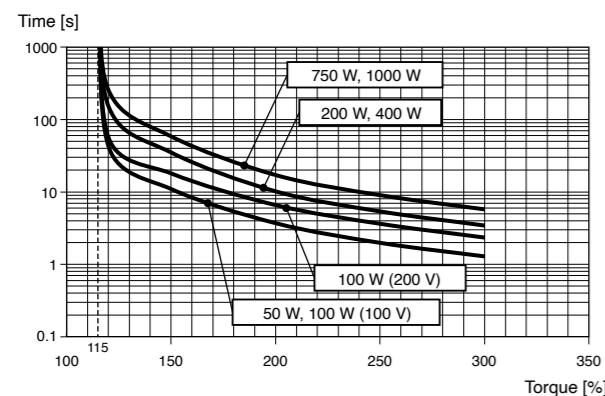
MINAS Servo System conforms to relevant standard under EU EMC Directives/UK EMC Regulation setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EU EMC Directives/UK EMC Regulation, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

### Conformity to UL Standards

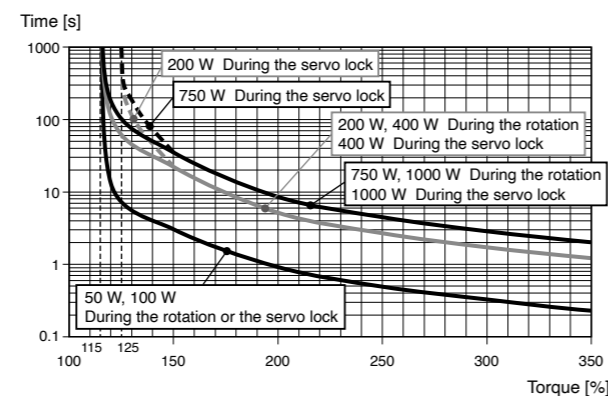
- Observe the following conditions of (1) and (2) to make the system conform to UL508C (E164620).
- Use the driver in an environment of Pollution Degree 2 or 1 prescribed in IEC60664-1. (e.g. Install in the control box with IP54 enclosure.)
  - Make sure to install a circuit breaker or fuse which are UL recognized (Listed  $\text{UL}$  marked) between the power supply and the noise filter. For rated current of circuit breaker and fuse, refer to P.27 "Driver and List of Applicable Peripheral Devices". Use a copper cable with temperature rating of 75 °C or higher.
  - Over-load protection level  
Over-load protective function will be activated when the effective current exceeds 115 % or more than the rated current based on the time characteristics (see the graph). Confirm that the effective current of the driver does not exceed the rated current. Set up the peak permissible current with Pr0.13 (Setup of 1st torque limit) and Pr5.22 (Setup 2nd torque limit).

#### Overload protection time characteristics

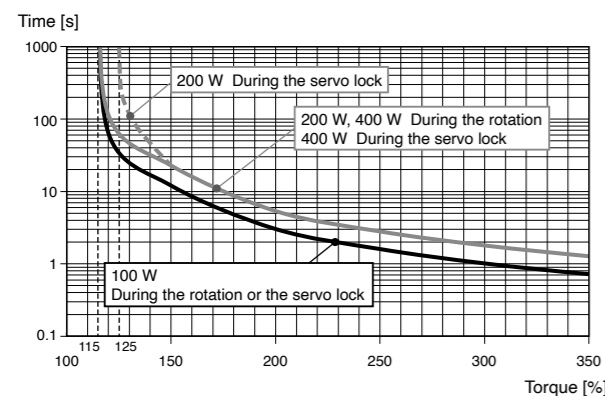
Motor type: 80 mm sq. or less MSMF



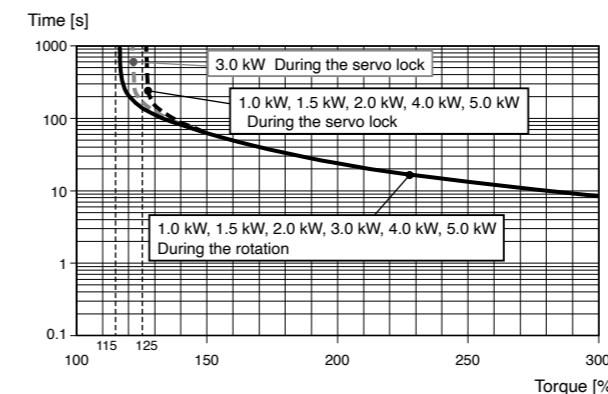
Motor type: 80 mm sq. or less MHMF



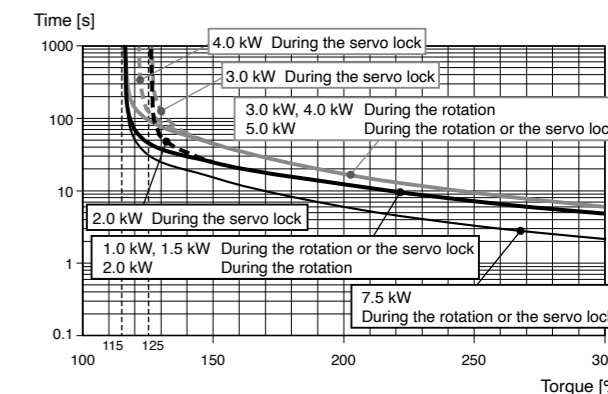
Motor type: 80 mm sq. or less MQMF



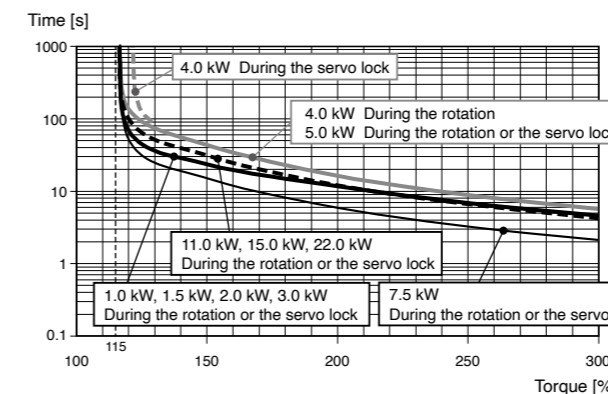
Motor type: 100 mm sq. or more MSMF



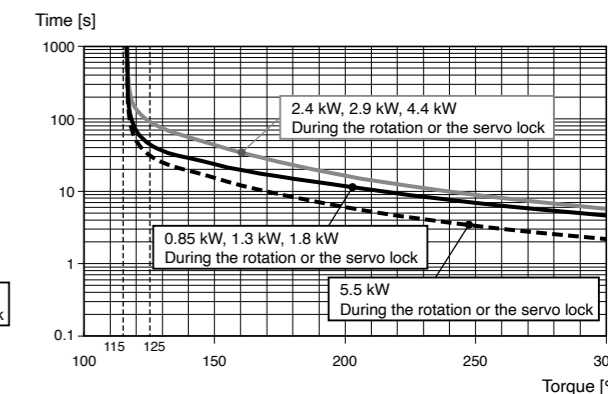
Motor type: 100 mm sq. or more MHMF



Motor type: 100 mm sq. or more MDMF



Motor type: 100 mm sq. or more MGMF



### Conformed Standards

	Driver	Motor
EU/UK Standards	EU EMC Directives/ UK EMC Regulation	EN55011 EN61000-6-2 EN61000-6-4 EN61800-3
	EU Low Voltage Directives/ UK Low Voltage Regulation	EN61800-5-1
	Machinery (Functional safety *1)	ISO13849-1(PL e, Cat.3) EN61508(SIL3) EN62061(SILCL 3) EN61800-5-2(SIL3, STO)
UL Standards	UL61800-5-1 (E164620)	UL1004-1, UL1004-6 (E327868)
CSA Standards	C22.2 No.14	C22.2 No.100
Radio Waves Act (South Korea) (KC) *2	KN11 KN61000-4-2,3,4,5,6,8,11	-

IEC : International Electrotechnical Commission  
EN : Europaischen Normen  
EMC : Electromagnetic Compatibility  
UL : Underwriters Laboratories  
CSA : Canadian Standards Association  
Pursuant to the directive 2004/108/EC, article 9(2)

● When export this product, follow statutory provisions of the destination country.

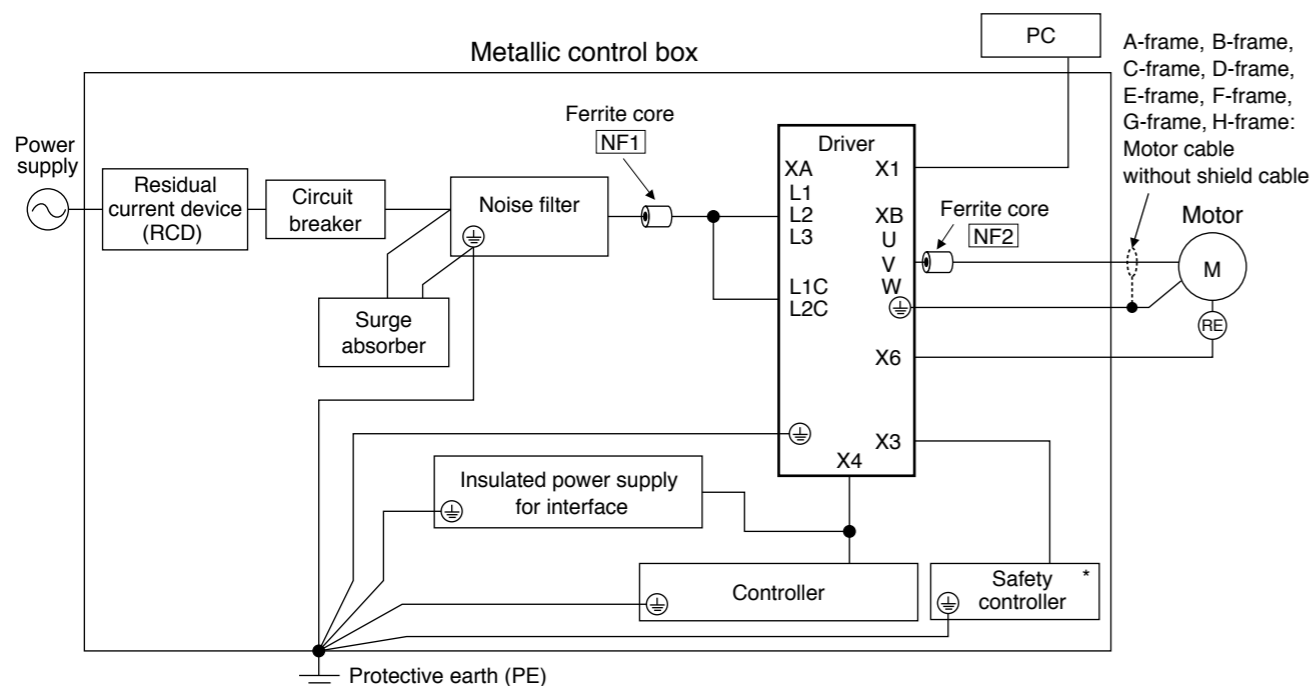
\*1 A6SE, A6SG, A6NE, A6BE series doesn't correspond to the functional safety standard.

\*2 Information related to the Korea Radio Law  
This servo driver is a Class A commercial broadcasting radio wave generator not designed for home use. The user and dealer should be aware of this fact.

A 급 기기 (업무용 방송통신기자재)  
이 기기는 업무용(A 급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.  
(대상기종 : Servo Driver)

Installation Environment

Use the servo driver in the environment of Pollution Degree 1 or 2 prescribed in IEC-60664-1 (e.g. Install the driver in control panel with IP54 protection structure.)



For [NF1] to [NF2], refer to the Table "Ferrite core" (P.414).

\* A6SE, A6SG, A6NE, A6BE is not provided with X3 terminal.

<Caution>

Use options correctly after reading Operating Instructions of the options to better understand the precautions. Take care not to apply excessive stress to each optional part.

Power Supply

100 V type (A-frame to C-frame)	Single phase, 100 V +10 % -15 % to 120 V +10 % -15 %	50 Hz/60 Hz
200 V type (A-frame to D-frame)	Single/3-phase, 200 V +10 % -15 % to 240 V +10 % -15 %	50 Hz/60 Hz
200 V type (E-frame to H-frame)	3-phase, 200 V +10 % -15 % to 240 V +10 % -15 %	50 Hz/60 Hz

- (1) This product is designed to be used in over-voltage category (installation category) III of EN 61800-5-1:2007.
- (2) Use an insulated power supply of DC12 V to 24 V which has CE marking or complies with EN60950.

Circuit Breaker

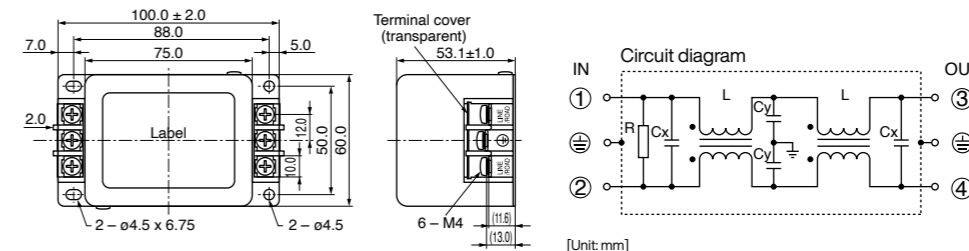
Install a circuit breaker which complies with IEC Standards and UL recognized (Listed and marked) between power supply and noise filter. The short-circuit protection circuit on the product is not for protection of branch circuit. The branch circuit should be protected in accordance with NEC and the applicable local regulations in your area.

Noise Filter

When you install one noise filter at the power supply for multi-axes application, contact the manufacturer of the noise filter. If noise margin is required, connect 2 filters in series to emphasize effectiveness.

Options

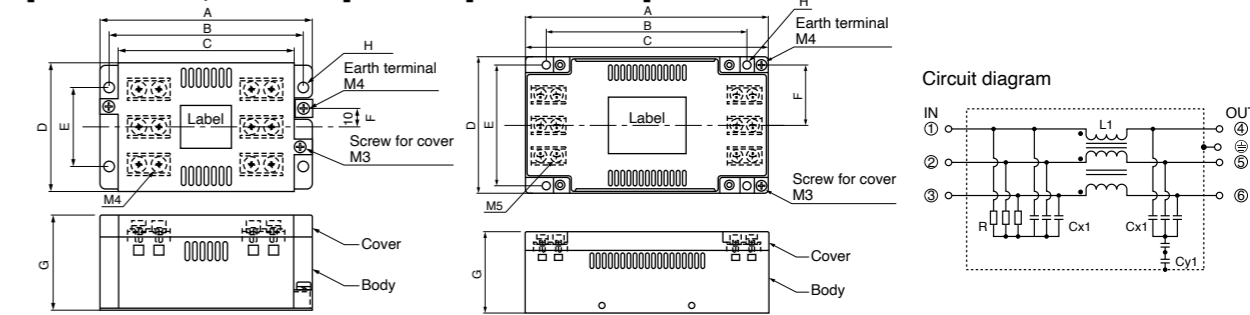
Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
DV0P4170	Single phase 100 V, 200 V	SUP-EK5-ER-6	A-frame and B-frame	Okaya Electric Ind.



Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
DV0PM20042	3-phase 200 V	3SUP-HU10-ER-6	A-frame and B-frame	Okaya Electric Ind.
DV0P4220	Single phase 100 V, 200 V		C-frame	
DV0PM20043	3-phase 200 V	3SUP-HU30-ER-6	D-frame	
		3SUP-HU50-ER-6	E-frame	

[DV0PM20042, DV0P4220]

[DV0PM20043]

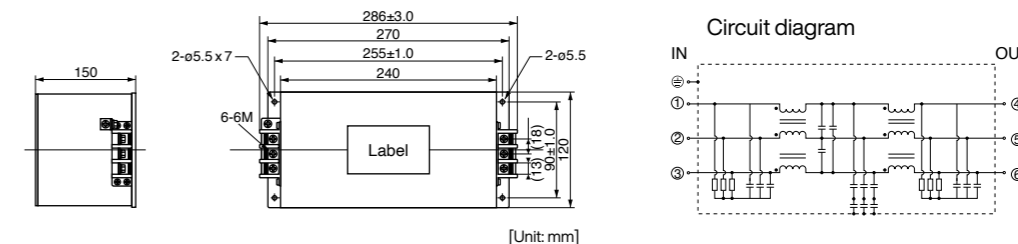


[Size] [Unit: mm]

	A	B	C	D	E	F	G	H
DV0PM20042	115	105	95	70	43	10	52	5.5
DV0P4220	145	135	125	70	50	10	52	5.5
DV0PM20043	165	136	165	90	80	40	54	5.5

For single phase application, use 2 terminals among 3 terminals, leaving the remaining terminal unconnected.

Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
DV0P3410	3-phase 200 V	3SUP-HL50-ER-6B	F-frame	Okaya Electric Ind.



<Remarks>

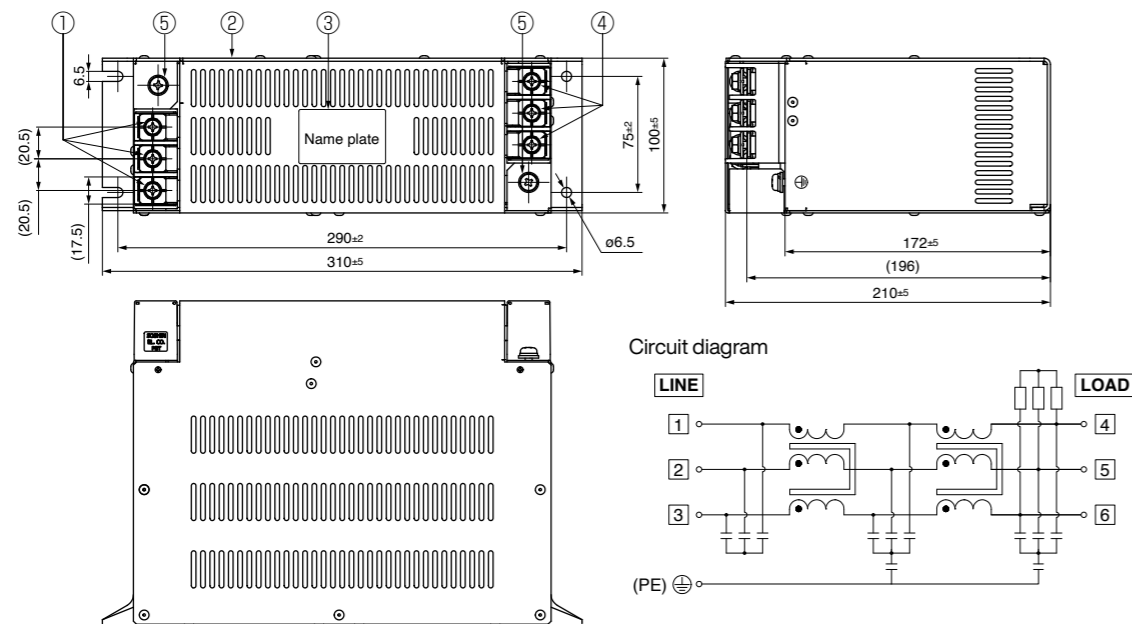
- Select a noise filter of capacity that exceeds the capacity of the power source (also check for load condition).
- For detailed specification of the filter, contact the manufacturer.



Noise Filter

Recommended components

Part No.	Voltage specifications for driver	Rated current (A)	Applicable driver (frame)	Manufacturer
HF3080C-SZA	3-phase 200 V	80	G	SOSHIN ELECTRIC CO.,LTD.
HF3100C-SZA		100	H	

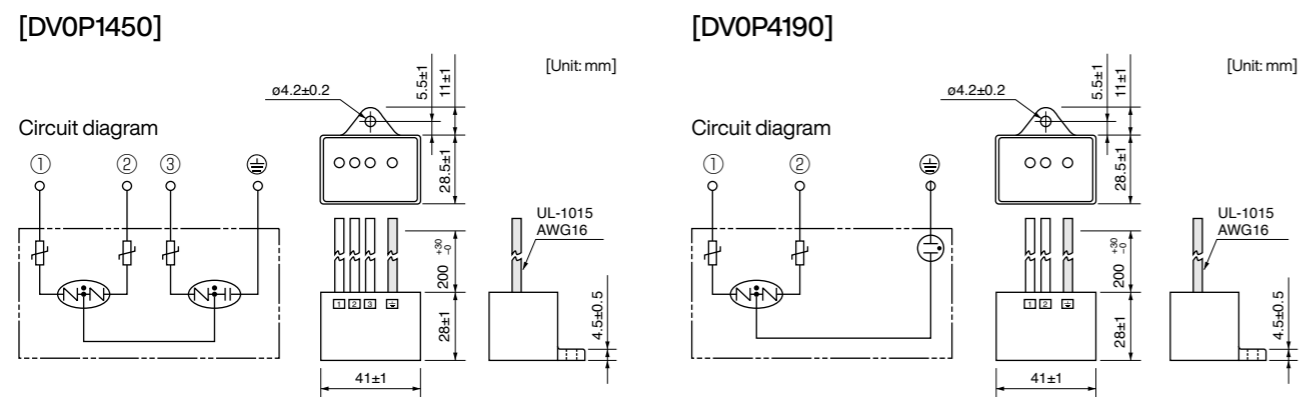


- <Remarks>**
- Select a noise filter of capacity that exceeds the capacity of the power source (also check for load condition).
  - For detailed specification of the filter, contact the manufacturer.
  - When you install one noise filter at the power supply for multi-axes application, contact the manufacturer of the noise filter.

Surge Absorber

Provide a surge absorber for the primary side of noise filter.

