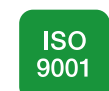


- Important Notes on exporting this product or equipment containing this product;
If the end-user or application of this product is related to military affairs or weapons, its export may be controlled by “Foreign Exchange and Foreign Trade Control Law” of Japan where export license will be required before 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.
*Example: apply 2.7 N·m – 3.3 N·m torque when tightening steel screw (M5) to steel surface.
- 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	Electric data of this product (Instruction Manual, CAD data) can be download from the following web site; http://industrial.panasonic.com/ww/products/motors-compressors/fa-motors

Contact to :



**ISO9001
Certificate
division**



**ISO14001
Certificate
division**

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Automotive & Industrial Systems Company,
Smart Factory Solutions Business Division,
Motor Business Unit

1-1 Morofuku 7-chome, Daito, Osaka 574-0044, Japan
Tel : +81-72-871-1212
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The contents of this catalog apply to the products as of April 2015.

- This product is for industrial equipment. Don't use this product at general household.
- Printed colors may be slightly different from the actual products.
- Specifications and design of the products are subject to change without notice for the product improvement.

<15.04(S)>

AC Servo <MINAS A5II / A5 series, E series>

2015 / 4

Panasonic

Panasonic

AC Servo

MINAS A5 II / A5 series

MINAS E series

2015/4

Catalog



MINAS A5 Family

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

Servo motor that brings out potential of the machine.

MINAS A5 Family



Two-degree-of-freedom control system
All-in-one type

A5II series

Rated output: **50 W to 15.0 kW**

- 20 bit incremental encoder, 17 bit absolute/ incremental encoder
- All-in-one: Speed, Position, Torque^{*1}, Full-closed¹ control type

^{*1} Not applicable to two-degree-of-freedom control system.



All-in-one type

A5 series

Rated output: **50 W to 15.0 kW**

- 20 bit incremental encoder, 17 bit absolute/ incremental encoder
- All-in-one: Speed, Position, Torque, Full-closed control type



Two-degree-of-freedom control system
Position control type

A5IIE series

Rated output: **50 W to 5.0 kW**

- 20 bit incremental encoder
- Position control (pulse train commands)



Position control type

A5E series

Rated output: **50 W to 5.0 kW**

- 20 bit incremental encoder
- Position control (pulse train commands)

Slim design and position control type

E series



Rated output: **50 W to 400 W**

- Ultra-small design and pulse train command type only
- Real-time auto gain tuning
- DIN-rail mountable (using mounting Kit)

High-speed communication “Realtime Express” support model

Ultra high-speed Network type

A5IIN series [Special Order Product] **RTEX** Realtime Express



Rated output: **50 W to 15.0 kW**

- Synchronized motion and precise CP control up to 32 axes with 100 Mbps communication
- Standard Ethernet cable^{*2} using
- Two-degree-of-freedom control system

Linear motor and DD motor control type

A5IINL series [Special Order Product] **RTEX** Realtime Express



Capacity of applying Linear motor:
Compatible with 15.0 kW rotary AC servo motor

- Position, Speed and Thrust control
- Automatic setup function & Automatic magnetic pole detection function
- Two-degree-of-freedom control system

DC 24 V type

A5IIMN series [Special Order Product] **RTEX** Realtime Express



Rated output: **10 W, 20 W, 30 W**

- Synchronized motion and precise CP control up to 32 axes with 100 Mbps communication
- Standard Ethernet cable^{*2} using
- Two-degree-of-freedom control system

Linear motor control, DC 24 V type

A5IIMNL series [Special Order Product] **RTEX** Realtime Express



Capacity of applying Linear motor:
Compatible with 30 W rotary AC servo motor

- Position, Speed and Thrust control
- Automatic setup function & Automatic magnetic pole detection function
- Two-degree-of-freedom control system

Linear motor and DD motor control type

A5L series [Special Order Product]



Capacity of applying Linear motor:
Compatible with 15.0 kW rotary AC servo motor

- Position, Speed, Thrust control
- Drastically reduced setup time by automatic setup
- Automatic magnetic pole detection function will detect the magnetic pole position of the linear motor.

EtherCAT communication driver type

A5B series [Special Order Product] **EtherCAT**



Rated output: **50 W to 15.0 kW**

- Supports PC-based controller
- Passed Official EtherCAT Conformance Test
- Standard Ethernet cable^{*2} using
- Two-degree-of-freedom control system

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General-purpose RS485 communication AE-LINK support type

A5A series [Special Order Product] **AE-LINK**



Rated output: **50 W to 5.0 kW**

- Positioning is possible by built-in NC function
- Can connect up to 31 axes
- Standard Ethernet cable^{*2} using
- Two-degree-of-freedom control system

• AE-LINK is a registered trade mark of Asahi Engineering.

Linear motor and DD motor control type

A5L series [Special Order Product]



Capacity of applying Linear motor:
Compatible with 15.0 kW rotary AC servo motor

- Position, Speed, Thrust control
- Drastically reduced setup time by automatic setup
- Automatic magnetic pole detection function will detect the magnetic pole position of the linear motor.

EtherCAT communication driver type

A5B series [Special Order Product] **EtherCAT**



Rated output: **50 W to 15.0 kW**

- Supports PC-based controller
- Passed Official EtherCAT Conformance Test
- Standard Ethernet cable^{*2} using
- Two-degree-of-freedom control system

[Special Order Product] : For details, see the website or request for information. ^{*2} Shielded twisted pair cable (CAT5e or higher)

Quicker, Wiser and Friendlier A5II series

Two-degree-of-freedom control system All-in-one type

• Full-closed control and torque control are not applicable to 2DOF control system.

A5II series

Ball screw settling time
0 ms

Belt device settling time
4 ms

• The above is a measure based on our test environment.



Two-degree-of-freedom control system Only for position control type

A5IIE series

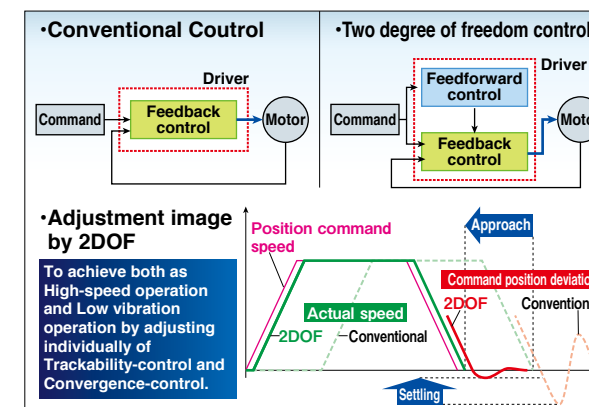


Realizes quick and accurate movement. Fast response & High-precision positioning

Adopted New Algorithm

"Two-degree-of-freedom control" (2DOF) to improve productivity and machining accuracy.

In the conventional model, because we could not adjust separately feedforward control and feedback controls, in other words even if we only adjust "Approach" of feedforward, it had connection with "Settling" of



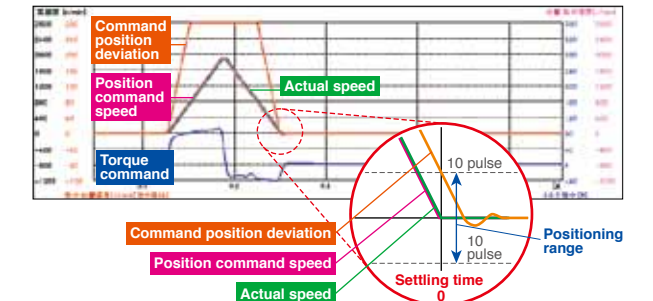
• Full-closed control and torque control are not applicable to 2DOF control system.

feedback control, mutual adjustment was required.

In 2DOF adopted A5II series, feedforward and feedback controls are adjusted separately, meaning "Approach" reaction to the given command, and the "Settling" can be adjusted separately. Realized low vibration and reduction of settling time. Realizes tact speed of the electronic component mounting machines, improves the accuracy of surface treatment of metal processing machines, allows for smooth operation and High speed industrial robots.

Waveform of PANATERM

(the case of the ball screw: 0 ms / waveform measured settling time)



Easy and quick adjusting time. 5 times faster* than conventional

Greatly improved "operability", easy-to-use software "PANATERM".

We have upgraded setup support software PANATERM, the convenient tool for parameter setting and monitoring often required during start-up of the machine for adjustment motor and driver. Improved to more easy-understandable screen.

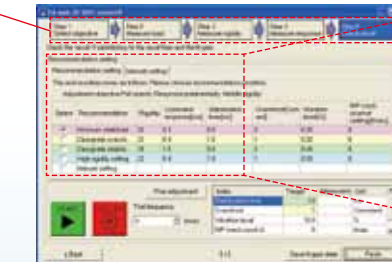
Equipped with "Fit Gain" function to realize speedy setup.