Option part No.	Voltage specifications for driver	Manufacturer's part No.	Manufacturer
DV0P1450	3-phase 200 V	R · A · V-781BXZ-4	Okaya Electric Ind.
DV0P4190	Single phase 100 V, 200 V	R · A · V-781BWZ-4	



- <Remarks>**
- Remove this surge absorber when you perform dielectric test on the machine, or surge absorber might be damaged.

Ferrite core

Install ferrite core to power cable and motor cable

Symbol <sup>1</sup>	Cable Name	Applicable driver (frame)	Option part No.	Manufacturer's part No.	Manufacturer	Required number
NF1	Power cable	A, B, E	DV0P1460	ZCAT3035-1330	TDK Corp.	1
		G, H	—	RJ8095	Konno Kogyosho Co.Ltd	3
NF2	Motor cable	A, B, C, D, E	DV0P1460	ZCAT3035-1330	TDK Corp.	1
		F				2
		G, H	—	T400-61D	MICROMETALS	3

\*1 For symbols, refer to the Block Diagram "Installation Environment" (P.411).

- The number of turns is all 1.
- NF1 is not required for C frame, D frame, F frame.

<Remarks>

To connect the ferrite core to the connector XB connection cable, adjust the sheath length at the tip of the cable, as required.

<Caution>

Fix the ferrite core in order to prevent excessive stress to the cables.

Fig.1: DV0P1460 (Option) 4 pieces

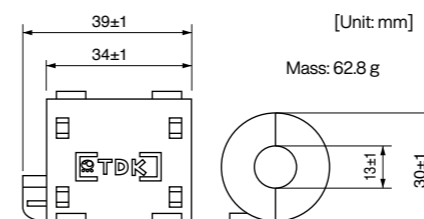


Fig.3: T400-61D (Recommended components) 1 pieces

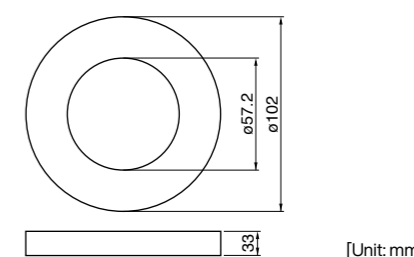
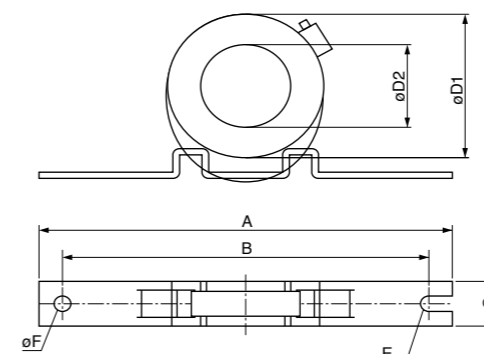


Fig.2: RJ8095 (Recommended components) 1 pieces



Manufacturer's part No.	Current value	100 kHz (μH)	Size [Unit: mm]							
			A	B	C	D1	D2	Core thickness	E	F
RJ8095	95 A	7.9±3	200	180	34	130	107	35	R3.5	7

Residual Current Device

Install a type B Residual current device (RCD) at primary side of the power supply.  
Type B: Residual current device which detects a direct-current ingredient.

Grounding

- Connect the protective earth terminal (⊕) of the driver and the protective earth terminal (PE) of the control box without fail to prevent electrical shocks.
- Do not make a joint connection to the protective earth terminals (⊕). 2 terminals are provided for protective earth.

<Note>

For driver and applicable peripheral devices, refer to P.27 "Driver and List of Applicable Peripheral Devices".

## Compliance to EU/ UK Regulation and EMC Directives

### EU Directives/ UK Regulation

The EU Directives/ UK Regulation apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products. MINAS AC Servos conforms to the EU Directives for EU Low Voltage Directives/ UK Low Voltage Regulation Equipment so that the machine incorporating our servos has an easy access to the conformity to relevant EU Directives for the machine.

### EU EMC Directives/UK EMC Regulation

MINAS Servo System conform to relevant standard under EU EMC Directives/UK EMC Regulation setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EU EMC Directives/UK EMC Regulation, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

### Conformed Standards

Subject	Conformed Standard		
Motor	IEC60034-1	IEC60034-5	UL1004 CSA22.2 No.100
Motor and driver	UL61800-5-1		CSA22.2 No.14
	EN55011	Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment	
	EN61000-6-2	Immunity for Industrial Environments	
	IEC61000-4-2	Electrostatic Discharge Immunity Test	
	IEC61000-4-3	Radio Frequency Electromagnetic Field Immunity Test	
	IEC61000-4-4	Electric High-Speed Transition Phenomenon/Burst Immunity Test	
	IEC61000-4-5	Lightening Surge Immunity Test	
	IEC61000-4-6	High Frequency Conduction Immunity Test	
IEC61000-4-11	Instantaneous Outage Immunity Test		

Conforms to EU Low Voltage Directives/UK Low Voltage Regulation  
Conforms to references by EU EMC Directives/UK EMC Regulation

IEC : International Electrotechnical Commission  
EN : Europäischen Normen  
EMC : Electromagnetic Compatibility  
UL : Underwriters Laboratories  
CSA : Canadian Standards Association

Pursuant to at the directive 2004/108/EC, article 9(2)

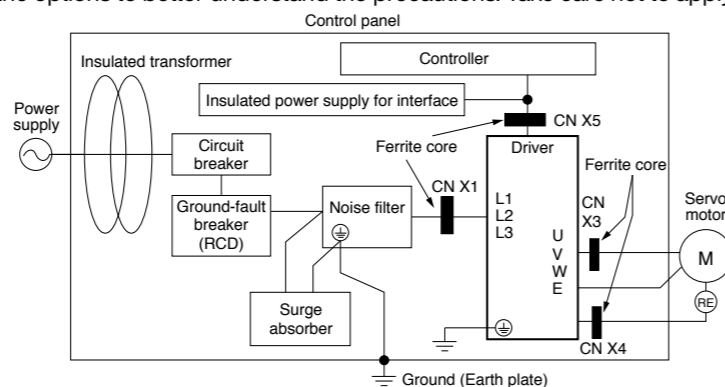
## Composition of Peripheral Components

### <Precautions in using options>

Use options correctly after reading operation manuals of the options to better understand the precautions. Take care not to apply excessive stress to each optional part.

### Installation Environment

Use Minas driver in environment of Pollution Degree 1 or 2 prescribed in IEC-60664-1 (e.g. Install the driver in control panel with IP54 protection structure.)



### Power Supply

100 V system	Single phase, 100 V	+10 % -15 %	to	115 V	+10 % -15 %	50 Hz/60 Hz
200 V system	Single phase, 200 V	+10 % -15 %	to	240 V	+10 % -15 %	50 Hz/60 Hz
200 V system	3-phase, 200 V	+10 % -15 %	to	240 V	+10 % -15 %	50 Hz/60 Hz

- Use the power supply under an environment of Overvoltage Category II specified in IEC60664-1.
- For a interface power supply, use the insulated one with 12 VDC to 24 VDC which conforms to CE Marking or EN Standards (EN60950).

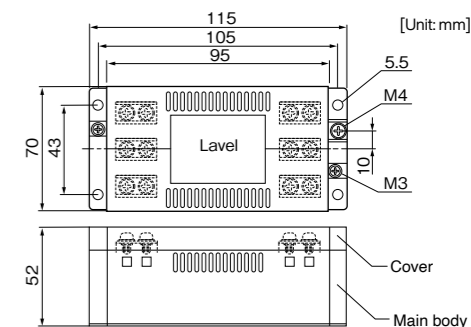
### Circuit Breaker

Connect a circuit breaker which conforms to IEC standards and is UL recognized (UL Listed, marked), between the power supply and the noise filter.

### Noise Filter

When you install one noise filter in the power supply for multi axis application, consult with the manufacture of the filter.

Option part No.	Part No.	Manufacturer
DV0P4160	3SUP-HU10-ER-6	Okaya Electric Industries Co.

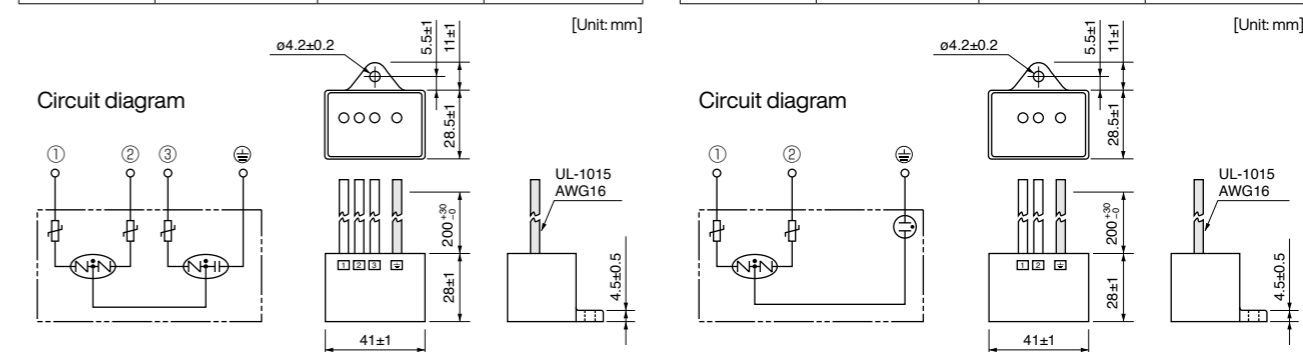


### Surge Absorber

Install a surge absorber at primary side of the noise filter.

Option part No.	Driver voltage spec	Part No.	Manufacturer
DV0P1450	3-phase, 200 V	R·A·V-781BXZ-4	Okaya Electric

Option part No.	Driver voltage spec	Part No.	Manufacturer
DV0P4190	Single phase, 100 V, 200 V	R·A·V-781BWZ-4	Okaya Electric



### <Remarks>

Remove this surge absorber when you perform dielectric test on the machine, or surge absorber might be damaged.

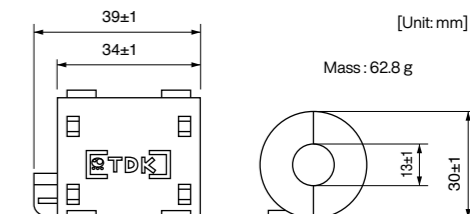
### Ferrite core

Install ferrite core to all cables (Power line, motor cable, encoder cable, interface cable)

### <Caution>

- Please fix a ferrite core to avoid excessive stress to the cable.
- When using multiple axes, noise generated from each driver might influence driver and peripheral equipment and result to malfunction. Please insert a ferrite core between driver and motor wires (U, V, W but grounding). (Please refer to P.415 "Composition of Peripheral Components".)

Option part No.	Part No.	Qty.	Manufacturer
DV0P1460	ZCAT3035-1330	4	TDK Corp.



### Grounding

- Connect the protective earth terminal of the driver () and protective earth terminal of the control panel (PE) without fail to prevent electrical shocks.
- Do not co-clamp to the ground terminals (). Two ground terminals are provided.

### Ground-Fault Breaker

Install a ground fault circuit breaker (RCD) to the primary side of the power supply. Please use B-type (DC sensitive) ground fault circuit breakers defined in IEC60947-2, JISC8201-2-2.

AC Servo Motor Capacity Selection Software

We have prepared PC software "M-SELECT" for AC servo motor capacity selection. Consult our sales representative or authorized distributor.

Three-step selection

1. Select components and specified values

Select appropriate mechanical parameter items and fill them with parameter values derived from the real machine. To simulate the target machine as practical as possible, use maximum number of parameters available.



2. Enter operation pattern

Input the planned operation pattern that will contain [speed and rotation standard] or [absolute position standard] with optional settings such as S-acceleration/deceleration.



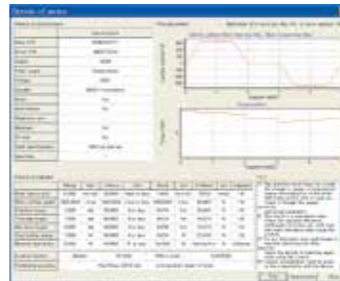
3. Select the motor

When the data required in step 1 and 2 above have been input, the software lists the motors, which will be appropriate to use with your machine. Select the motor that is best suitable for your machine application.



Details of motor

Once the motor is selected, specifications of the motor and driver, and details of reason for determination are displayed and may be printed out.



Option Selection Software for AC Servo Motor

We have prepared PC software to enable fast, easy, and correct option selection, a complicated job without the software.

Two procedures for option selection

1. Selection according to driver series and motor type

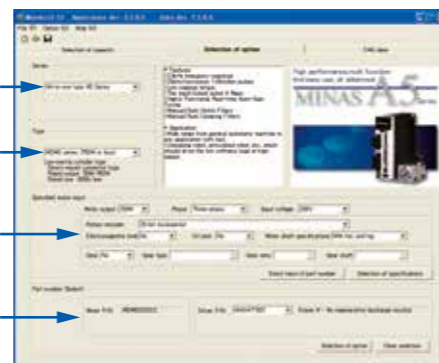
Suitable option can be selected by selecting driver series, motor type and motor specification through pull-down menu.

Driver series

Motor type

Motor specification

Model number input area



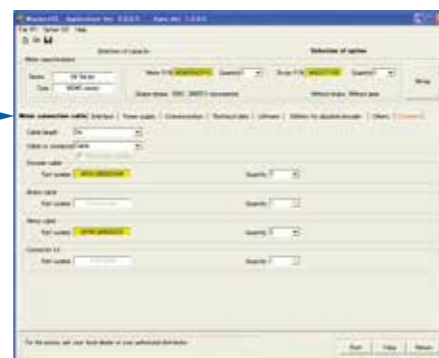
2. Entry of model number

If you know the model number based on the servo motor and driver currently used, enter the model number.

Result of selection

Tab sheet specific to each of option model numbers is used for easier identification of the desired option.

Tab



\* When you are using the motor capacity selection software, simply press [Option Selection] tab and the screen as shown right will appear.

Please download from our web site and use after install to the PC.  
<https://industrial.panasonic.com/ww/products/motors-compressors/fa-motors/ac-servo-motors/minas-a5-panatarm>

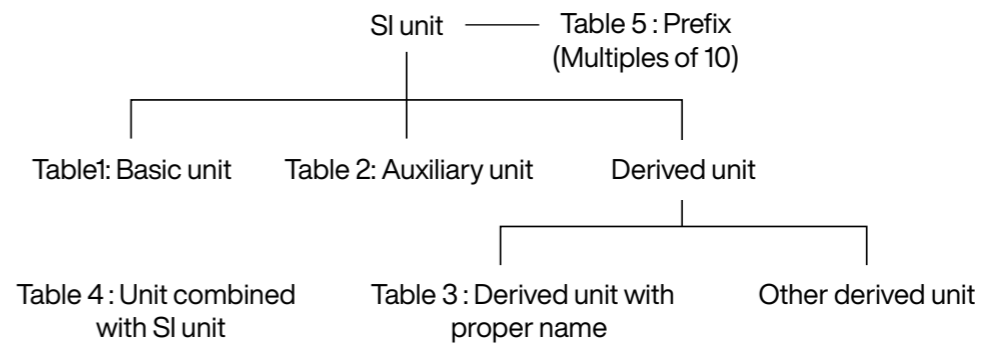


Table 1: Basic unit

Quantity	Name of unit	Symbol of unit
Length	meter	m
Weight	kilogram	kg
Time	second	s
Current	ampere	A
Thermodynamic temperature	kelvin	K
Amount of substance	mol	mol
Luminous intensity	candela	cd

Table 2: Auxiliary unit

Quantity	Name of unit	Symbol of unit
Plane angle	radian	rad
Solid angle	steradian	sr

Table 3: Major derived unit with proper name

Quantity	Name	Symbol of unit	Derivation from basic unit, auxiliary unit or other derived unit
Frequency	hertz	Hz	1 Hz = 1 s <sup>-1</sup>
Force	newton	N	1 N = 1 kg·m/s <sup>2</sup>
Pressure, Stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>
Energy, Work, Amount of heat	joule	J	1 J = 1 N·m
Amount of work, Work efficiency, Power, Electric power	watt	W	1 W = 1 J/s
Electric charge, Amount of electricity	coulomb	C	1 C = 1 A·s
Electric potential, Potential difference, Voltage, Electromotive force	volt	V	1 V = 1 J/C
Electrostatic capacity, Capacitance	farad	F	1 F = 1 C/V
Electric resistance	ohm	Ω	1 Ω = 1 V/A
Electric conductance	siemens	S	1 S = 1 Ω <sup>-1</sup>
Magnetic flux	weber	Wb	1 Wb = 1 V·s
Magnetic flux density, Magnetic induction	tesla	T	1 T = 1 Wb/m <sup>2</sup>
Inductance	henry	H	1 H = 1 Wb/A
Degree centigrade (Celsius)	degree centigrade (Celsius)/ degree	°C	t °C = (t+273.15) K
Luminous flux	lumen	lm	1 lm = 1 cd·sr
Illuminance	lux	lx	1 lx = 1 lm/m <sup>2</sup>

Table 4: Unit combined with SI unit

Quantity	Name	Symbol of unit
Time	minute	min
	hour	h
	day	d
Plane angle	degree	°
	minute	'
	second	"
Volume	liter	l, L
Weight	ton	t

Table 5: Prefix

Multiples powered to unit	Prefix	
	Name	Symbol
10 <sup>18</sup>	exa	E
10 <sup>15</sup>	peta	P
10 <sup>12</sup>	tera	T
10 <sup>9</sup>	giga	G
10 <sup>6</sup>	mega	M
10 <sup>3</sup>	kilo	k
10 <sup>2</sup>	hecto	h
10	deca	da
10 <sup>-1</sup>	deci	d
10 <sup>-2</sup>	centi	c
10 <sup>-3</sup>	milli	m
10 <sup>-6</sup>	micro	μ
10 <sup>-9</sup>	nano	n
10 <sup>-12</sup>	pico	p
10 <sup>-15</sup>	femto	f
10 <sup>-18</sup>	atto	a

Quantity	Symbol of conventional unit	Symbol of SI unit and compatible unit	Conversion value
Length	μ (micron)	μm	1 μ = 1 μm (micrometer)
Acceleration	Gal	m/s <sup>2</sup>	1 Gal = 10 <sup>-2</sup> m/s <sup>2</sup>
	G	m/s <sup>2</sup>	1 G = 9.80665 m/s <sup>2</sup>
Frequency	c/s, c	Hz	1 c/s = Hz
Revolving speed, Number of revolutions	rpm	s <sup>-1</sup> or min <sup>-1</sup> , r/min	1 rpm = 1 min <sup>-1</sup>
Weight	kgf	-	} Same value
Mass	-	kg	
Weight flow rate	kgf/s	-	} Same value
Mass flow rate	-	kg/s	
Specific weight	kgf/m <sup>3</sup>	-	} Same value
Density	-	kg/m <sup>3</sup>	
Specific volume	m <sup>3</sup> /kgf	m <sup>3</sup> /kg	Same value
Load	kgf	N	1 kgf = 9.80665 N
Force	kgf	N	1 kgf = 9.80665 N
	dyn	N	1 dyn = 10 <sup>-5</sup> N
Moment of force	kgf·m	N·m	1 kgf·m = 9.806 N·m
Pressure	kgf/cm <sup>2</sup>	Pa, bar <sup>(1)</sup> or kgf/cm <sup>2</sup>	1 kgf/cm <sup>2</sup> = 9.80665 × 10 <sup>4</sup> Pa = 0.980665 bar
	at (Engineering atmospheric pressure)	Pa	1 at = 9.80665 × 10 <sup>4</sup> Pa
	atm (Atmospheric pressure)	Pa	1 atm = 1.01325 × 10 <sup>5</sup> Pa
	mH <sub>2</sub> O, mAq	Pa	1 mH <sub>2</sub> O = 9.80665 × 10 <sup>3</sup> Pa
	mmHg	Pa or mmHg <sup>(2)</sup>	1 mmHg = 133.322 Pa
	Torr	Pa	
Stress	kgf/mm <sup>2</sup>	Pa or N/m <sup>2</sup>	1 kgf/mm <sup>2</sup> = 9.80665 × 10 <sup>6</sup> Pa = 9.80665 × 10 <sup>6</sup> N/m <sup>2</sup>
	kgf/cm <sup>2</sup>	Pa or N/m <sup>2</sup>	1 kgf/cm <sup>2</sup> = 9.80665 × 10 <sup>4</sup> Pa = 9.80665 × 10 <sup>4</sup> N/m <sup>2</sup>
Elastic modulus	kgf/m <sup>2</sup>	Pa or N/m <sup>2</sup>	1 kgf/m <sup>2</sup> = 9.80665 Pa = 9.80665 N/m <sup>2</sup>
			1 kgf/cm <sup>2</sup> = 9.80665 × 10 <sup>4</sup> N/m <sup>2</sup>
Energy, Work	kgf·m	J (joule)	1 kgf·m = 9.80665 J
	erg	J	1 erg = 10 <sup>-7</sup> J
Work efficiency, Power	kgf·m/s	W (watt)	1 kgf·m/s = 9.80665 W
	PS	W	1 PS = 0.7355 kW
Viscosity	PP	Pa·s	1 P = 0.1 Pa·s
Kinetic viscosity	St	mm <sup>2</sup> /s	10 <sup>-2</sup> St = 1 mm <sup>2</sup> /s
Thermodynamic temperature	K	K (kelvin)	1 K = 1 K
Temperature interval	deg	K <sup>(3)</sup>	1 deg = 1 K
Amount of heat	cal	J	1 cal = 4.18605 J
Heat capacity	cal/°C	J/K <sup>(3)</sup>	1 cal/°C = 4.18605 J/K
Specific heat, Specific heat capacity	cal/(kgf·°C)	cal/(kgf·K) <sup>(3)</sup>	1 cal/(kgf·°C) = 4.18605 J/(kg·K)
Entropy	cal/K	J/K	1 cal/K = 4.18605 J/K
Specific entropy	cal/(kgf·K)	J/(kg·K)	1 cal/(kgf·K) = 4.18605 J/(kg·K)
Internal energy (Enthalpy)	cal	J	1 cal = 4.18605 J
Specific internal energy (Specific enthalpy)	cal/kgf	J/kg	1 cal/kgf = 4.18605 J/kg
Heat flux	cal/h	W	1 kcal/h = 1.16279 W
Heat flux density	cal/(h·m <sup>2</sup> )	W/m <sup>2</sup>	1 kcal/(h·m <sup>2</sup> ) = 1.16279 W/m <sup>2</sup>
Thermal conductivity	cal/(h·m·°C)	W/(m·K) <sup>(3)</sup>	1 kcal/(h·m·°C) = 1.16279 W/(m·K)
Coefficient of thermal conductivity	cal/(h·m <sup>2</sup> ·°C)	W/(m <sup>2</sup> ·K) <sup>(3)</sup>	1 kcal/(h·m <sup>2</sup> ·°C) = 1.16279 W/(m <sup>2</sup> ·K)
Intensity of magnetic field	Oe	A/m	1 Oe = 10 <sup>3</sup> / (4π) A/m
Magnetic flux	Mx	Wb (weber)	1 Mx = 10 <sup>-8</sup> Wb
Magnetic flux density	Gs, G	T (tesla)	1 Gs = 10 <sup>-4</sup> T

**Note**

- (1) Applicable to liquid pressure. Also applicable to atmospheric pressure of meteorological data, when "bar" is used in international standard.
- (2) Applicable to scale or indication of blood pressure manometers.
- (3) "C" can be substituted for "K".