Newly developed feature "Fit Gain" maximizes the characteristics of A5II series. And adaptive notch filter function can reduce the vibration that occurs when the rigidity of the device is low, you can set and adjust automatically the best variety of gain.

• Adjustment is completed in only **3** processes



• Fit gain adjustment window



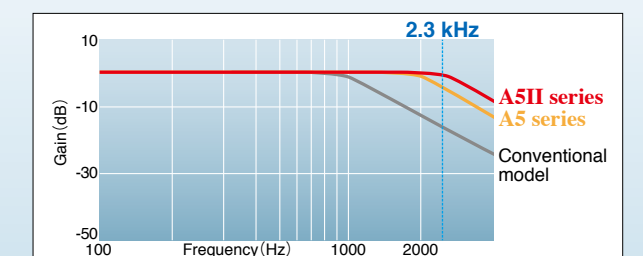
• Automatically proposes various settings

Selected	Recommendation	Rigidity	Command response[ms]	Stabilization response[ms]
☒	Minimum stabilization	22	3.2	0.3
☒	Designated over	22	3.4	1.0
☒	Designated initial	19	1.5	9.5
☒	Highly setting	22	3.4	1.0

Realized 2.3 kHz frequency response to improve productivity

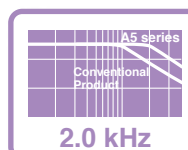
Comparison* 1.15 times faster than conventional

Realized 2.3 kHz response makes possible high-speed operation and improves productivity.



* Comparison with conventional product A5-series.

1 Quick



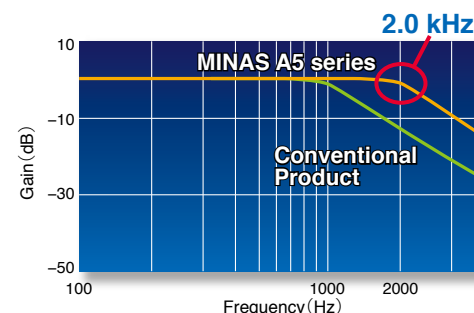
2.0 kHz Frequency Response

A5 A5E

Example application Semiconductor production equipment, packaging, etc.

Achieves the industry's leading frequency response of 2.0 kHz.

Operation speed up by new developed LSI and high responsible control. **By the industry's leading speed and positioning response, a highly advanced system can be created. What's more, the shorter response delay will realize an extremely lower vibration.**



20 bits/revolution, 1.04 million pulses (At incremental type)

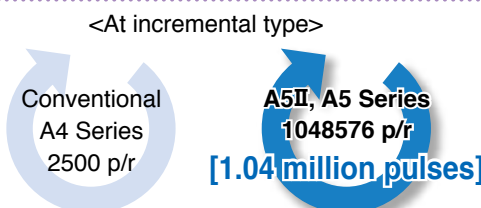
A5II A5 A5IIE A5E

Example application Machine tools, textile machinery, etc.

Ensures smoother operation and reduced vibration at stopping.

Ensures accurate positioning in a short time.

New proprietary signal processing technology achieves 1.04 million pulses with a 20-bit incremental encoder.



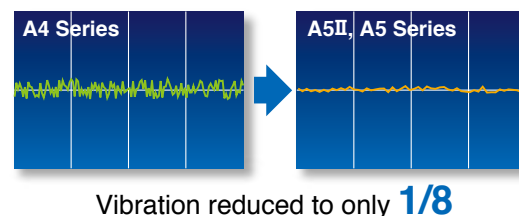
Low Cogging Torque (Excluding MSMD, MHMD, MDME 11.0 kW, 15.0 kW)

A5II A5 A5IIE A5E

Example application Semiconductor production equipment, textile machinery, etc.

For the industry's most stable speed and lowest cogging

We've achieved the industry's lowest cogging by minimizing the pulse width by a new design incorporating a 10-pole rotor for the motor and a magnetic field parsing technique. **Positioning and stability are greatly improved by the minimal torque variation. This results to improved speed stability and positioning of motor rotation.**



The Input/Output Pulse 4 Mpps

A5II A5 A5IIE A5E

Example application Semiconductor production equipment, machine tools, etc.

Accommodates the industry's leading positioning resolution commands (with pulse train commands).

The command input and feedback output operate at the high speed of 4 Mpps. Accommodates high-resolution and high-speed operation, including standard full closed operation. (Provided with A5II, A5 only.)



2 Smart



Highly Functional Real-time Auto-Gain Tuning

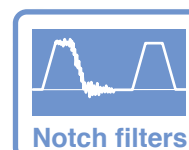
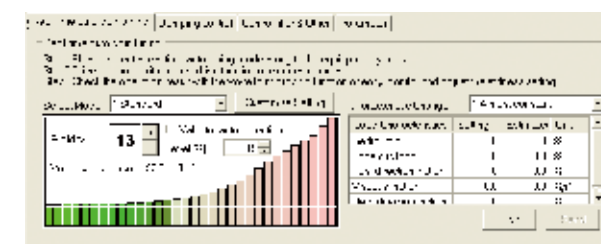
A5II A5 A5IIE A5E

Example application Semiconductor production equipment, food processing machinery, etc.

High-performance real-time auto-gain tuning featuring simple setup.

After installation, tuning will be completed automatically after several operations. When the response is adjusted, **simple tuning** is supported with a change of one parameter value. Use of the gain adjustment mode in the setup support software contributes to optimum adjustment. **The built-in auto vibration suppression function reduces equipment damage.** Appropriate modes are provided for various machines such as **vertical axis machines and high friction machines with belts.**

This makes it possible to perform simple optimal adjustments simply by selecting the mode and stiffness.



Manual/Auto Notch Filters

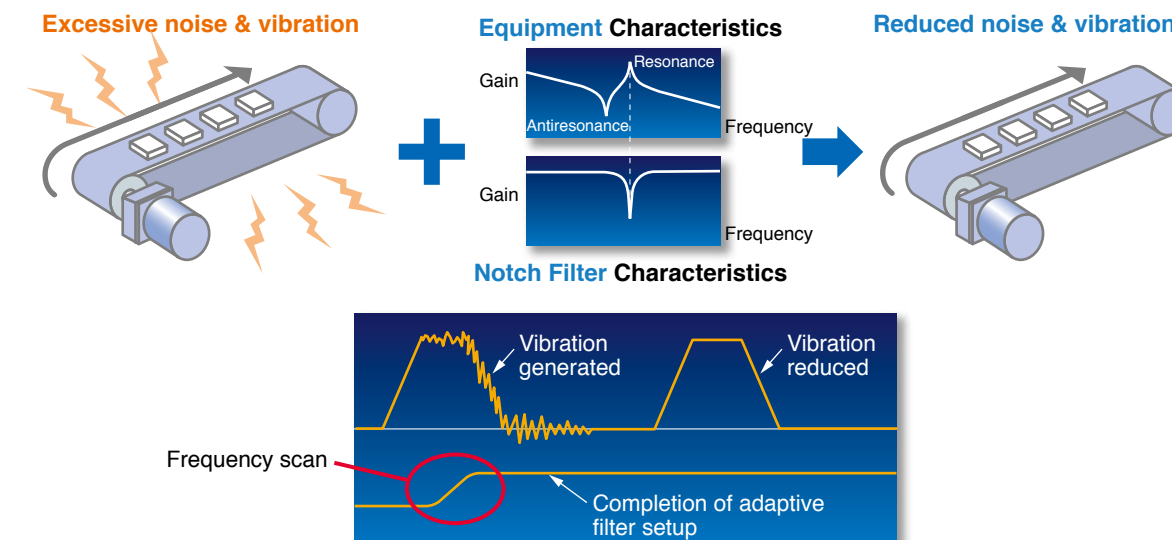
A5II A5 A5IIE A5E

Example application Semiconductor production equipment, food processing machinery, etc.

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

during operation. The A5II, A5 series features an industry-largest total of four notch filters with setup frequencies of 50 Hz to 5000 Hz. This approach enables depth adjustment within this frequency range. (Two of the filters share the auto set-up.)





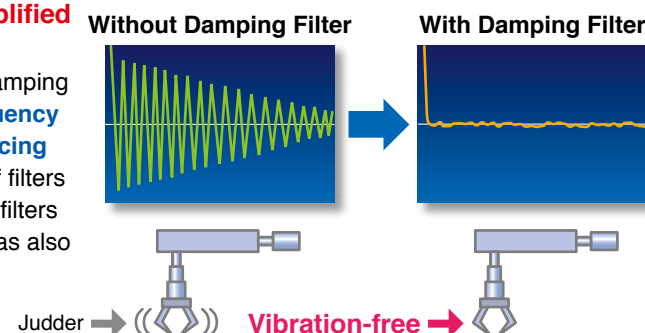
Manual/Auto Damping Filter

A5II A5 A5IIE A5E

Example application Chip mounters, food processing machinery, robots, general production machinery, etc.