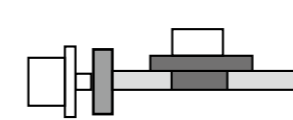
Flow of Motor Selection

**1. Definition of mechanism to be driven by motor.**

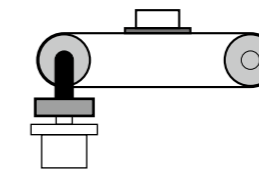
Define details of individual mechanical components (ball screw length, lead and pulley diameters, etc.)

<Typical mechanism>

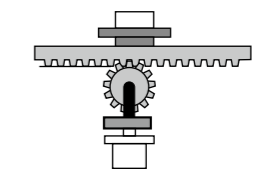
Ball screw mechanism



Belt mechanism

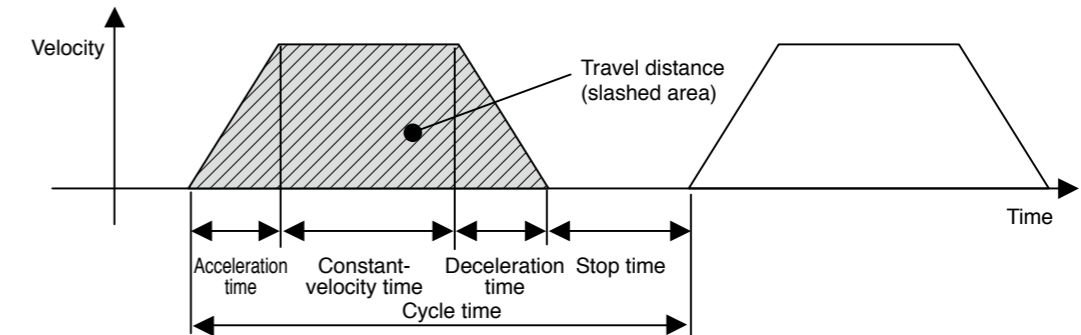


Rack & pinion, etc.



**2. Definition of operating pattern.**

Acceleration/deceleration time, Constant-velocity time, Stop time, Cycle time, Travel distance



Note) Selection of motor capacity significantly varies depending on the operating pattern. The motor capacity can be reduced if the acceleration/deceleration time and stop time are set as long as possible.

**3. Calculation of load inertia and inertia ratio.**

Calculate load inertia for each mechanical component. (Refer to "General inertia calculation method" described later.)

Divide the calculated load inertia by the inertia of the selected motor to check the inertia ratio.

For calculation of the inertia ratio, note that the catalog value of the motor inertia is expressed as "× 10<sup>-4</sup> kg·m<sup>2</sup>".

**4. Calculation of motor velocity**

Calculate the motor velocity from the moving distance, acceleration / deceleration time and constant-velocity time.

**5. Calculation of torque**

Calculate the required motor torque from the load inertia, acceleration/deceleration time and constant-velocity time.

**6. Calculation of motor**

Select a motor that meets the above 3 to 5 requirements.

Description on the Items Related to Motor Selection

1. Torque

(1) Peak torque

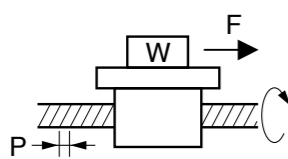
Indicate the maximum torque that the motor requires during operation (mainly in acceleration and deceleration steps). The reference value is 80% or less of the maximum motor torque. If the torque is a negative value, a regenerative discharge resistor may be required.

(2) Traveling torque, Stop holding torque

Indicates the torque that the motor requires for a long time. The reference value is 80% or less of the rated motor torque. If the torque is a negative value, a regenerative discharge resistor may be required.

Traveling torque calculation formula for each mechanism

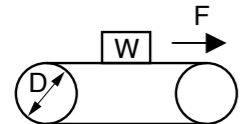
**Ball screw mechanism**



Traveling torque  $T_f = \frac{P}{2\pi\eta} (\mu gW + F)$

W : Weight [kg]       $\eta$  : Mechanical efficiency  
 P : Lead [m]       $\mu$  : Coefficient of friction  
 F : External force [N]      g : Acceleration of gravity 9.8[m/s<sup>2</sup>]

**Belt mechanism**



Traveling torque  $T_f = \frac{D}{2\pi\eta} (\mu gW + F)$

W : Weight [kg]       $\eta$  : Mechanical efficiency  
 P : Pulley diameter [m]       $\mu$  : Coefficient of friction  
 F : External force [N]      g : Acceleration of gravity 9.8[m/s<sup>2</sup>]

(3) Effective torque

Indicates a root-mean-square value of the total torque required for running and stopping the motor per unit time. The reference value is approx. 80% or less of the rated motor torque.

$$T_{rms} = \sqrt{\frac{T_a^2 \times t_a + T_f^2 \times t_b + T_d^2 \times t_d}{t_c}}$$

T<sub>a</sub> : Acceleration torque [N·m]      t<sub>a</sub> : Acceleration time [s]      t<sub>c</sub> : Cycle time [s]  
 T<sub>f</sub> : Traveling torque [N·m]      t<sub>b</sub> : Constant-velocity time [s]      (Run time + Stop time)  
 T<sub>d</sub> : Deceleration torque [N·m]      t<sub>d</sub> : Deceleration time [s]

2. Motor velocity

Maximum velocity

Maximum velocity of motor in operation: The reference value is the rated velocity or lower value. When the motor runs at the maximum velocity, you must pay attention to the motor torque and temperature rise. For actual calculation of motor velocity, see "Example of motor selection" described later.

3. Inertia and inertia ratio

Inertia is like the force to retain the current moving condition.

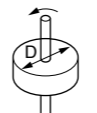
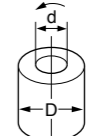
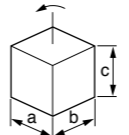
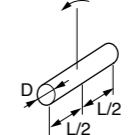
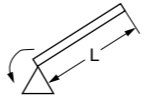
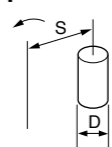
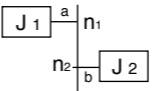
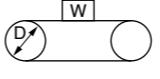
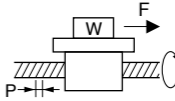
Inertia ratio is calculated by dividing load inertia by rotor inertia.

Generally, for motors with 750 W or lower capacity, the inertia ratio should be "20" or less. For motors with 1000 W or higher capacity, the inertia ratio should be "10" or less.

If you need quicker response, a lower inertia ratio is required.

(For example, when the motor takes several seconds in acceleration step, the inertia ratio can be further increased.)

General inertia calculation method

Shape	J calculation formula	Shape	J calculation formula
<b>Disk</b> 	$J = \frac{1}{8} WD^2$ [kg·m <sup>2</sup> ] W : Weight [kg] D : Outer diameter [m]	<b>Hollow cylinder</b> 	$J = \frac{1}{8} W(D^2 + d^2)$ [kg·m <sup>2</sup> ] W : Weight [kg] D : Outer diameter [m] d : Inner diameter [m]
<b>Prism</b> 	$J = \frac{1}{12} W(a^2 + b^2)$ [kg·m <sup>2</sup> ] W : Weight [kg] a, b, c : Side length [m]	<b>Uniform rod</b> 	$J = \frac{1}{48} W(3D^2 + 4L^2)$ [kg·m <sup>2</sup> ] W : Weight [kg] D : Outer diameter [m] L : Length [m]
<b>Straight rod</b> 	$J = \frac{1}{3} WL^2$ [kg·m <sup>2</sup> ] W : Weight [kg] L : Length [m]	<b>Separated rod</b> 	$J = \frac{1}{8} WD^2 + WS^2$ [kg·m <sup>2</sup> ] W : Weight [kg] D : Outer diameter [m] S : Distance [m]
<b>Reduction gear</b> 	Inertia on shaft "a" $J = J_1 + \left(\frac{n_2}{n_1}\right)^2 J_2$ [kg·m <sup>2</sup> ] n <sub>1</sub> : A rotational speed of a shaft [r/min] n <sub>2</sub> : A rotational speed of b shaft [r/min]		
<b>Conveyor</b> 	$J = \frac{1}{4} WD^2$ [kg·m <sup>2</sup> ] W : Workpiece weight on conveyor [kg] D : Drum diameter [m] * Excluding drum J	<b>Ball screw</b> 	$J = J_B + \frac{W \cdot P^2}{4\pi^2}$ [kg·m <sup>2</sup> ] W : Weight [kg] P : Lead J <sub>B</sub> : J of ball screw

If weight (W [kg]) is unknown, calculate it with the following formula:

Weight W[kg]=Density ρ [kg/m<sup>3</sup>] x Volume V[m<sup>3</sup>]

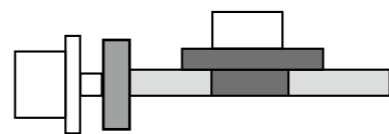
Density of each material

Iron ρ =7.9 x 10<sup>3</sup> [kg/m<sup>3</sup>]      Aluminum ρ =2.8 x 10<sup>3</sup> [kg/m<sup>3</sup>]  
 Brass ρ =8.5 x 10<sup>3</sup> [kg/m<sup>3</sup>]

To Drive Ball Screw Mechanism

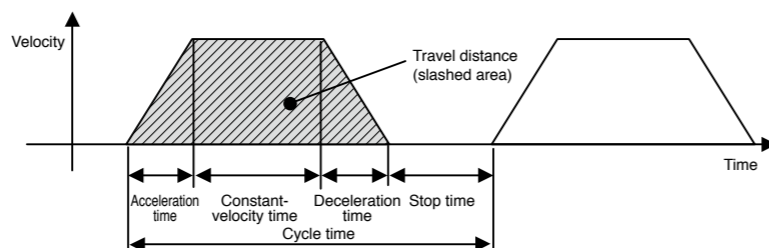
1. Example of motor selection for driving ball screw mechanism

- Workpiece weight WA = 10 [kg]
- Ball screw length BL = 0.5 [m]
- Ball screw diameter BD = 0.02 [m]
- Ball screw lead BP = 0.02 [m]
- Ball screw efficiency Bη = 0.9
- Travel distance 0.3[m]
- Coupling inertia Jc = 10 × 10<sup>-6</sup> [kg·m<sup>2</sup>] (Use manufacturer-specified catalog value, or calculation value.)



2. Running pattern :

- Acceleration time ta = 0.1 [s]
- Constant-velocity time tb = 0.8 [s]
- Deceleration time td = 0.1 [s]
- Cycle time tc = 2 [s]
- Travel distance 0.3[m]



3. Ball screw weight  $BW = \rho \times \pi \times \left(\frac{BD}{2}\right)^2 \times BL = 7.9 \times 10^3 \times \pi \times \left(\frac{0.02}{2}\right)^2 \times 0.5 = 1.24$  [kg]

4. Load inertia  $JL = JC + JB = JC + \frac{1}{8}BW \times BD^2 + \frac{WA \cdot BP^2}{4\pi^2} = 0.00001 + (1.24 \times 0.02^2) / 8 + 10 \times 0.02^2 / 4\pi^2 = 1.73 \times 10^{-4}$  [kg·m<sup>2</sup>]

5. Provisional motor selection

In case of MSMF 200 W motor : JM = 0.14 × 10<sup>-4</sup> [kg·m<sup>2</sup>]

6. Calculation of inertia ratio

JL / JM = 1.73 × 10<sup>-4</sup> / 0.14 × 10<sup>-4</sup> Therefore, the inertia ratio is "12.3" (less than "30")  
 (In case of MSMF 100 W motor: JM = 0.048 × 10<sup>-4</sup> Therefore, the inertia ratio is "36.0".)

7. Calculation of maximum velocity (Vmax)

$\frac{1}{2} \times \text{Acceleration time} \times V_{max} + \text{Constant-velocity time} \times V_{max} + \frac{1}{2} \times \text{Deceleration time} \times V_{max} = \text{Travel distance}$   
 $\frac{1}{2} \times 0.1 \times V_{max} + 0.8 \times V_{max} + \frac{1}{2} \times 0.1 \times V_{max} = 0.3$   
 $0.9 \times V_{max} = 0.3$   
 $V_{max} = 0.3 / 0.9 = 0.334$  [m/s]

8. Calculation of motor velocity (N [r/min]) Ball screw lead per resolution: BP = 0.02 [m]

$N = 0.334 / 0.02 = 16.7$  [r/s]  
 $= 16.7 \times 60 = 1002$  [r/min] < 3000 [r/min] (Rated velocity of MSMF 200 W motor)

9. Calculation of torque

Traveling torque  $T_f = \frac{BP}{2\pi B\eta} (\mu g WA + F) = \frac{0.02}{2\pi \times 0.9} (0.1 \times 9.8 \times 10 + 0) = 0.035$  [N·m]

Acceleration torque  $T_a = \frac{(JL + JM) \times 2\pi N [r/s]}{\text{Acceleration time [s]}} + \text{Traveling torque}$   
 $= \frac{(1.73 \times 10^{-4} + 0.14 \times 10^{-4}) \times 2\pi \times 16.7}{0.1} + 0.035 = 0.196 + 0.035 = 0.231$  [N·m]

Deceleration torque  $T_d = \frac{(JL + JM) \times 2\pi N [r/s]}{\text{Deceleration time [s]}} - \text{Traveling torque}$   
 $= \frac{(1.73 \times 10^{-4} + 0.14 \times 10^{-4}) \times 2\pi \times 16.7}{0.1} - 0.035 = 0.196 - 0.035 = 0.161$  [N·m]

10. Verification of maximum torque

Acceleration torque = Ta = 0.231 [N·m] < 1.91 [N·m] (Maximum torque of MSMF 200 W motor)

11. Verification of effective torque

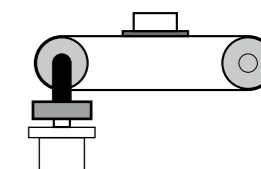
$T_{rms} = \sqrt{\frac{T_a^2 \times t_a + T_f^2 \times t_b + T_d^2 \times t_d}{t_c}}$   
 $= \sqrt{\frac{0.231^2 \times 0.1 + 0.035^2 \times 0.8 + 0.161^2 \times 0.1}{2}} = 0.067$  [N·m] < 0.64 [N·m] (Rated torque of MSMF 200 W motor)

12. Judging from the inertia ratio calculated above, selection of 200 W motor is preferable, although the torque margin is significantly large.

Example of Motor Selection

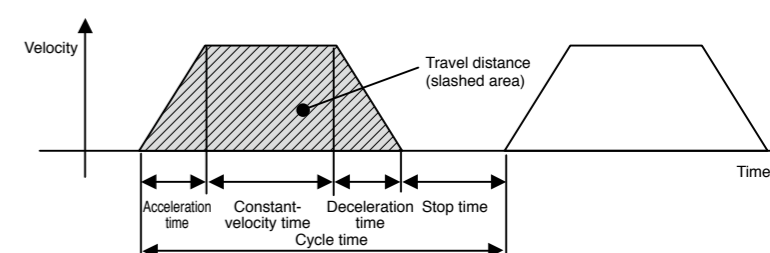
Example of motor selection for timing belt mechanism

1. Mechanism
- Workpiece weight WA = 2[kg] (including belt)
  - Pulley diameter PD = 0.05[m]
  - Pulley weight WP = 0.5[kg] (Use manufacturer-specified catalog value, or calculation value.)
  - Mechanical efficiency Bη = 0.8
  - Coupling inertia Jc = 0 (Direct connection to motor shaft)
  - Belt mechanism inertia JB
  - Pulley inertia JP



2. Running pattern

- Acceleration time ta = 0.1[s]
- Constant-velocity time tb = 0.8[s]
- Deceleration time td = 0.1[s]
- Cycle time tc = 2[s]
- Travel distance 1[m]



3. Load inertia JL = JC + JB + JP

$= JC + \frac{1}{4}WA \times PD^2 + \frac{1}{8}WP \times PD^2 \times 2$   
 $= 0 + \frac{1}{4} \times 2 \times 0.05^2 + \frac{1}{8} \times 0.5 \times 0.05^2 \times 2 = 0.00156 = 15.6 \times 10^{-4}$  [kg·m<sup>2</sup>]

4. Provisional motor selection

In case of MSMF 750 W motor : JM = 0.96 × 10<sup>-4</sup> [kg·m<sup>2</sup>]

5. Calculation of inertia ratio

JL / JM = 15.6 × 10<sup>-4</sup> / 0.96 × 10<sup>-4</sup> Therefore, the inertia ratio is "16.3" (less than "20")

6. Calculation of maximum velocity (Vmax)

$$\frac{1}{2} \times \text{Acceleration time} \times V_{\max} + \text{Constant-velocity time} \times V_{\max} + \frac{1}{2} \times \text{Deceleration time} \times V_{\max} = \text{Travel distance}$$

$$\frac{1}{2} \times 0.1 \times V_{\max} + 0.8 \times V_{\max} + \frac{1}{2} \times 0.1 \times V_{\max} = 1$$

$$0.9 \times V_{\max} = 1$$

$$V_{\max} = 1 / 0.9 = 1.111 [\text{m/s}]$$

7. Calculation of motor velocity (N [r/min])

A single rotation of pulley :  $\pi \times PD = 0.157 [\text{m}]$

$$N = 1.111 / 0.157 = 7.08 [\text{r/s}]$$

$$= 7.08 \times 60 = 424.8 [\text{r/min}] < 3000 [\text{r/min}] \text{ (Rated velocity of MSMF 750 W motor)}$$

8. Calculation of torque

Traveling torque  $T_f = \frac{PD}{2\gamma} (\mu g W_A + F) = \frac{0.05}{2 \times 0.8} (0.1 \times 9.8 \times 3 + 0)$

$$= 0.061 [\text{N}\cdot\text{m}]$$

Acceleration torque  $T_a = \frac{(J_L + J_M) \times 2\pi N [\text{r/s}]}{\text{Acceleration time} [\text{s}]} + \text{Traveling torque}$

$$= \frac{(15.6 \times 10^{-4} + 0.96 \times 10^{-4}) \times 2\pi \times 7.08}{0.1} + 0.061$$

$$= 0.736 + 0.061 = 0.797 [\text{N}\cdot\text{m}]$$

Deceleration torque  $T_d = \frac{(J_L + J_M) \times 2\pi N [\text{r/s}]}{\text{Deceleration time} [\text{s}]} - \text{Traveling torque}$

$$= \frac{(15.6 \times 10^{-4} + 0.96 \times 10^{-4}) \times 2\pi \times 7.08}{0.1} - 0.061$$

$$= 0.736 - 0.061 = 0.675 [\text{N}\cdot\text{m}]$$

9. Verification of maximum torque

Acceleration torque  $T_a = 0.797 [\text{N}\cdot\text{m}] < 7.1 [\text{N}\cdot\text{m}]$  (Maximum torque of MSMF 750 W motor)

10. Verification of effective torque

$$T_{\text{rms}} = \sqrt{\frac{T_a^2 \times t_a + T_f^2 \times t_b + T_d^2 \times t_d}{t_c}}$$

$$= \sqrt{\frac{0.797^2 \times 0.1 + 0.061^2 \times 0.8 + 0.675^2 \times 0.1}{2}}$$

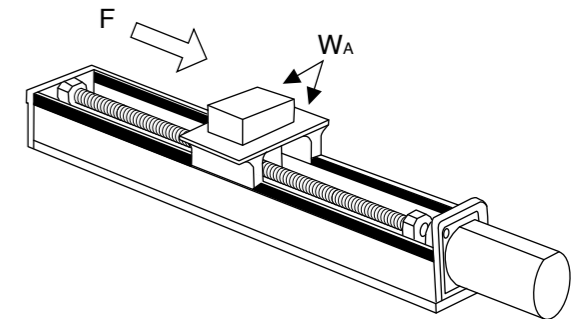
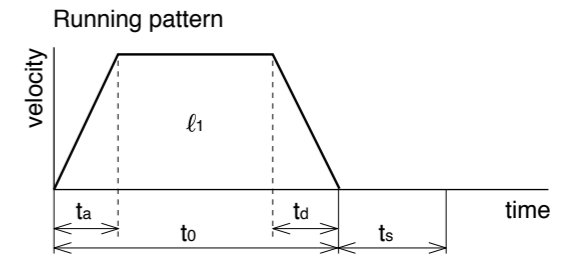
$$= 0.237 [\text{N}\cdot\text{m}] < 2.4 [\text{N}\cdot\text{m}] \text{ (Rated torque of MSMF 750 W motor)}$$

11. Judging from the above calculation result, selection of MSMF 750W motor is acceptable.

Request for motor selection I : Ball screw drive

1. Driven mechanism and running data

- 1) Travel distance of the work load per one cycle  mm
- 2) Cycle time  s  
(Fill in items 3) and 4) if required.)
- 3) Acceleration time  s
- 4) Deceleration time  s
- 5) Stopping time  s
- 6) Max. velocity  mm/s
- 7) External force  N
- 8) Positioning accuracy of the work load  mm
- 9) Total weight of the work load and the table  kg
- 10) Power supply voltage  V
- 11) Diameter of the ball screw  mm
- 12) Total length of the ball  mm
- 13) Lead of the ball screw  mm



14) Traveling direction (horizontal, vertical etc.)

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name : \_\_\_\_\_

Department/Section : \_\_\_\_\_

Name : \_\_\_\_\_

Address : \_\_\_\_\_

Tel : \_\_\_\_\_

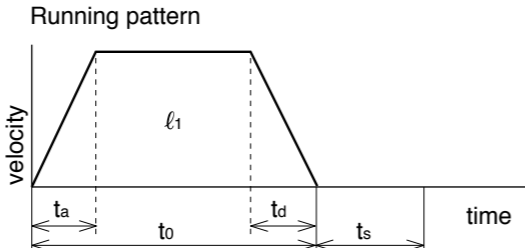
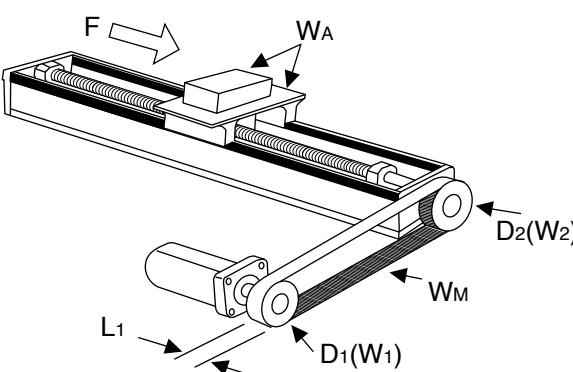
Fax : \_\_\_\_\_

E-mail address: \_\_\_\_\_

## Request Sheet for Motor Selection

### Request for motor selection II : Timing pulley + Ball screw drive

#### 1. Driven mechanism and running data

		Motor side	Ball screw side
1) Travel distance of the work load per one cycle	$l_1$ : <input type="text"/> mm	15) Diameter of the pulley	$D_1$ : <input type="text"/> mm $D_2$ : <input type="text"/> mm
2) Cycle time	$t_0$ : <input type="text"/> s	16) Weight of the pulley	$W_1$ : <input type="text"/> kg $W_2$ : <input type="text"/> kg
(Fill in items 3) and 4) if required.)		(or item 17) and 18))	
3) Acceleration time	$t_a$ : <input type="text"/> s	17) Width of the pulley	$L_1$ : <input type="text"/> mm
4) Deceleration time	$t_d$ : <input type="text"/> s	18) Material of the pulley	<input type="text"/>
5) Stopping time	$t_s$ : <input type="text"/> s	19) Weight of the belt	$W_M$ : <input type="text"/> kg
6) Max. velocity	$V$ : <input type="text"/> mm/s		
7) External force	$F$ : <input type="text"/> N		
8) Positioning accuracy of the work load	$\pm$ <input type="text"/> mm		
9) Total weight of the work load and the table	$W_A$ : <input type="text"/> kg		
10) Power supply voltage	<input type="text"/> V		
11) Diameter of the ball screw	<input type="text"/> mm		
12) Total length of the ball screw	<input type="text"/> mm		
13) Lead of the ball screw	<input type="text"/> mm		
14) Traveling direction (horizontal, vertical etc.)	<input type="text"/>		

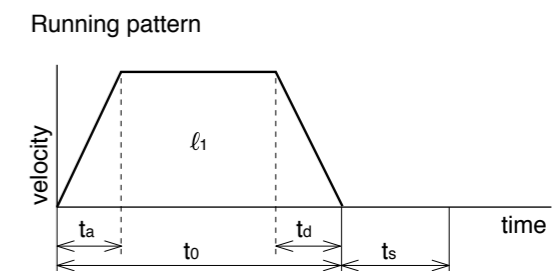
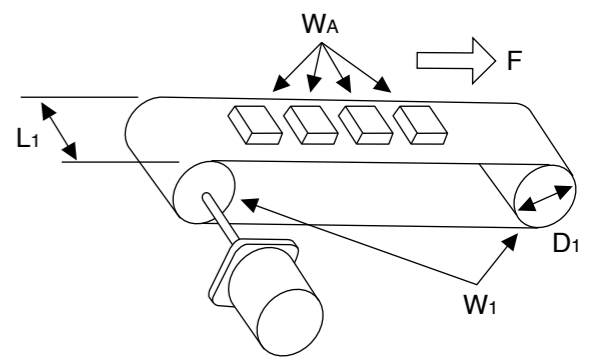
#### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :	<input type="text"/>
Department/Section :	<input type="text"/>
Name :	<input type="text"/>
Address :	<input type="text"/>
Tel :	<input type="text"/>
Fax :	<input type="text"/>
E-mail address:	<input type="text"/>

## Request Sheet for Motor Selection

### Request for motor selection III : Belt drive

#### 1. Driven mechanism and running data

1) Travel distance of the work load per one cycle	$l_1$ : <input type="text"/> mm		
2) Cycle time	$t_0$ : <input type="text"/> s		
(Fill in items 3) and 4) if required.)			
3) Acceleration time	$t_a$ : <input type="text"/> s		
4) Deceleration time	$t_d$ : <input type="text"/> s		
5) Stopping time	$t_s$ : <input type="text"/> s		
6) Max. velocity	$V$ : <input type="text"/> mm/s		
7) External force	$F$ : <input type="text"/> N		
8) Positioning accuracy of the work load	$\pm$ <input type="text"/> mm	(or item 14) and 15))	
9) Total weight of the work load	$W_A$ : <input type="text"/> kg	14) Width of the pulley	$L_1$ : <input type="text"/> mm
10) Power supply voltage	<input type="text"/> V	15) Material of the pulley	<input type="text"/>
11) Weight of the belt	$W_M$ : <input type="text"/> kg	16) Traveling direction (horizontal, vertical etc.)	<input type="text"/>
12) Diameter of the driving pulley	$D_1$ : <input type="text"/> mm		
13) Total weight of the pulley	$W_1$ : <input type="text"/> kg		

#### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :	<input type="text"/>
Department/Section :	<input type="text"/>
Name :	<input type="text"/>
Address :	<input type="text"/>
Tel :	<input type="text"/>
Fax :	<input type="text"/>
E-mail address:	<input type="text"/>



# Request Sheet for Motor Selection

## Request for motor selection IV : Timing pulley + Belt drive

### 1. Driven mechanism and running data

1) Travel distance of the work load per one cycle  mm

2) Cycle time  s

(Fill in items 3) and 4) if required.)

3) Acceleration time  s

4) Deceleration time  s

5) Stopping time  s

6) Max. velocity  mm/s

7) External force  N

8) Positioning accuracy of the work load  mm

9) Total weight of the work load  kg

10) Power supply voltage

11) Weight of motor side belt  kg

	Motor side	Belt side
12) Diameter of the pulley	<input type="text" value="D&lt;sub&gt;1&lt;/sub&gt;"/> mm	<input type="text" value="D&lt;sub&gt;2&lt;/sub&gt;"/> mm
13) Weight of the pulley	<input type="text" value="W&lt;sub&gt;1&lt;/sub&gt;"/> kg	<input type="text" value="W&lt;sub&gt;2&lt;/sub&gt;"/> kg

(or item 14) and 15))

14) Width of the belt  mm

15) Material of the pulley

	Motor side	Belt side
16) Diameter of the pulley	<input type="text" value="D&lt;sub&gt;3&lt;/sub&gt;"/> mm	<input type="text" value="D&lt;sub&gt;4&lt;/sub&gt;"/> mm
17) Weight of the pulley	<input type="text" value="W&lt;sub&gt;3&lt;/sub&gt;"/> kg	<input type="text" value="W&lt;sub&gt;4&lt;/sub&gt;"/> kg

(or item 18) and 19))

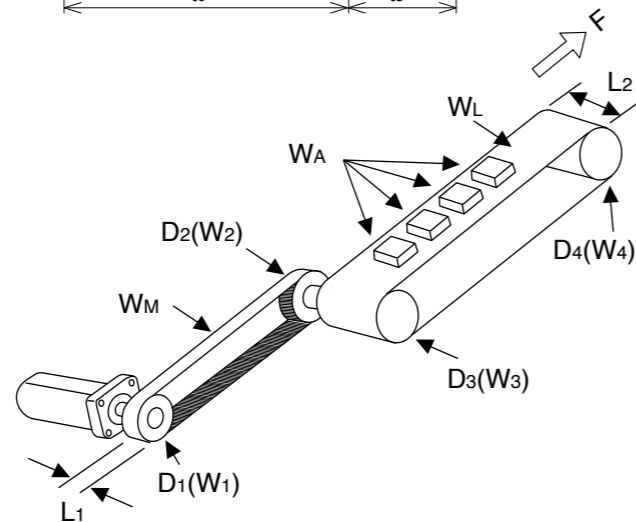
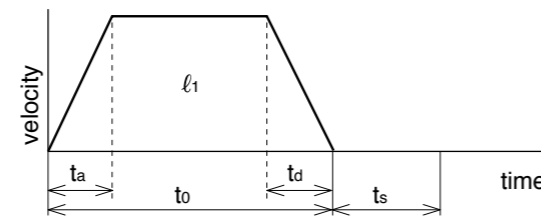
18) Width of the pulley  mm

19) Material of the pulley

20) Weight of the belt  kg

21) Traveling direction (horizontal, vertical etc.)

Running pattern



### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

	Company name : _____
	Department/Section : _____
	Name : _____
	Address : _____
	Tel : _____
	Fax : _____
	E-mail address: _____

# Request Sheet for Motor Selection

## Request for motor selection V : Turntable drive

### 1. Driven mechanism and running data

1) Travel distance of the work load per one cycle  deg

2) Cycle time  s

(Fill in items 3) and 4) if required.)

3) Acceleration time  s

4) Deceleration time  s

5) Stopping time  s

6) Max. rotational speed of the table  deg/s

(or)  r/s

7) Positioning accuracy of the work load  deg

8) Weight of one work load  kg

9) Driving radius of the center of gravity of the work  mm

10) Diameter of the table  mm

11) Mass of the table  kg

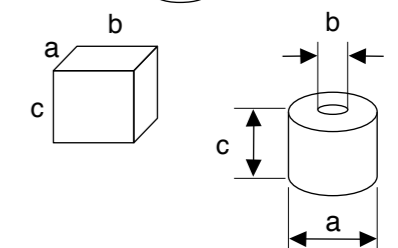
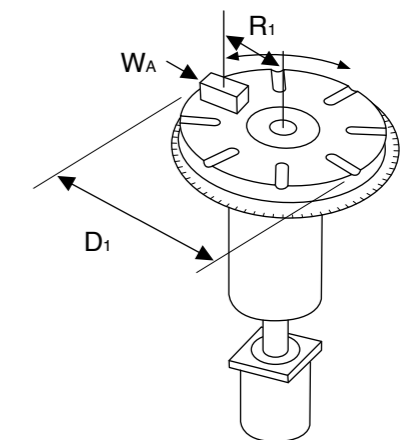
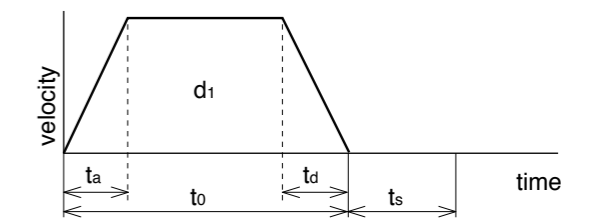
12) Diameter of the table support  mm

13) Power supply voltage

	Prism	Cylinder
14) Dimensions of the work load	<input type="text" value="a"/> mm	<input type="text" value="a"/> mm
	<input type="text" value="b"/> mm	<input type="text" value="b"/> mm
	<input type="text" value="c"/> mm	<input type="text" value="c"/> mm

15) Number of work loads  pcs

Running pattern



### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

	Company name : _____
	Department/Section : _____
	Name : _____
	Address : _____
	Tel : _____
	Fax : _____
	E-mail address: _____

# Request Sheet for Motor Selection

## Request for motor selection VI : Timing pulley + Turntable drive

### 1. Driven mechanism and running data

1) Travel distance of the work load per one cycle	$d_1$ : deg	16) Diameter of the pulley	Motor side $D_2$ : mm	Turntable side $D_3$ : mm
2) Cycle time	$t_o$ : s	17) Weight of the pulley	$W_2$ : kg	$W_3$ : kg
(Fill in items 3) and 4) if required.)		(or item 18) and 19))		
3) Acceleration time	$t_a$ : s	18) Width of the pulley	$L_1$ : mm	
4) Deceleration time	$t_d$ : s	19) Material of the pulley		
5) Stopping time	$t_s$ : s	20) Weight of the belt	$W_M$ : kg	
6) Max. rotational speed of the table	$v$ : deg/s			
(or)	$V$ : r/s			
7) Positioning accuracy of the work load	$\pm$ deg			
8) Weight of one work load	$W_A$ : kg			
9) Driving radius of the center of gravity of the work	$R_1$ : mm			
10) Diameter of the table	$D_1$ : mm			
11) Mass of the table	$W_1$ : kg			
12) Diameter of the table support	$T_1$ : mm			
13) Power supply voltage	V	14) Dimension of the work load (Prism)      (Cylinder) a: mm    a: mm b: mm    b: mm c: mm    c: mm		
15) Number of work loads	pcs			

### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

	Company name : _____
	Department/Section : _____
	Name : _____
	Address : _____
	Tel : _____
	Fax : _____
	E-mail address: _____

# Request Sheet for Motor Selection

## Request for motor selection VII : Roller feed drive

### 1. Driven mechanism and running data

1) Travel distance of the work load per one cycle	$l_1$ : mm		
2) Cycle time	$t_o$ : s		
(Fill in items 3) and 4) if required.)			
3) Acceleration time	$t_a$ : s		
4) Deceleration time	$t_d$ : s	(or item 13) and 14))	
5) Stopping time	$t_s$ : s		
6) Max. velocity	$v$ : mm/s	13) Width of the roller	$L_1$ : mm
7) External pulling force	$F$ : N	14) Material of the roller	
8) Positioning accuracy of the work load	$\pm$ mm	15) Number of rollers: pcs 16) Power supply voltage: V 17) Diameter of the roller: $D_1$ : mm 18) Mass of the roller: $W_1$ : kg	
9) Number of rollers			
10) Power supply voltage			

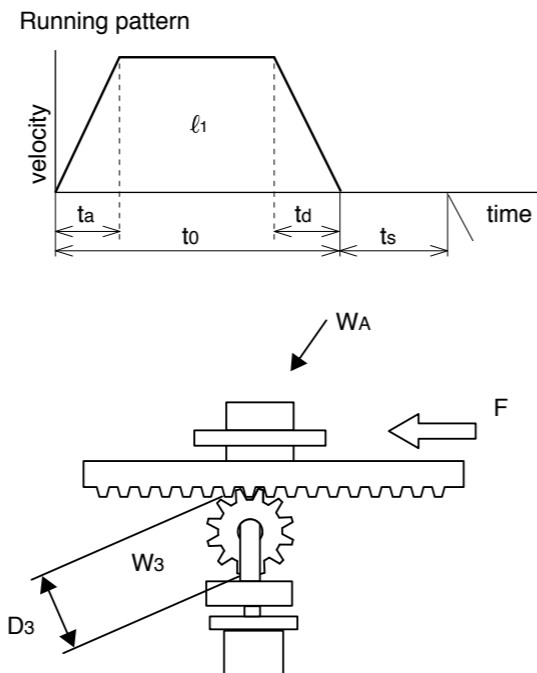
### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

	Company name : _____
	Department/Section : _____
	Name : _____
	Address : _____
	Tel : _____
	Fax : _____
	E-mail address: _____

## Request for motor selection VIII : Driving with Rack & Pinion

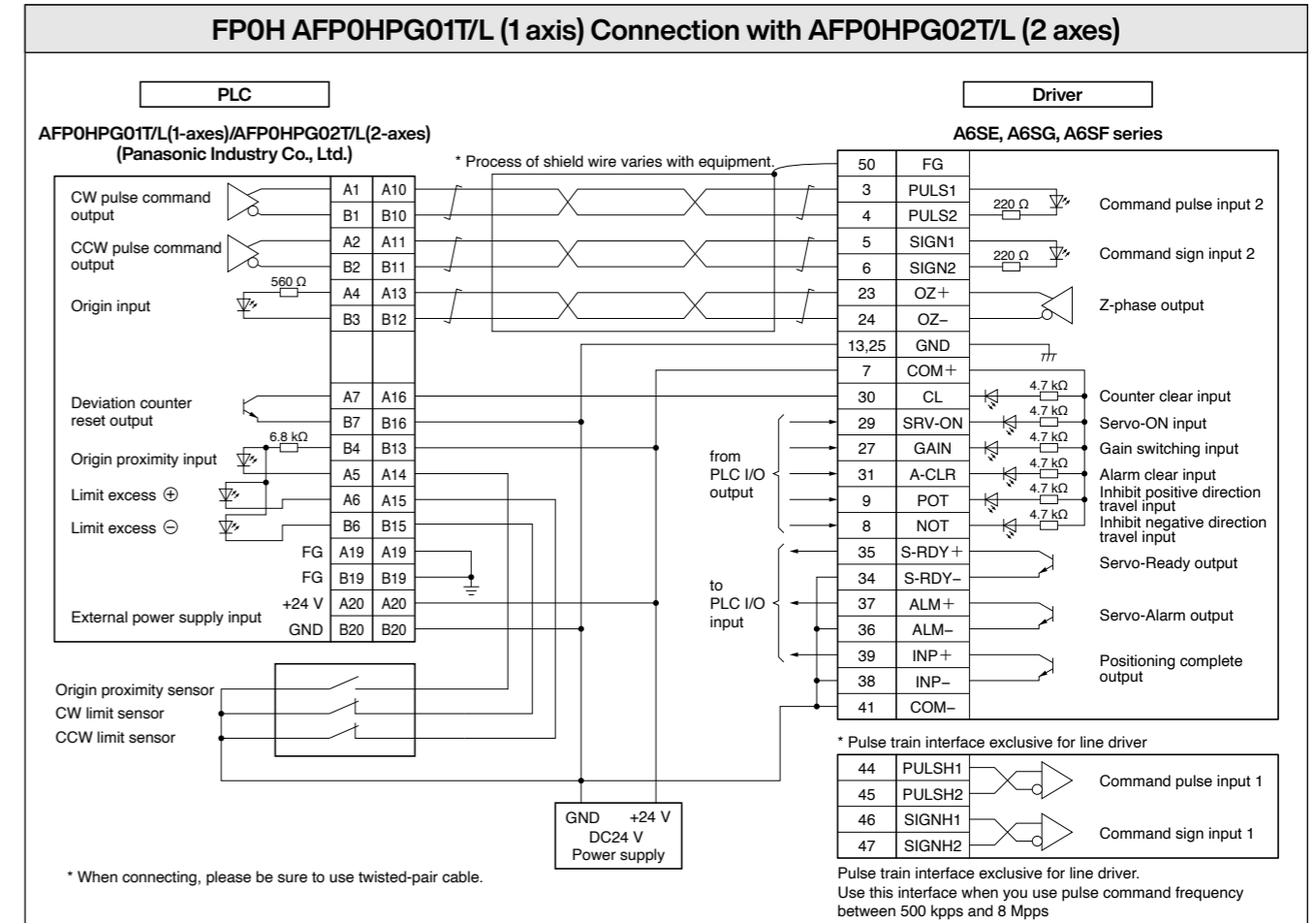
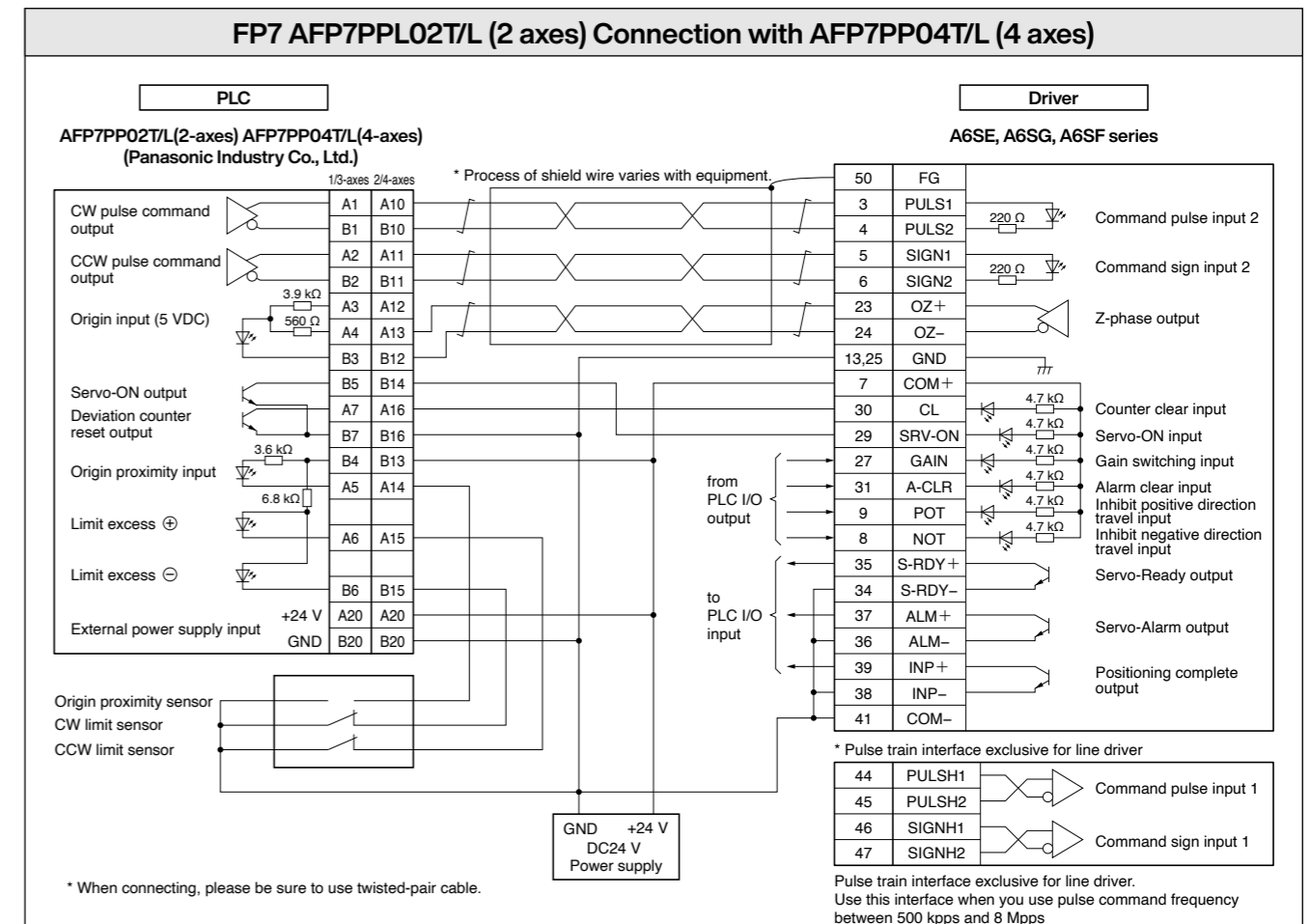
### 1. Driven mechanism and running data