Equipped with a damping filter featuring simplified automatic setup.

The setup software features automatic setup of the damping filter. **This filter removes the natural vibration frequency component from the command input, greatly reducing vibration of the axis when stopping.** The number of filters has been increased to four from the conventional two filters (two for simultaneous use). The adaptive frequency has also been significantly expanded from 1 Hz to 200 Hz.



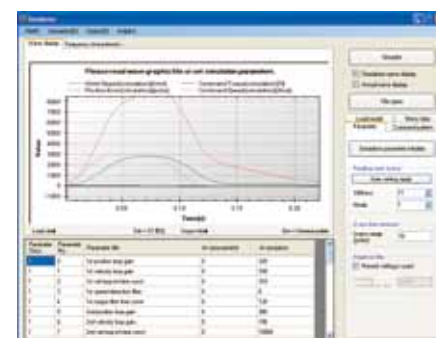
Motion Simulation

A5II A5 A5IIE A5E

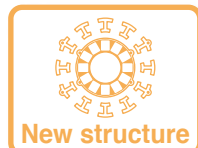
Example application General production machinery, etc.

Equipped with a simplified machine simulation function.

The setup software uses frequency response data acquired from the actual machine. In addition, it features a machine simulation function for performing simulated operation. **This allows you to easily confirm the effects of gain and various filters without adjusting the actual equipment.**



3
Light



New Structure/ Innovative Core/ Innovative Encoder

A5II A5 A5IIE A5E

Example application Robots, chip mounters, general production machinery, etc.

Featuring significantly reduced weight and a more compact motor

We've developed new designs for both compact motors and large motors. The new design used for the core has succeeded in compact. **The addition of an innovative compact encoder has contributed to a 10 % to 25 % (1 kg to 6 kg) reduction in motor weight in the 1 kW and larger class when compared with conventional motors.**



[Examples for MSM or MDM]

Series	A4	A5II A5	Weight Reduction
MSM 1 kW	4.5 kg	3.5 kg	▲1 kg
MSM 2 kW	6.5 kg	5.3 kg	▲1.2 kg
MDM 1 kW	6.8 kg	5.2 kg	▲1.6 kg
MDM 2 kW	10.6 kg	8.0 kg	▲2.6 kg



4
Safe



Complies with European Safety Standards.

A5II A5

Example application Semiconductor and LCD production equipment, etc.

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 low-voltage machinery commands. (The final safety compliance must be applied as machine.)



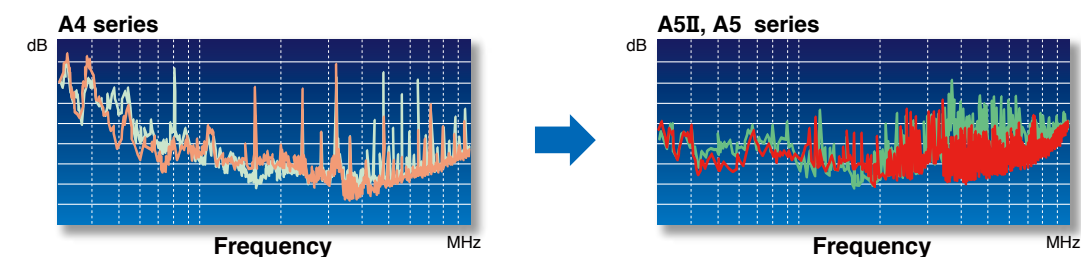
Low noise

A5II A5 A5IIE A5E

Example application Semiconductor and LCD production equipment, etc. general production machinery for export to the European market

Complies with the European EMC Directive

By incorporating the latest circuit technology, A5II, A5 series achieves a further noise reduction of 3 dB compared with the conventional A4 series, which also features noise suppression. (The A4 series also conforms to the EMC Directive.)



IP67 Enclosure Rating (Products are build to order items.)

A5II A5 A5IIE A5E

Example application Machine tools, robots, printing machines, etc.

IP67 enclosure rating for increased environmental resistance

Our improved motor seals and direct-mount connectors in the motor power supply and encoder input-output areas contribute to this unit's IP67 enclosure rating.



IP67

- Protection against water
 - Protection against temporary immersion in water
- Protection against dust
 - Protected against dust penetration when in full contact

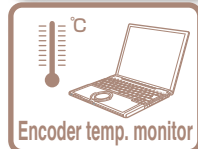
- Motors of MSMD and MHMD series and 0.9 kW or higher standard stock items have IP65 rating.
- Motors of IP67 have smaller encoder connector that requires cable compatible with IP67 motor.
- * IP67 motor is build to order items.