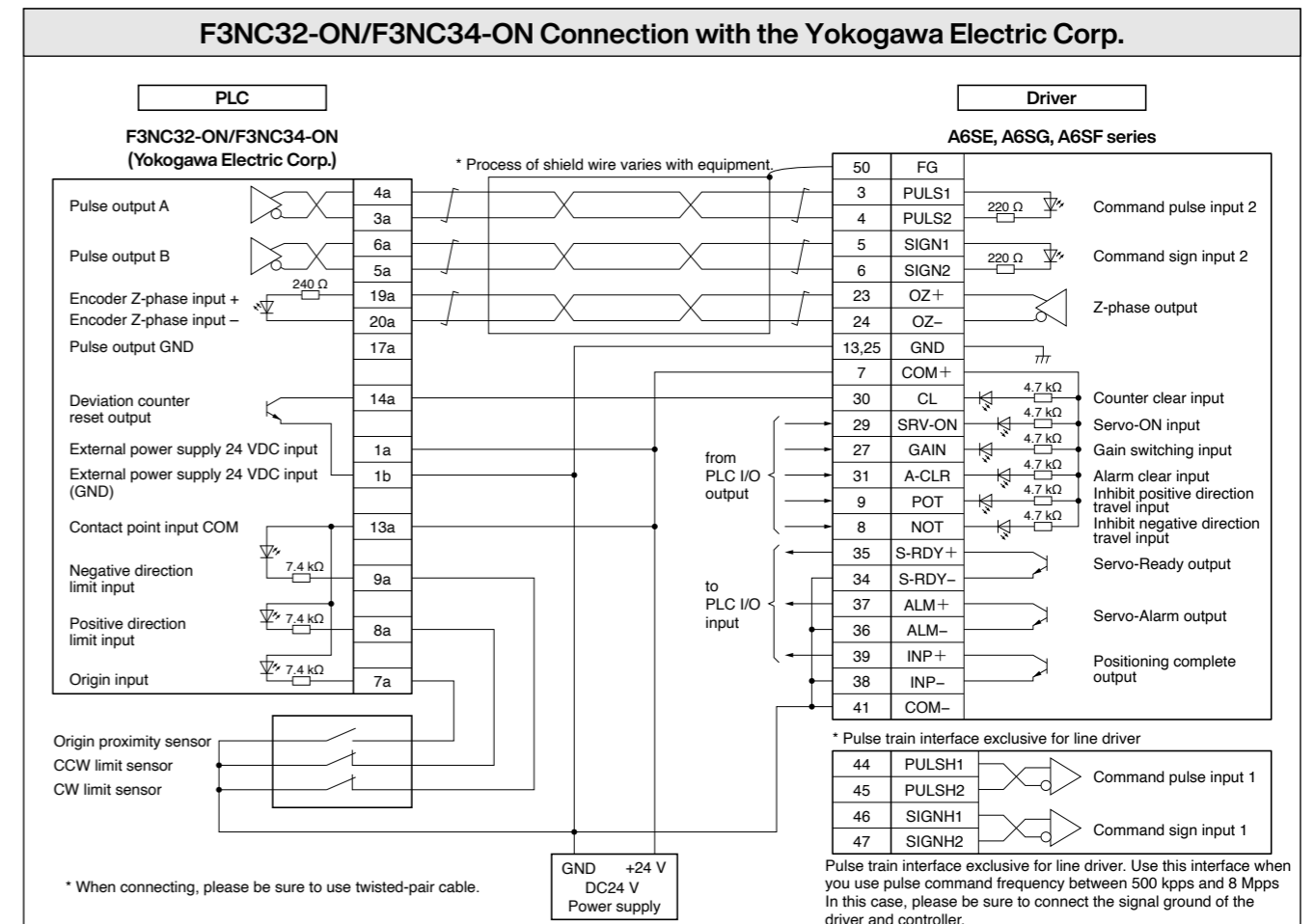
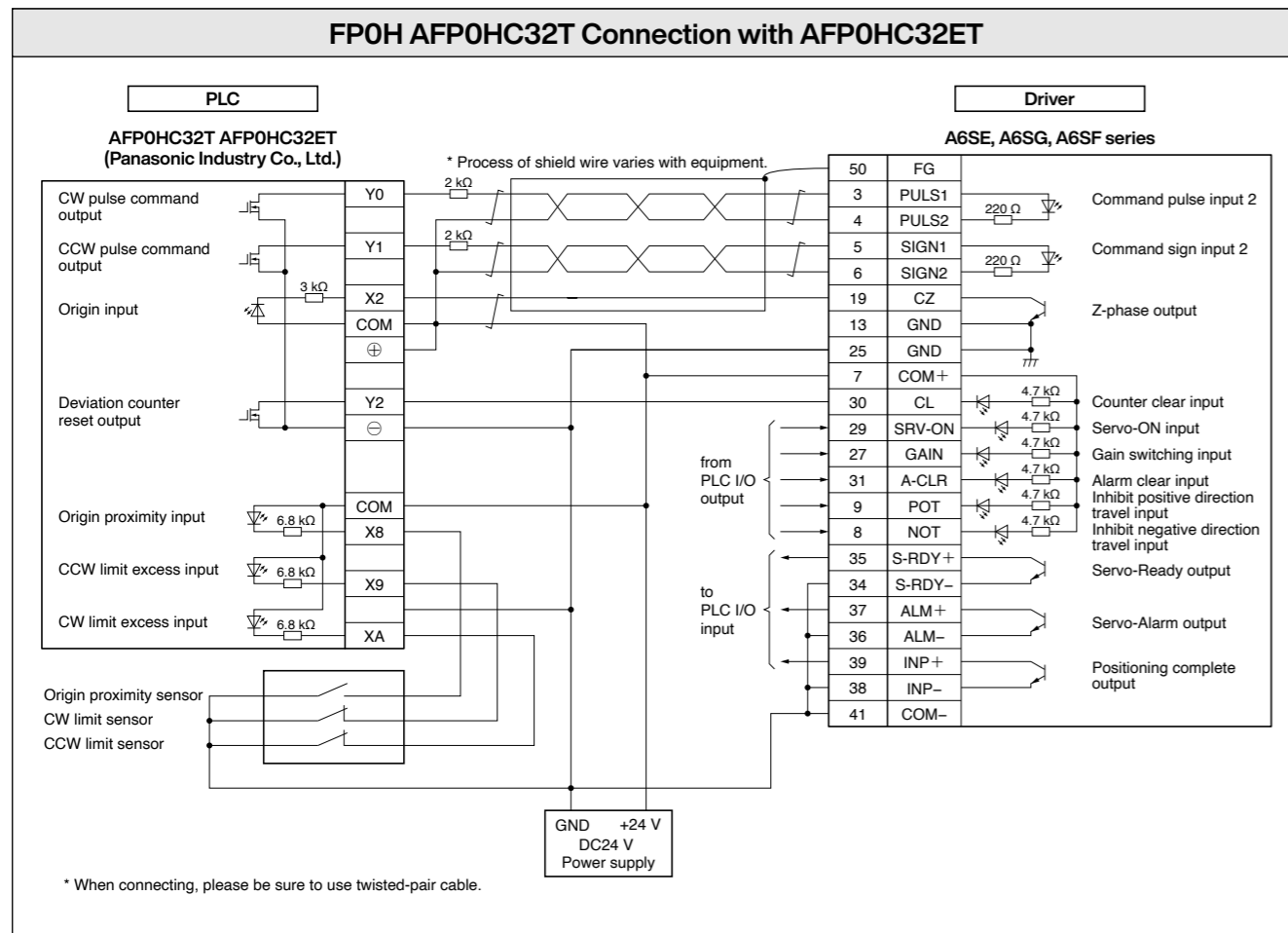
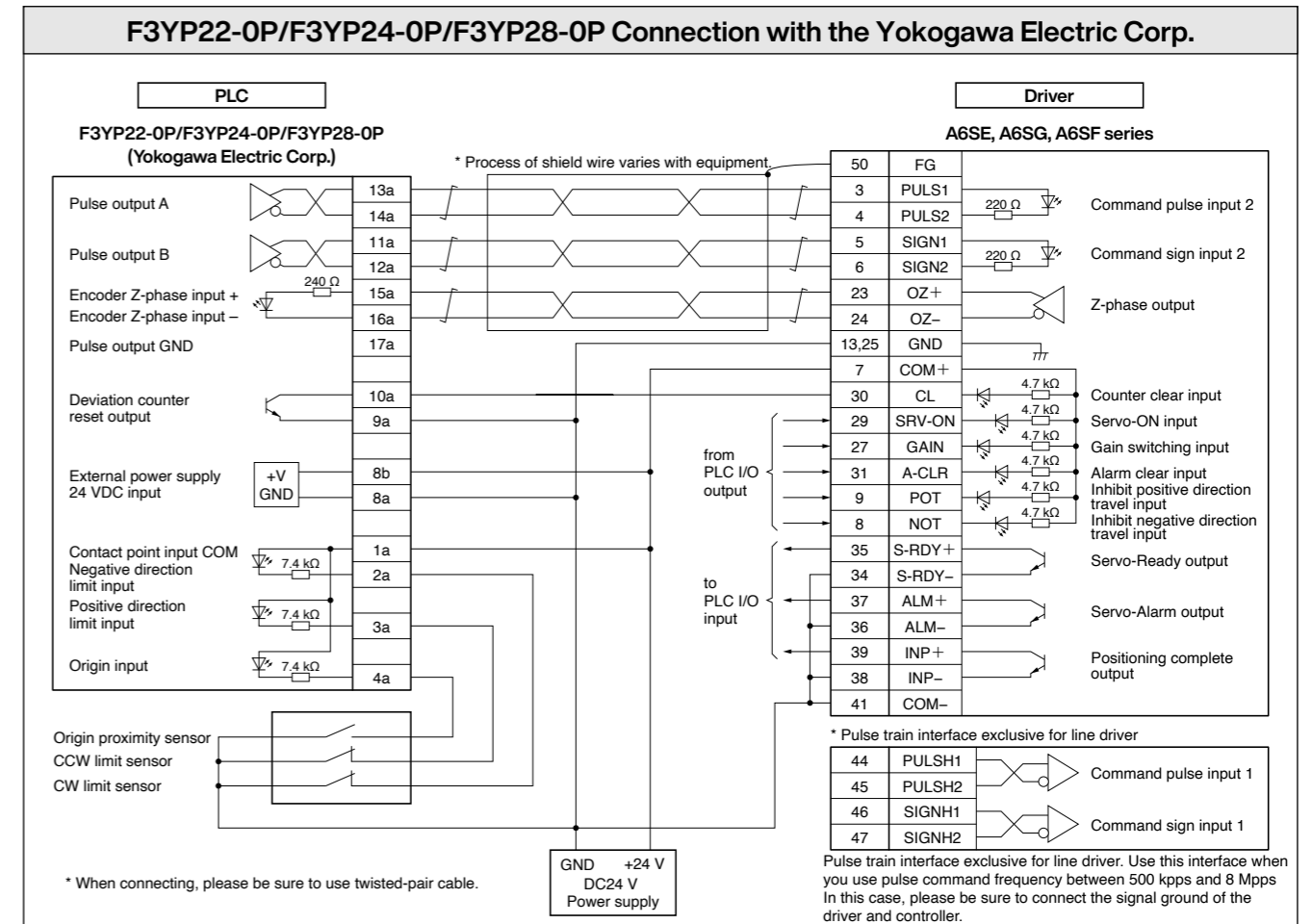
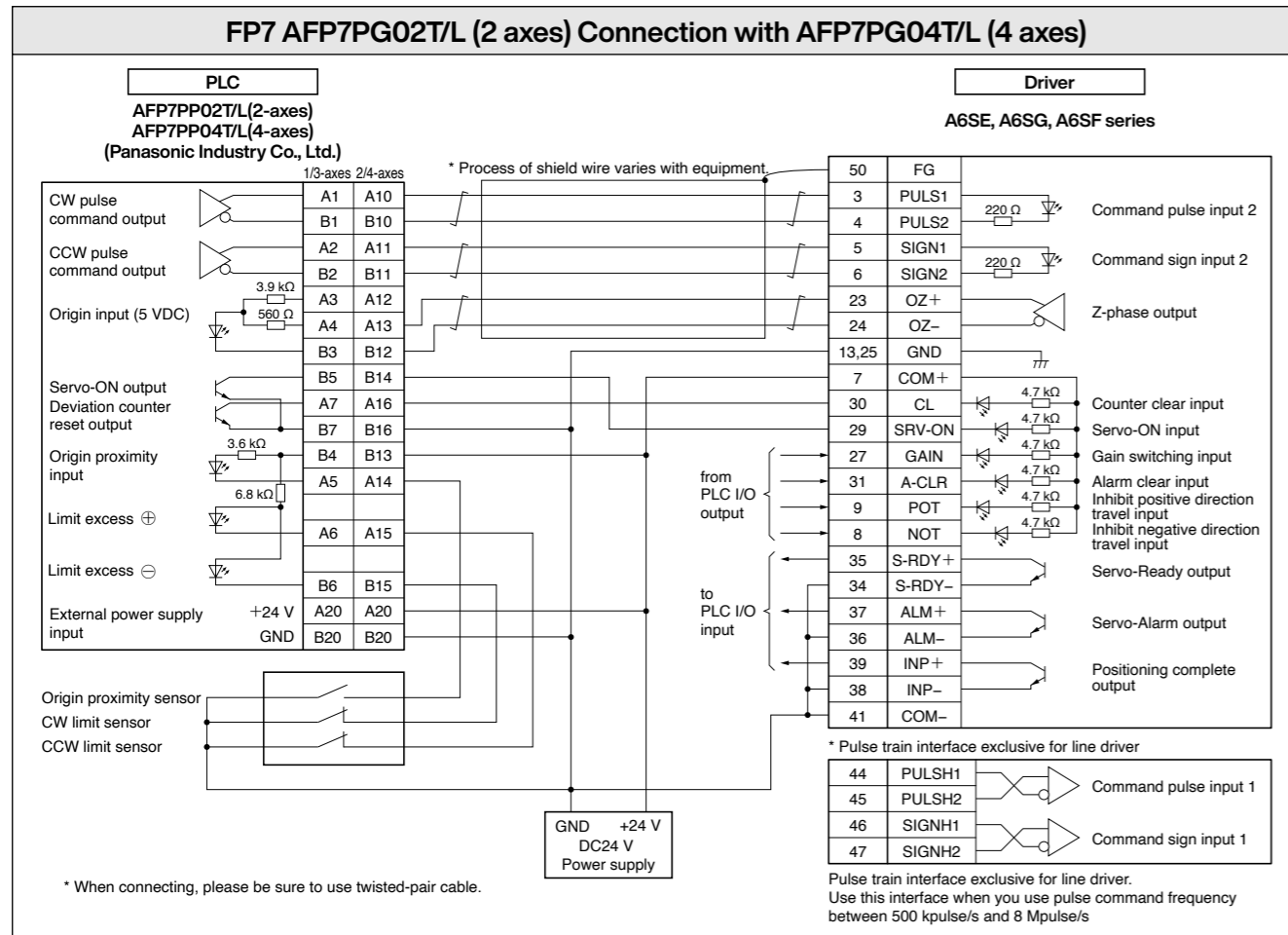
- 1) Travel distance of the work load per one cycle mm
- 2) Cycle time s
- (Fill in items 3) and 4) if required.)
- 3) Acceleration time s
- 4) Deceleration time s
- 5) Stopping time s
- 6) Max. velocity mm/s
- 7) External force N
- 8) Positioning accuracy of the work load mm
- 9) Total weight of the work load kg
- 10) Power supply voltage V
- 11) Diameter of the pinion mm
- 12) Mass of the pinion kg
- 13) Traveling direction (horizontal, vertical, etc.)

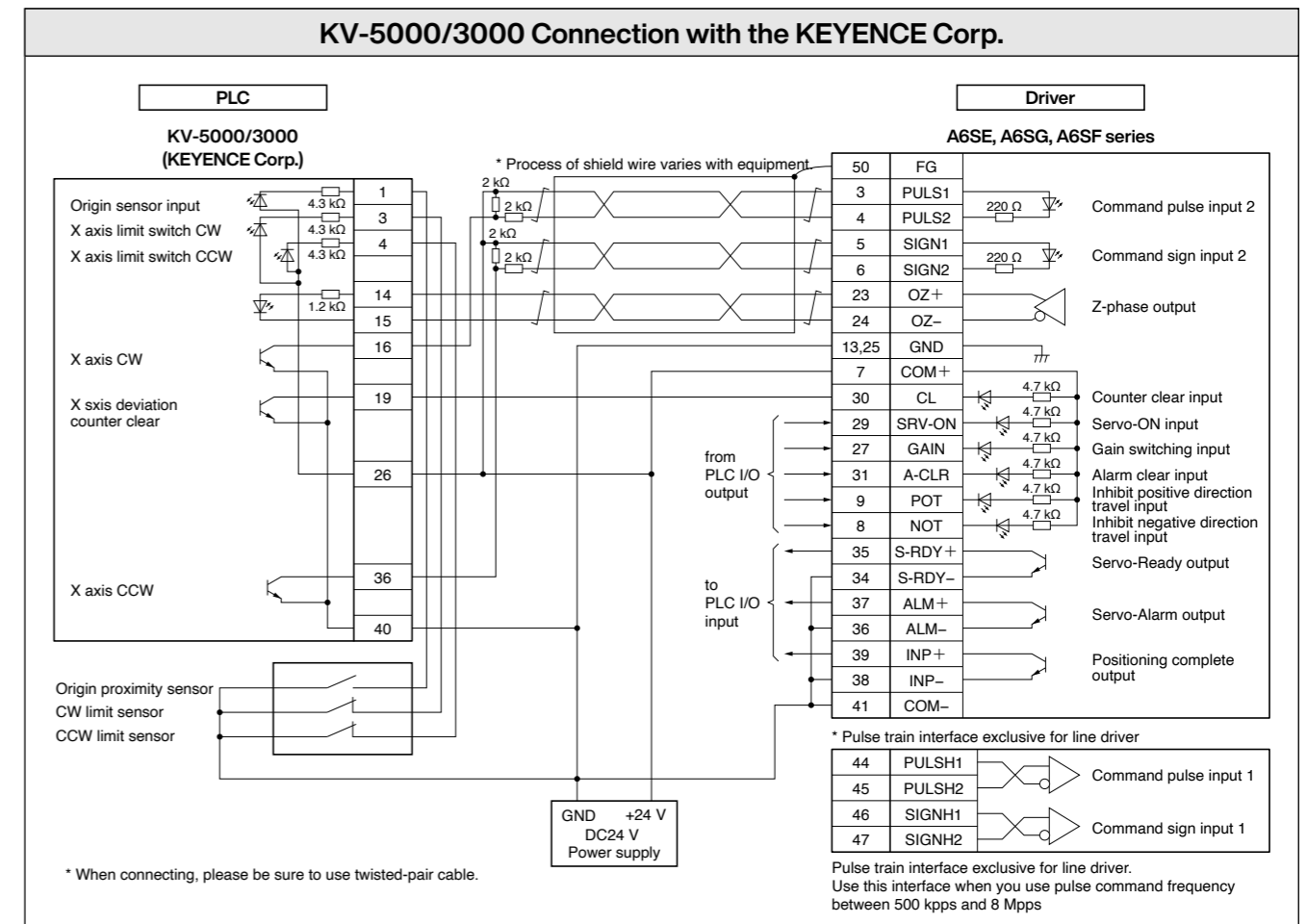
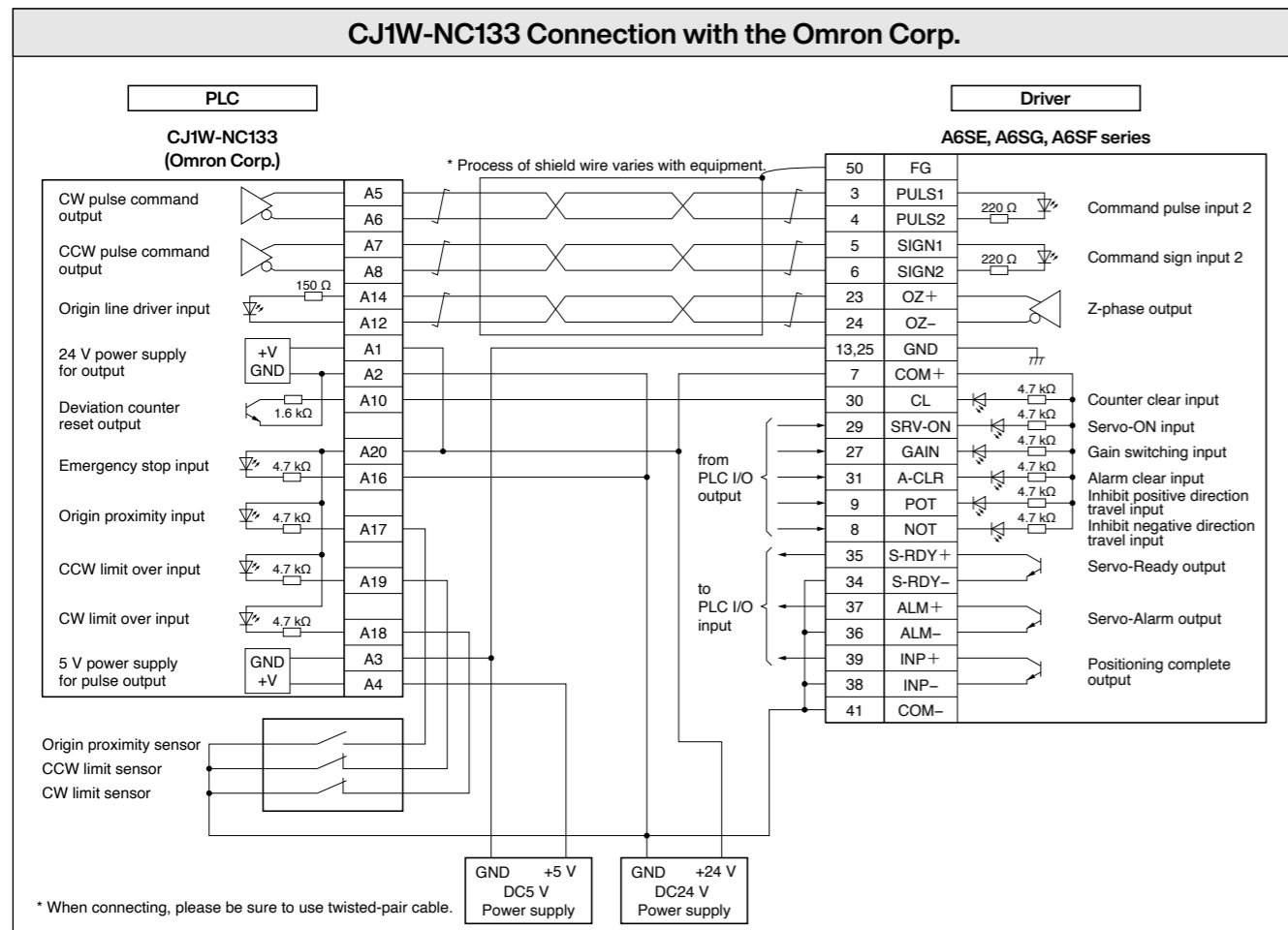
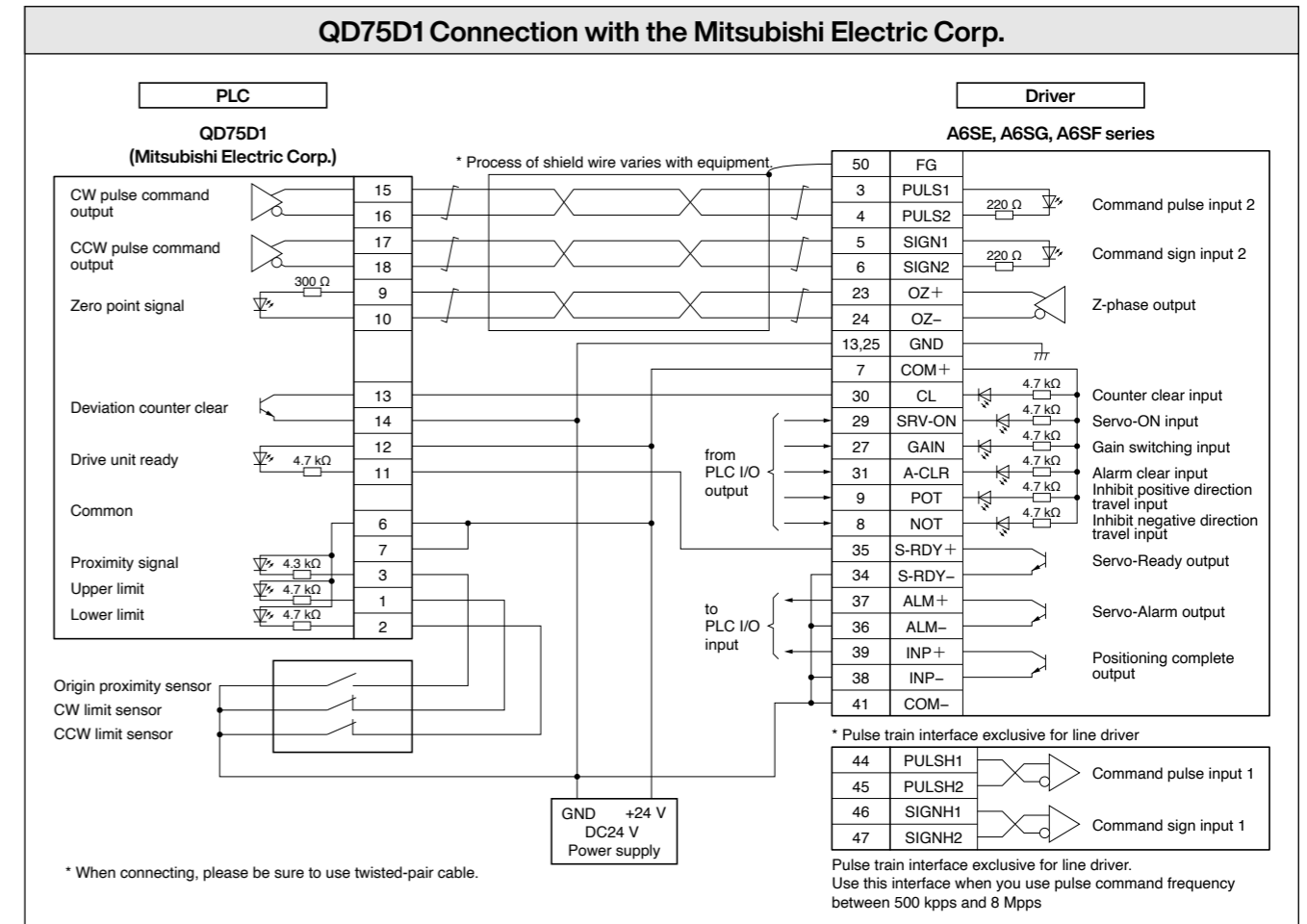
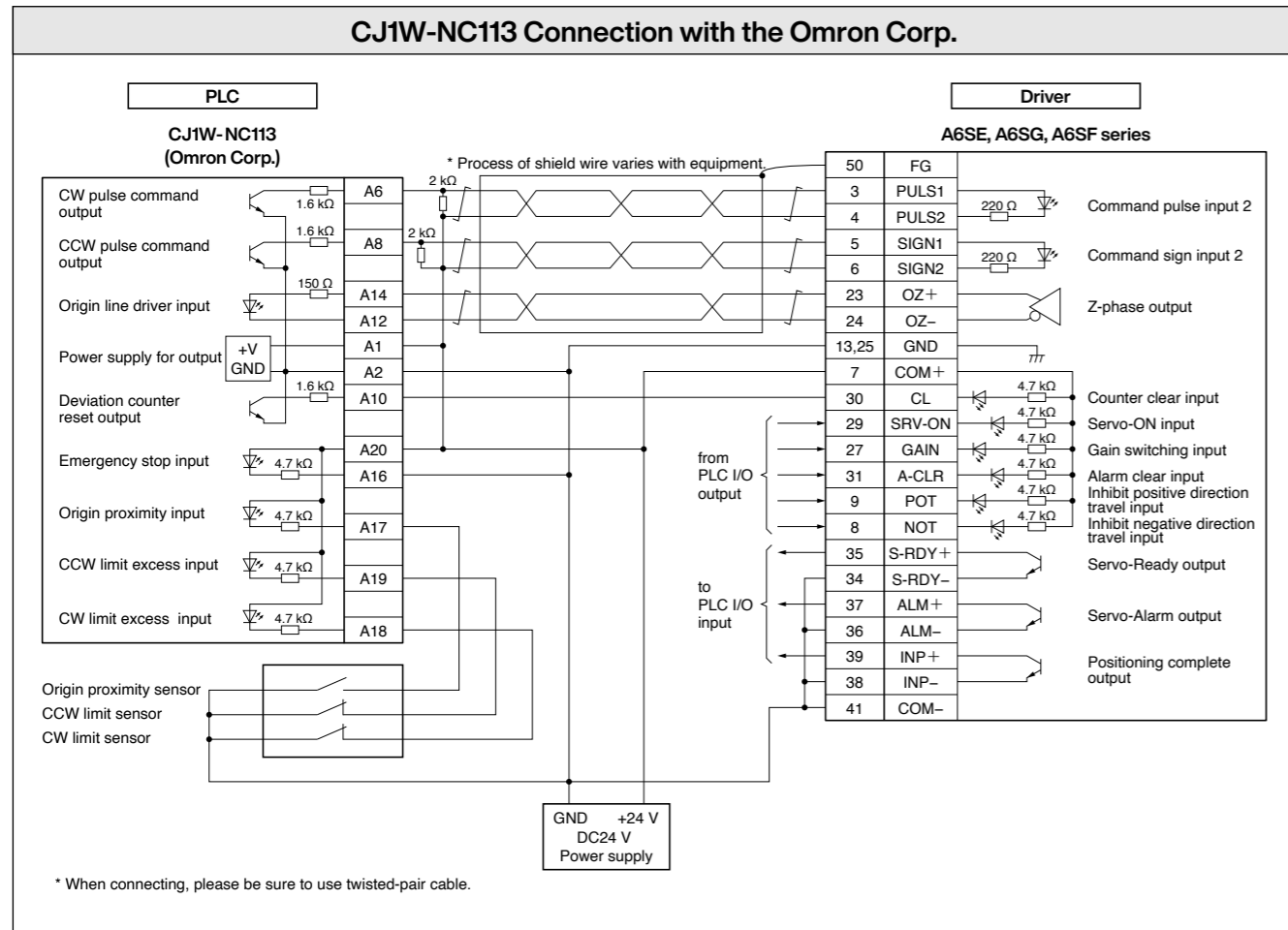


### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

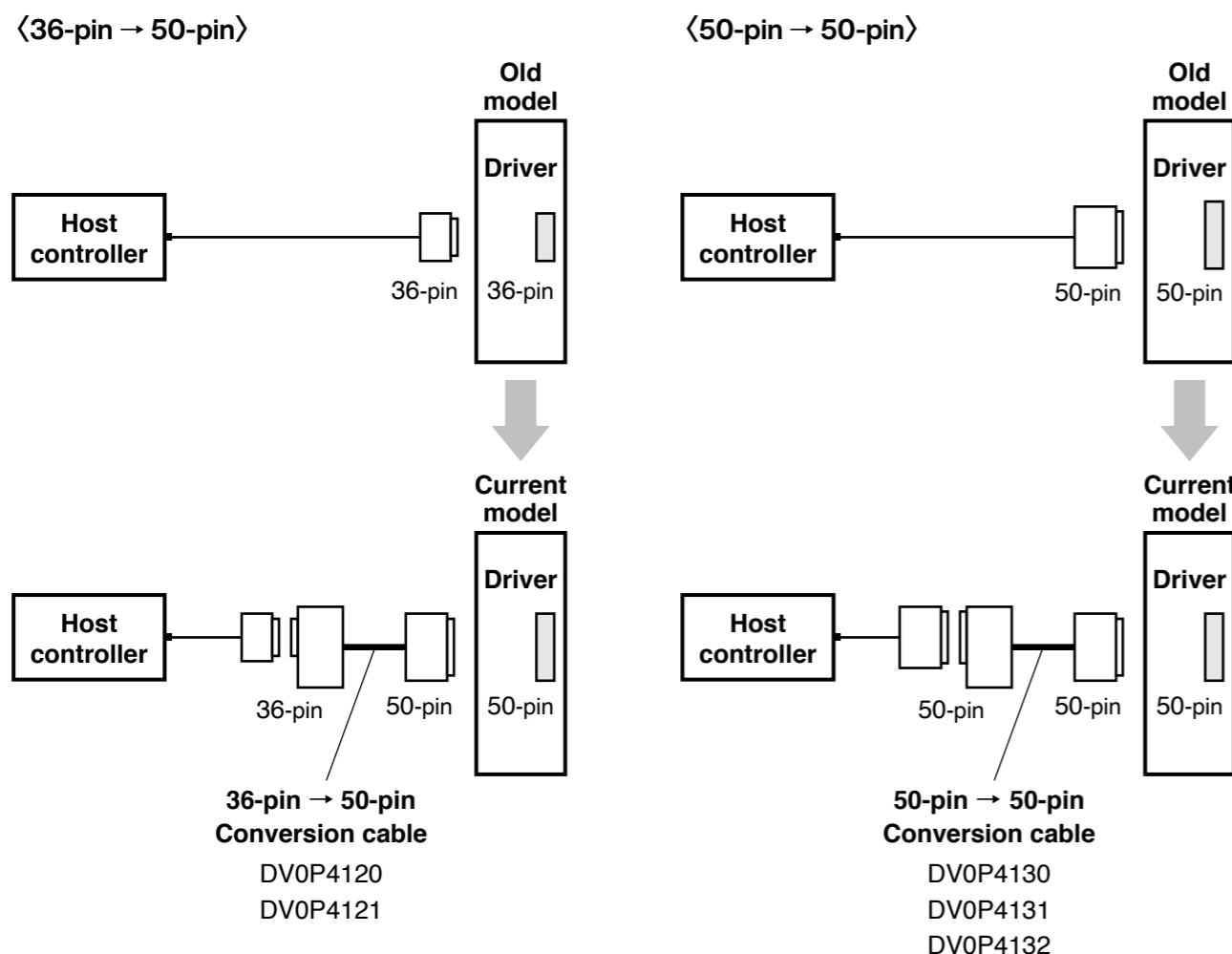
Company name :	
Department/Section :	
Name :	
Address :	
Tel :	
Fax :	
E-mail address:	







For easier replacement of old driver (MINAS X/XX/V series) with A6 series, use the interface conversion connector.



When selecting the cable, refer to the table below because the part number of the cable is specific to the control mode of the old model.

Old model	Control mode	Conversion cable part No.	Conversion wiring table
X series XX series (36-pin)	Position/velocity control	DV0P4120	P.440
	Torque control	DV0P4121	
V series (50-pin)	Position control	DV0P4130	P.441
	Velocity control	DV0P4131	
	Torque control	DV0P4132	P.442

\* For external dimensions, refer to P.322.

**Conversion Wiring Table**

Pin No. on Old Model	DV0P4120			DV0P4121		
	Pin No. on Current Model	Signal Name	Symbol	Pin No. on Current Model	Signal Name	Symbol
1	23	Z-phase output	OZ+	23	Z-phase output	OZ+
2	24	Z-phase output	OZ-	24	Z-phase output	OZ-
3	13	Signal ground	GND	13	Signal ground	GND
4	19	Z-phase output	CZ	19	Z-phase output	CZ
5	4	Command pulse input 2	PULS2	4	Command pulse input 2	PULS2
6	3	Command pulse input 2	PULS1	3	Command pulse input 2	PULS1
7	6	Command pulse sign input 2	SIGN2	6	Command pulse sign input 2	SIGN2
8	5	Command pulse sign input 2	SIGN1	5	Command pulse sign input 2	SIGN1
9	33	Command pulse inhibition input	INH	33	Command pulse inhibition input	INH
10	26	Speed zero clamp input	ZEROSPD	26	Speed zero clamp input	ZEROSPD
11	7	Power supply for control signal (+)	COM+	7	Power supply for control signal (+)	COM+
12	29	Servo-ON input	SRV-ON	29	Servo-ON input	SRV-ON
13	30	Deviation counter clear input	CL	30	Deviation counter clear input	CL
14	14	Speed command input	SPR	NC		
15	15	Signal ground	GND	15	Signal ground	GND
16	43	Speed monitor output	SP	43	Speed monitor output	SP
17	25	Signal ground	GND	25	Signal ground	GND
18	50	Frame ground	FG	50	Frame ground	FG
19	21	A-phase output	OA+	21	A-phase output	OA+
20	22	A-phase output	OA-	22	A-phase output	OA-
21	48	B-phase output	OB+	48	B-phase output	OB+
22	49	B-phase output	OB-	49	B-phase output	OB-
23	NC			NC		
24	NC			NC		
25	39	Positioning complete output Speed arrival output	COIN+ AT-SPEED+	39	Positioning complete output Speed arrival output	COIN+ AT-SPEED+
26	37	Servo-Alarm output	ALM+	37	Servo-Alarm output	ALM+
27	35	Servo-Ready output	S-RDY+	35	Servo-Ready output	S-RDY+
28	34	Positioning complete output (-) Speed arrival output (-)	COIN- AT-SPEED-	34	Positioning complete output (-) Speed arrival output (-)	COIN- AT-SPEED-
	36	Servo-Alarm output (-)	ALM-	36	Servo-Alarm output (-)	ALM-
	38	Servo-Ready output (-)	S-RDY-	38	Servo-Ready output (-)	S-RDY-
	41	Power supply for control signal (-)	COM-	41	Power supply for control signal (-)	COM-
29	8	CW over-travel inhibit input	CWL	8	CW over-travel inhibit input	CWL
30	9	CCW over-travel inhibit input	CCWL	9	CCW over-travel inhibit input	CCWL
31	31	Alarm clear input	A-CLR	31	Alarm clear input	A-CLR
32	32	Control mode switching input	C-MODE	32	Control mode switching input	C-MODE
33	18	CW direction torque limit input	CWTL	18	CW direction torque limit input	CWTL
34	16	CCW direction torque limit input	CCWTL	14	Torque command input	TRQR
35	17	Signal ground	GND	17	Signal ground	GND
36	42	Torque monitor output	IM	42	Torque monitor output	IM

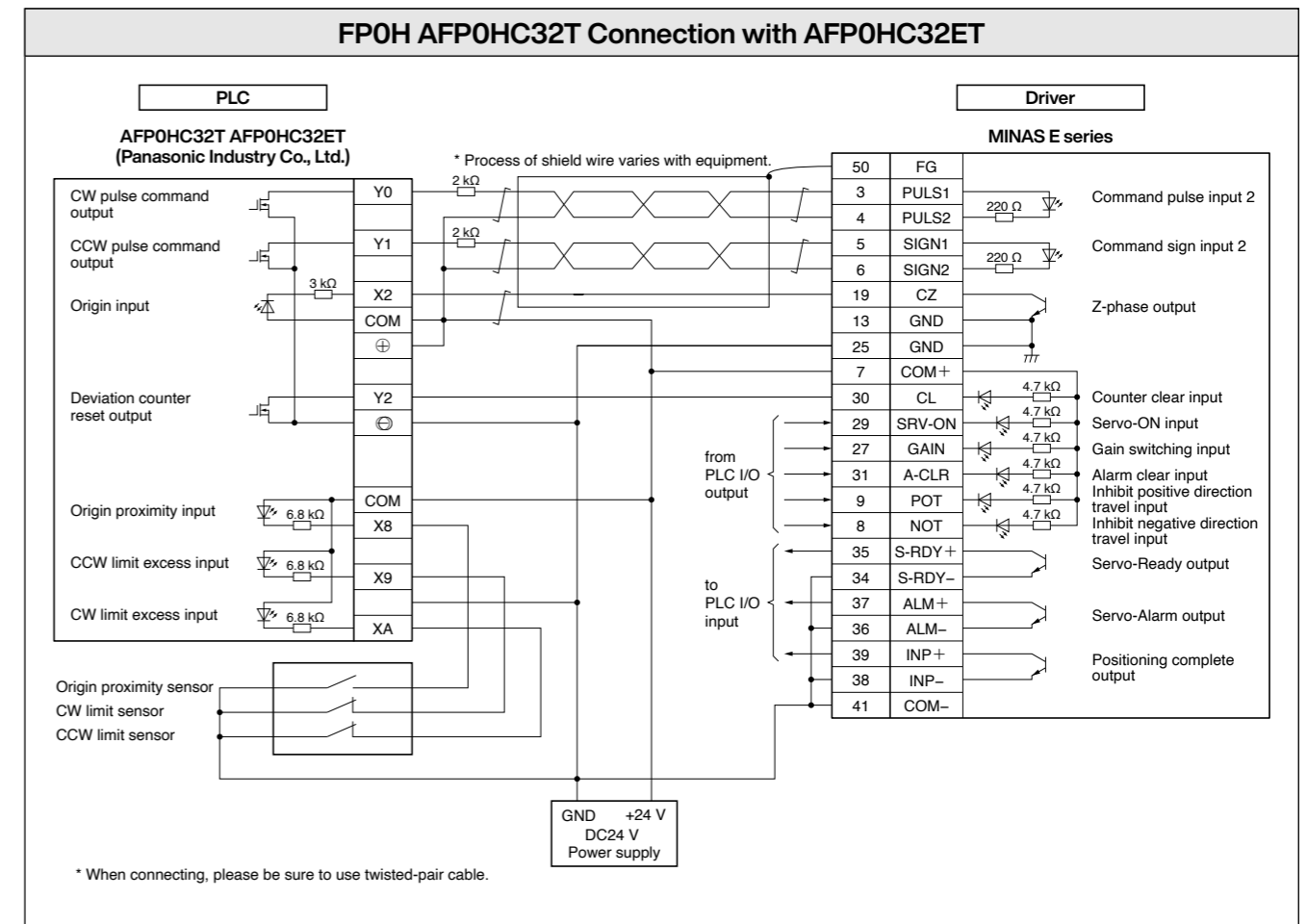
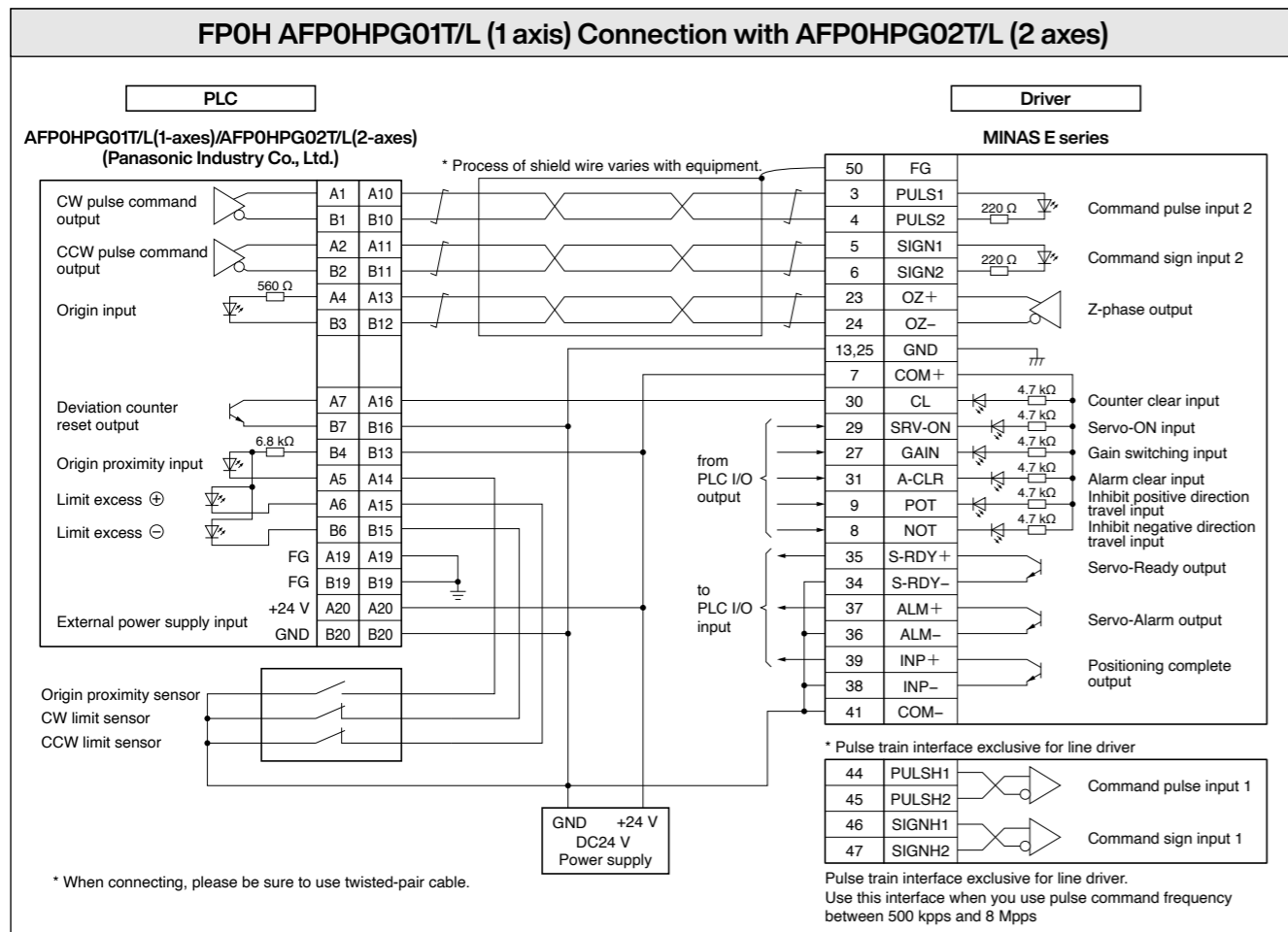
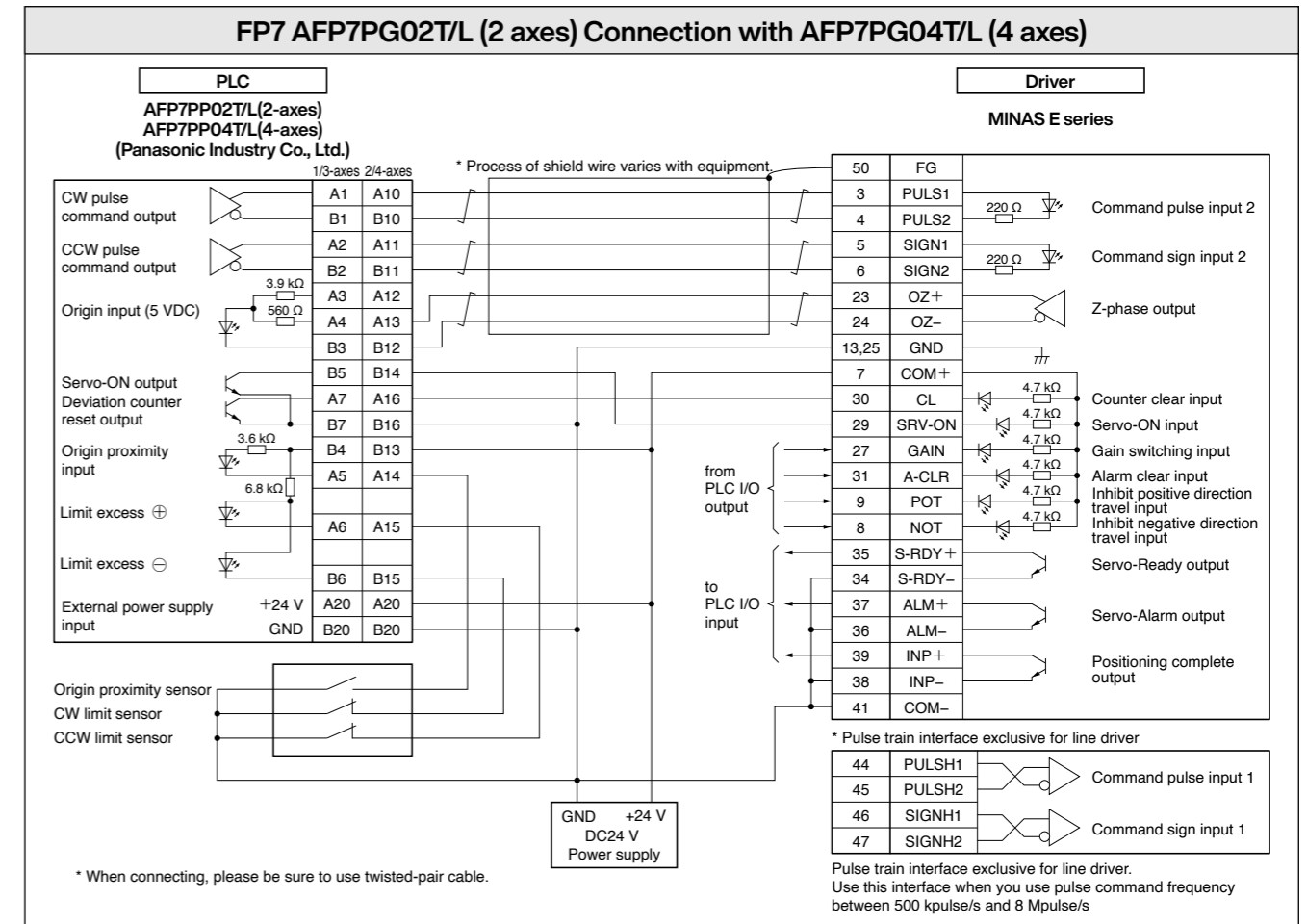
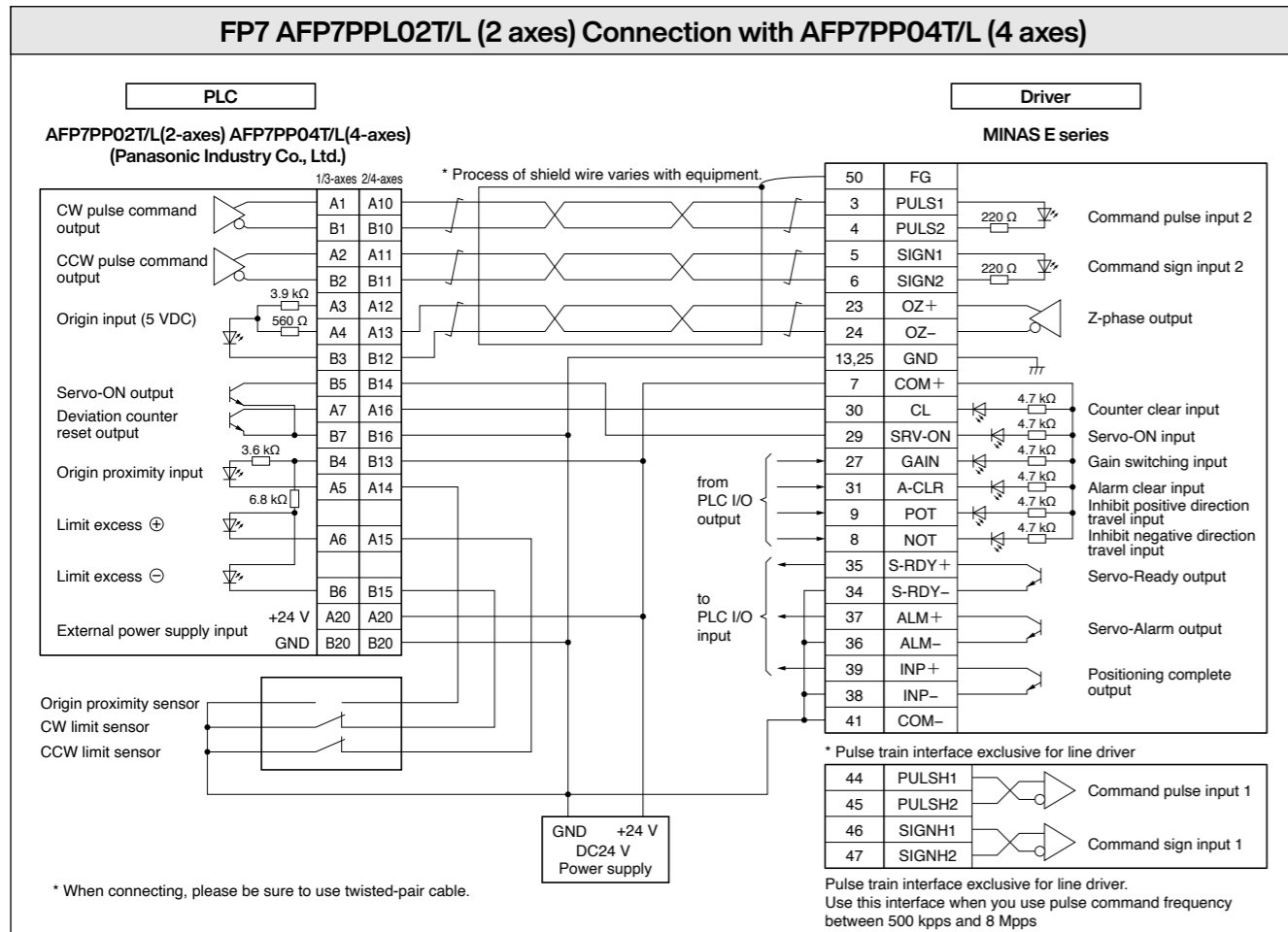
\* "NC" is no connect.

Pin No. on Old Model	DV0P4130			DV0P4131		
	Pin No. on Current Model	Signal Name	Symbol	Pin No. on Current Model	Signal Name	Symbol
1	8	CW over-travel inhibit input	CWL	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL	9	CCW over-travel inhibit input	CCWL
3	3	Command pulse input 2	PULS1	NC		
4	4	Command pulse input 2	PULS2	NC		
5	5	Command pulse sign input 2	SIGN1	NC		
6	6	Command pulse sign input 2	SIGN2	NC		
7	7	Power supply for control signal (+)	COM+	7	Power supply for control signal (+)	COM+
8	NC			NC		
9	NC			NC		
10	NC			NC		
11	11	External brake release signal	BRK-OFF+	11	External brake release signal	BRK-OFF+
12	12	Zero-speed detection output signal	ZSP	12	Zero-speed detection output signal	ZSP
13	13	Torque in-limit signal output	TLC	13	Torque in-limit signal output	TLC
14	NC			14	Speed command input	SPR
15	15	Signal ground	GND	15	Signal ground	GND
16	16	CCW direction torque limit input	CCWTL	16	CCW direction torque limit input	CCWTL
17	17	Signal ground	GND	17	Signal ground	GND
18	18	CW direction torque limit input	CWTL	18	CW direction torque limit input	CWTL
19	19	Z-phase output	CZ	19	Z-phase output	CZ
20	NC			NC		
21	21	A-phase output	OA+	21	A-phase output	OA+
22	22	A-phase output	OA-	22	A-phase output	OA-
23	23	Z-phase output	OZ+	23	Z-phase output	OZ+
24	24	Z-phase output	OZ-	24	Z-phase output	OZ-
25	50	Frame ground	FG	50	Frame ground	FG
26	26	Speed zero clamp input	ZEROSPD	26	Speed zero clamp input	ZEROSPD
27	27	Gain switching input	GAIN	27	Gain switching input	GAIN
28	NC			33	Selection 1 input of internal command speed	INTSPD1
29	29	Servo-ON input	SRV-ON	29	Servo-ON input	SRV-ON
30	30	Deviation counter clear input	CL	NC		
31	31	Alarm clear input	A-CLR	31	Alarm clear input	A-CLR
32	32	Control mode switching input	C-MODE	32	Control mode switching input	C-MODE
33	33	Command pulse inhibition input	INH	NC		
34	NC			NC		
35	35	Servo-Ready output	S-RDY+	35	Servo-Ready output	S-RDY+
36	NC			NC		
37	37	Servo-Alarm output	ALM+	37	Servo-Alarm output	ALM+
38	NC			NC		
39	39	Positioning complete output	COIN+	39	Speed arrival output	AT-SPEED+
40	40	Torque in-limit signal output	TLC	40	Torque in-limit signal output	TLC
41	10	External brake release signal (-)	BRK-OFF-	10	External brake release signal (-)	BRK-OFF-
	34	Positioning complete output (-)	COIN-	34	Speed arrival output (-)	AT-SPEED-
	36	Servo-Alarm output (-)	ALM-	36	Servo-Alarm output (-)	ALM-
	38	Servo-Ready output (-)	S-RDY-	38	Servo-Ready output (-)	S-RDY-
	41	Power supply for control signal (-)	COM-	41	Power supply for control signal (-)	COM-
42	42	Torque monitor output	IM	42	Torque monitor output	IM
43	43	Speed monitor output	SP	43	Speed monitor output	SP
44	25	Signal ground	GND	25	Signal ground	GND
45	25	Signal ground	GND	25	Signal ground	GND
46	25	Signal ground	GND	25	Signal ground	GND
47	NC			NC		
48	48	B-phase output	OB+	48	B-phase output	OB+
49	49	B-phase output	OB-	49	B-phase output	OB-
50	50	Frame ground	FG	50	Frame ground	FG

\* "NC" is no connect.

Pin No. on Old Model	DV0P4132		
	Pin No. on Current Model	Signal Name	Symbol
1	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL
3	NC		
4	NC		
5	NC		
6	NC		
7	7	Power supply for control signal (+)	COM+
8	NC		
9	NC		
10	NC		
11	11	External brake release signal	BRK-OFF+
12	12	Zero-speed detection output signal	ZSP
13	13	Torque in-limit signal output	TLC
14	NC		
15	15	Signal ground	GND
16	16	Torque command input	TRQR
17	17	Signal ground	GND
18	18	CW direction torque limit input	CWTL
19	19	Z-phase output	CZ
20	NC		
21	21	A-phase output	OA+
22	22	A-phase output	OA-
23	23	Z-phase output	OZ+
24	24	Z-phase output	OZ-
25	50	Frame ground	FG
26	26	Speed zero clamp input	ZEROSPD
27	27	Gain switching input	GAIN
28	NC		
29	29	Servo-ON input	SRV-ON
30	NC		
31	31	Alarm clear input	A-CLR
32	32	Control mode switching input	C-MODE
33	NC		
34	NC		
35	35	Servo-Ready output	S-RDY+
36	NC		
37	37	Servo-Alarm output	ALM+
38	NC		
39	39	Speed arrival output	AT-SPEED+
40	40	Torque in-limit signal output	TLC
41	10	External brake release signal (-)	BRK-OFF-
	34	Speed arrival output (-)	AT-SPEED-
	36	Servo-Alarm output (-)	ALM-
	38	Servo-Ready output (-)	S-RDY-
	41	Power supply for control signal (-)	COM-
42	42	Torque monitor output	IM
43	43	Speed monitor output	SP
44	25	Signal ground	GND
45	25	Signal ground	GND
46	25	Signal ground	GND
47	NC		
48	48	B-phase output	OB+
49	49	B-phase output	OB-
50	50	Frame ground	FG

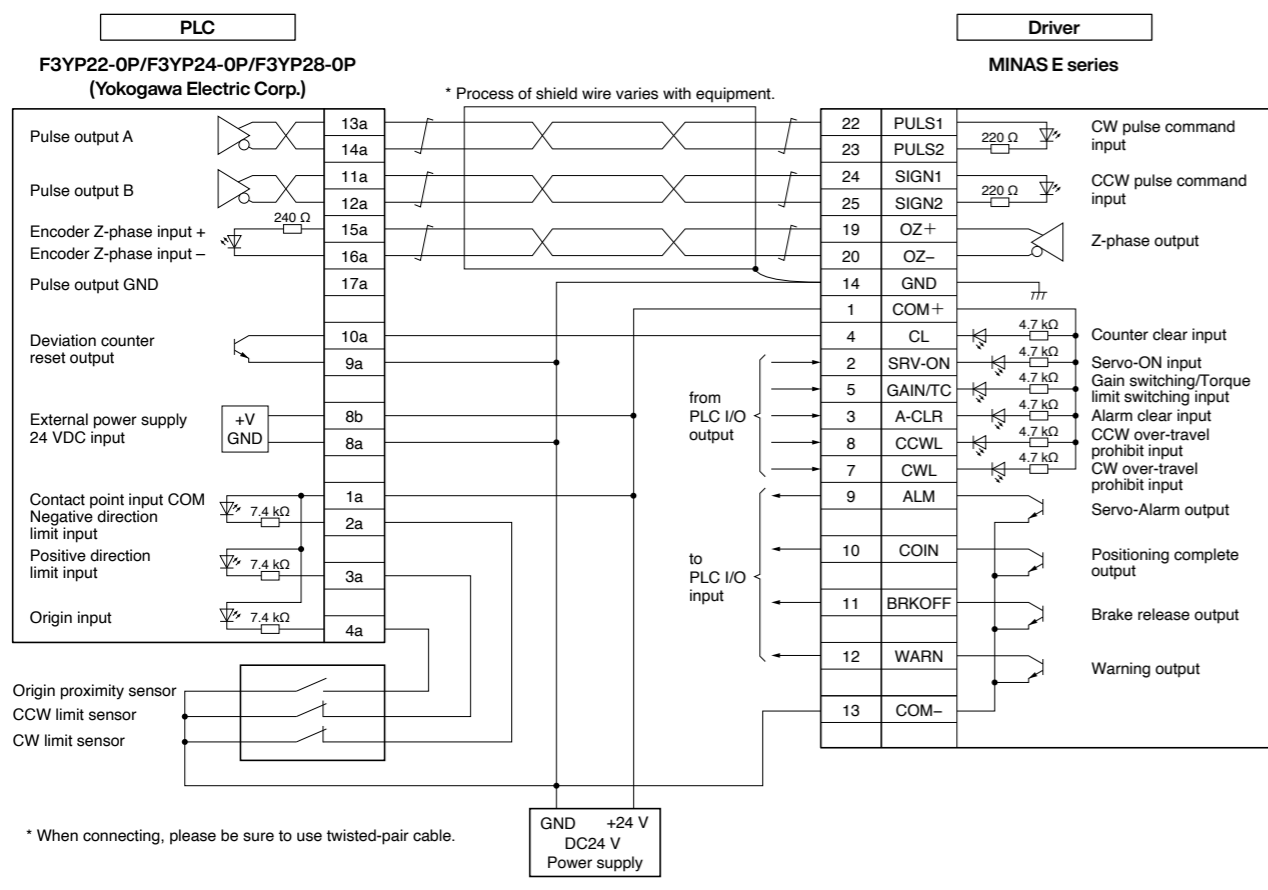
\* "NC" is no connect.



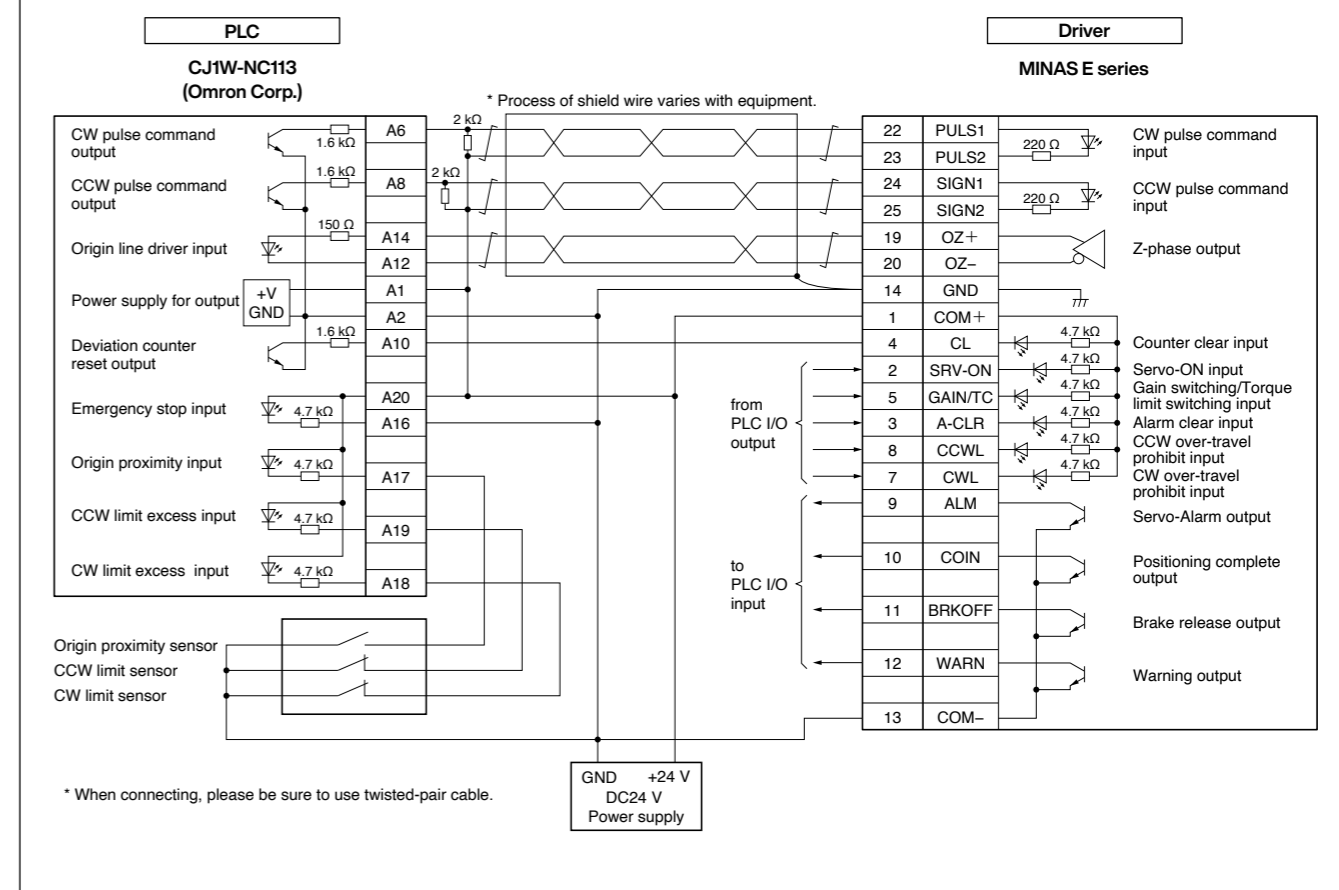
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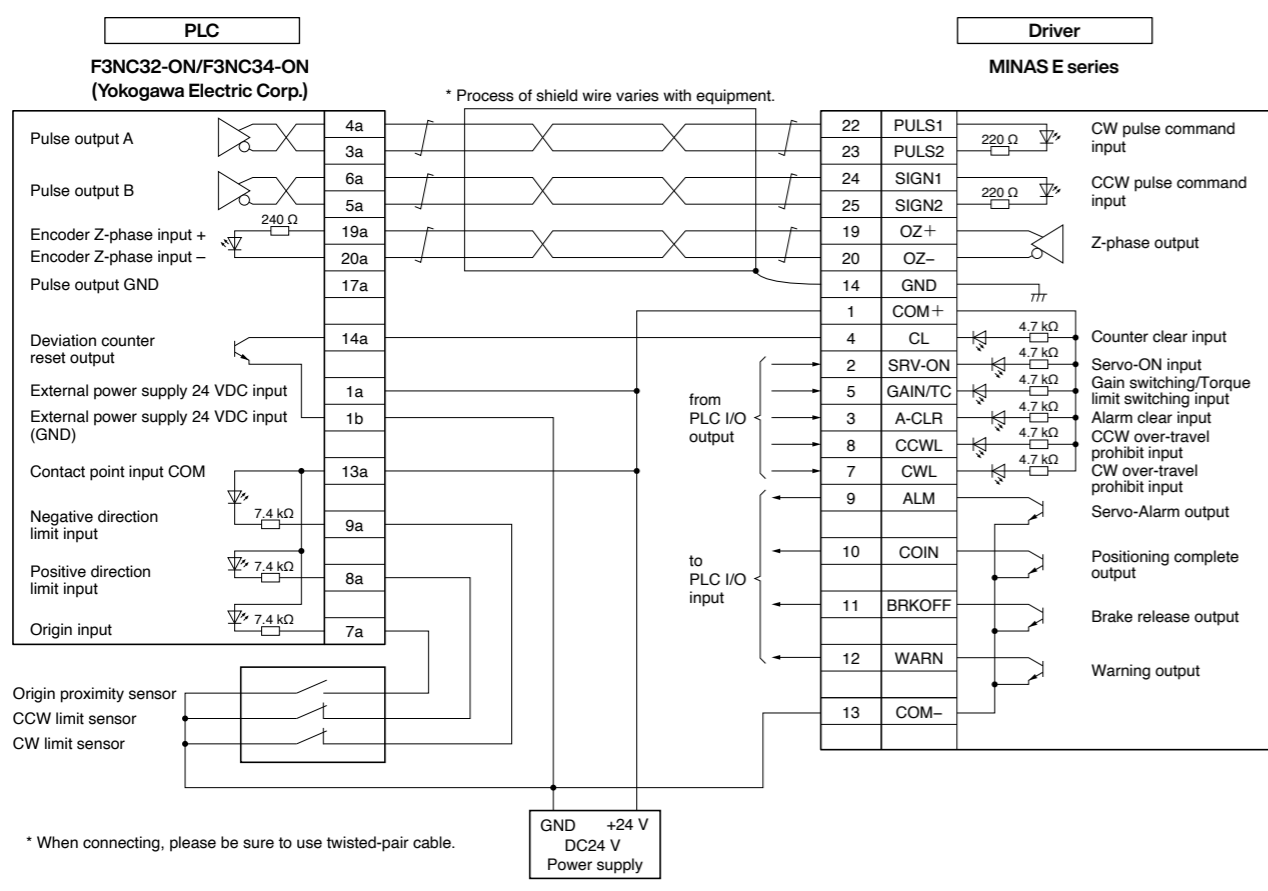
F3YP22-0P/F3YP24-0P/F3YP28-0P Connection with the Yokogawa Electric Corp.



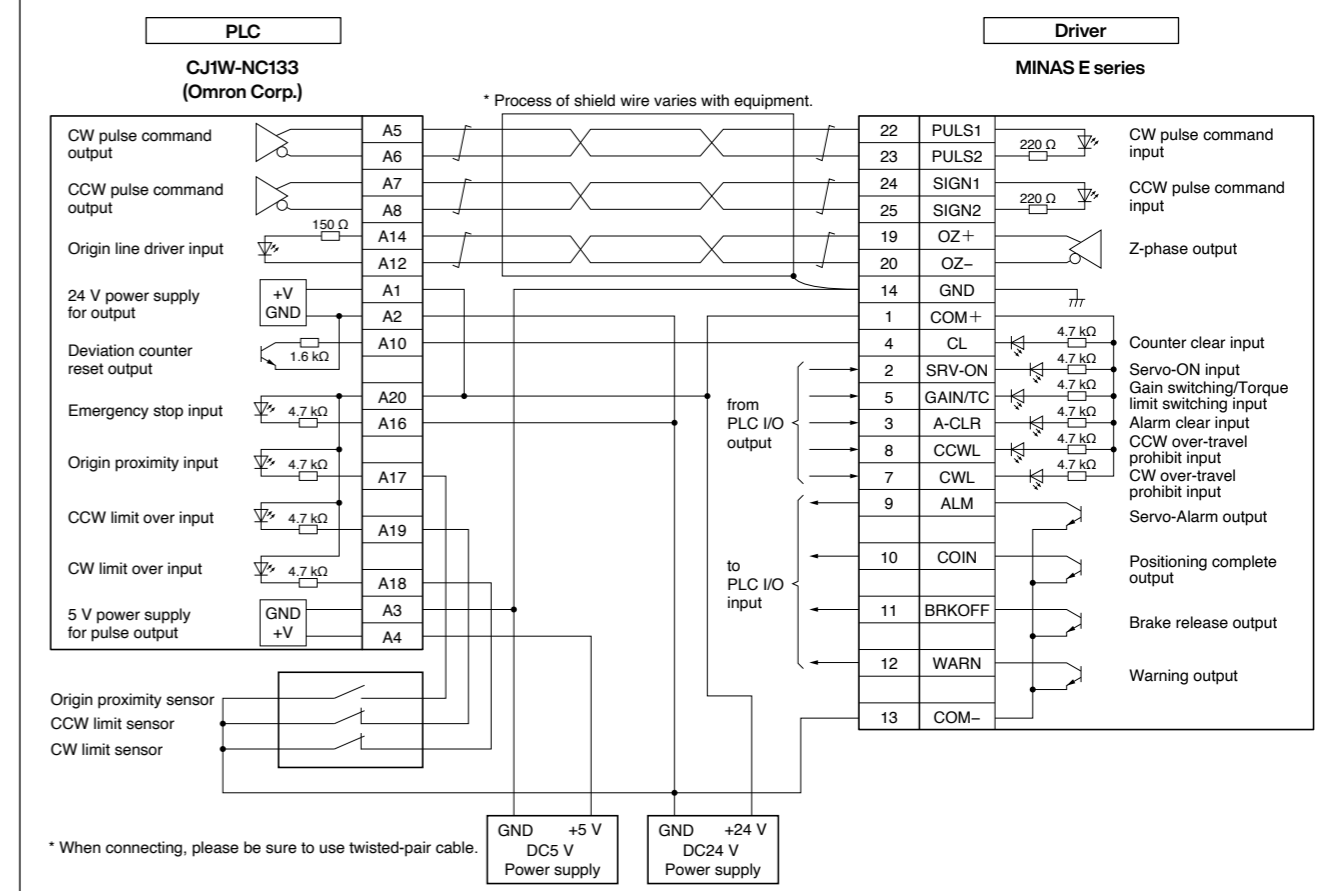
CJ1W-NC113 Connection with the Omron Corp.

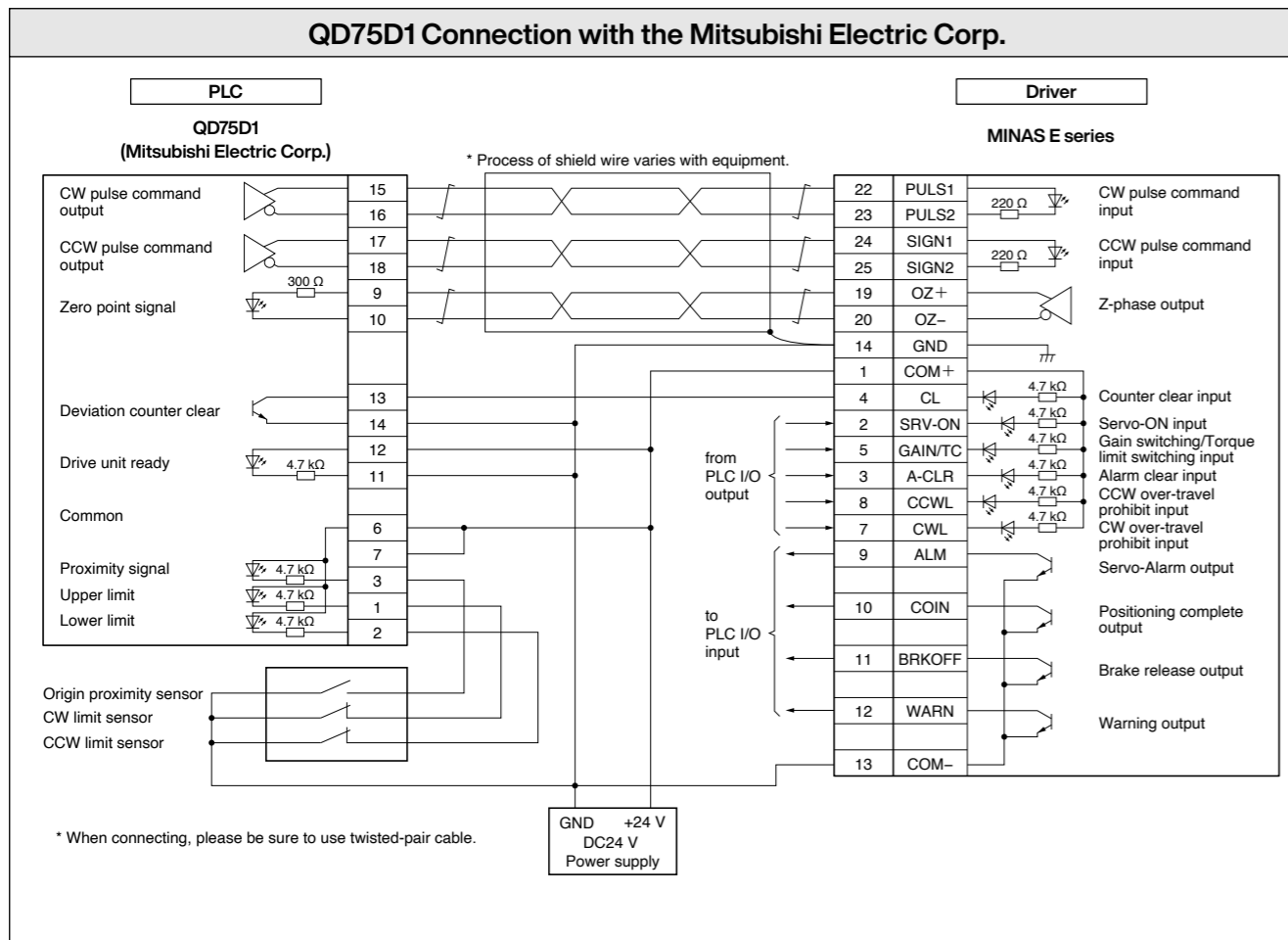


F3NC32-ON/F3NC34-ON Connection with the Yokogawa Electric Corp.



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**Sales Office**

[Panasonic Industry Co., Ltd. Sales Office of Motors] (November 01, 2022)

Region	Company Name [Category]	City	Address	TEL
				FAX
U.S.A	Panasonic Industrial Devices Sales Company of America [Sales office]	New Jersey	Two Riverfront Plaza, 10th Floor Newark, NJ 07102-5490 U.S.A	+1-800-344-2112
				Web site <a href="http://na.industrial.panasonic.com/">http://na.industrial.panasonic.com/</a>
Brazil	Panasonic Do Brasil Limitada [Sales office]	Sao Paulo	Avenida do Cafe, 277 Torre A-8 Andar Jabaquara ZIP Code: 04311-900 Sao Paulo SP Brazil	—
				Web site <a href="http://www.panasonic-electric-works.com/">http://www.panasonic-electric-works.com/</a>
Germany	Panasonic Industry Europe GmbH European Headquarters [Sales office]	Munich	Caroline-Herschel-Straße 100, 85521 Ottobrunn, Germany	+49-89-45354-1000
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Austria	Panasonic Electric Industry Austria GmbH [Sales office]	Biedermannsdorf	Josef Madersperger Straße 2, 2362 Biedermannsdorf, Austria	+43-2236-26846-7
				Web site <a href="http://www.panasonic-electric-works.at/">http://www.panasonic-electric-works.at/</a>
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				Web site <a href="http://www.panasonic-electric-works.es/">http://www.panasonic-electric-works.es/</a>
Hungary	Panasonic Electric Works Europe AG Hungarian Representative Office [Sales office]	Budapest	Neumann Janos. u. 1., 1117 Budapest, Hungary	+43 2236 26846-25
				Web site <a href="http://www.panasonic-electric-works.at/">http://www.panasonic-electric-works.at/</a>
Switzerland	Panasonic Industry Switzerland AG [Sales office]	Rotkreuz	Grundstraße 8, 6343 Rotkreuz ZG, Switzerland	+41(0)417997054
				Web site <a href="http://www.panasonic-electric-works.ch/">http://www.panasonic-electric-works.ch/</a>

A6 Series

A6N Series

A6B Series  
Special Order Product

E Series

Information

# Sales Office

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				FAX
Turkey	Savior Kontrol Otomasyon [Distributors]	Istanbul	DES Sanayi Sitesi 102 Sk. B-06 Blok No: 6-8 34776 Yukari Dudullu Ümraniye Istanbul Turkey	+90-216-466-3683
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				e-mail info@savior.com.tr
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BOSTEK TEKNOLOJI GELISTIRME VE ROBOT SIST.SAN.TIC.A.S [Distributors]	Izmir	10042 SOK.NO:10 A.O.S.B CIGLI-IZMIR, TURKEY	+90 232 433 8515	
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			Web site http://www.bostek.com.tr	
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				+852-2865-3697
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	Panasonic Industry (China) Co.,Ltd. [Sales office]	Shenzhen	10F, Tower D, China Resources Land Building, No.19 Kefa Road, Nanshan District, Shenzhen, 518057, China	+86-755-22074488
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India	Panasonic Life Solutions India Private Limited INDD - Industrial Devices Division- Sales & Marketing (Gurgaon(HQ)) [Sales office]	Delhi	12th Floor, Ambience Corporate Office, Tower-2, Ambience Island, NH-8, Gurgaon-122002, Haryana, India	+91-124-4871300
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	Panasonic Life Solutions India Private Limited INDD - Industrial Devices Division- Sales & Marketing (Bangalore Office) [Sales office]	Bengaluru	"J.P. Chambers" 2nd Floor, #276/22-1, 46th Cross, 5th Block, Jayanagar, Bangalore - 560041	+91-124-6676-311
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	Panasonic Life Solutions India Private Limited INDD - Industrial Devices Division- Sales & Marketing (Mumbai Office) [Sales office]	Mumbai	502 / 503, Windfall, Sahar Plaza Complex, JB Nagar Andheri Kurla Road, Andheri (E) Mumbai - 400059, India	+91-22- 6196 8480 M: -919004229452
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	Panasonic Life Solutions India Private Limited INDD - Industrial Devices Division- Sales & Marketing (Chennai Office) [Sales office]	Chennai	Spic House Ann exe, 6th Floor, No.88, Mount Road, Guindy, Chennai - 600032, Tamilnadu	+91-44-6108-9300
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	Panasonic Life Solutions India Private Limited INDD - Industrial Devices Division- Sales & Marketing (Pune Office) [Sales office]	Pune	Office No. 401 & 402, Godrej Eternia, Above At Home Centre, Next to Shopper's Stop, Shivaji Nagar, Mumbai Pune Road, Pune - 411005, Maharashtra India	+91-20-67449907
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Korea	Panasonic Industrial Devices Sales Korea Co., Ltd. [Sales office]	Seoul	114-38 Teheran-ro, Gangnam-gu, Seoul, 06176, Korea (1004 Daechi dong, DONGIL Tower 5-6F)	+82-2-795-9600
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	Intermech Machinery Pte.Ltd. [Distributors]	Singapore	2 Woodlands Sector 1 #03-25, Woodlands Spectrum 1 Singapore 738068	+65-6751-5088	
				+65-6759-2122	
				e-mail sales@intermech.com.sg	
			Web site http://www.intermech.com.sg		
	Malaysia	Panamech (Penang) Sdn. Bhd. [Distributors]	Penang	18, Persiaran Mahsuri 1/2, Sunway Tunas, Penang, 11900	+60-4-645-1635
					+60-4-645-1639
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