5
Easy

4 languages



Life prediction



Encoder temp. monitor

PANATERM Set-up Support Software

A5II A5 A5IIE A5E

The PANATERM Set-up Support Software, with many added features.

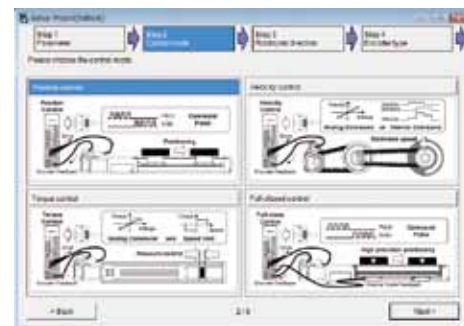
The PANATERM assists users in setting parameters, monitoring control conditions, setup support, and analyzing mechanical operation data on the PC screen, when installed in a commercially available personal computer, and connected to the MINAS A5 Family through the USB interface.

● **Localized in 4 languages**

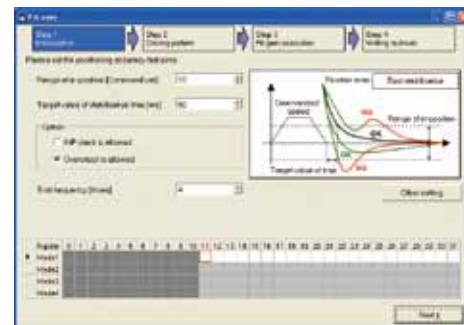
Choose either **English, Japanese, Chinese, or Korean**-language display.

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.

**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.

**The fit gain function for setting two-degree-of-freedom control.**

- 1) Select the adjustment method
- 2) Load measurement
- 3) Adjust gain to meet your needs by confirming results. (for A5II, A5IIE)

**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.

Encoder Temperature Monitor

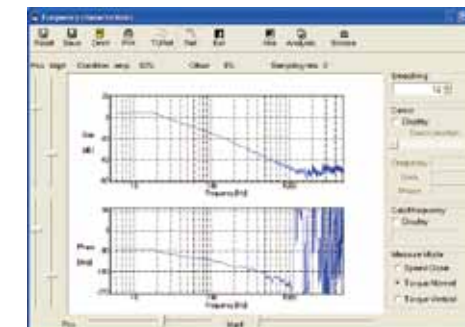
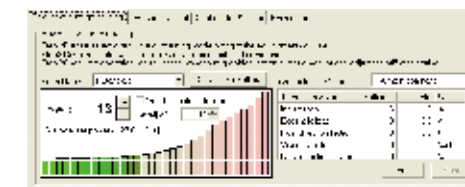
The Encoder Temperature Monitor is a new function capable of **real-time measurement of the interior temperature of the encoder, something that has been difficult to achieve in the past**. It is valuable for monitoring the motor and can be used as a diagnostic in the event of a malfunction (provided with 20-bit encoder only).

Other New Function

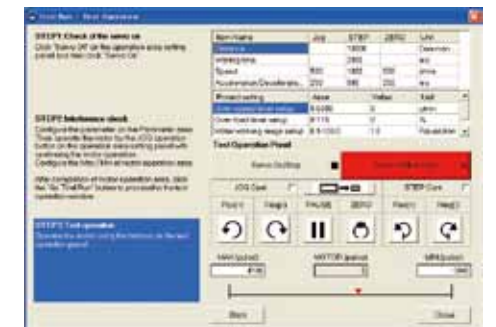
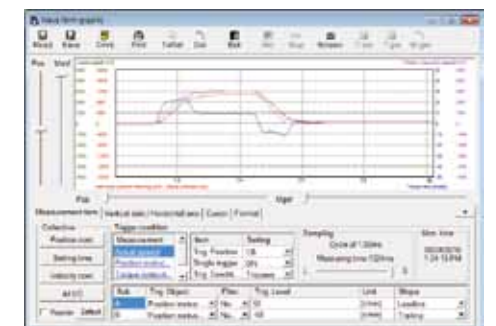
The software offers a wide range of convenient features including motor and driver data such as load factor, voltage, and driver temperature. Moreover, the logging function records the interface history. As well, a non-rotating contributing factor display function.

**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.

**Added New screen for gain adjustment, equipped with stiffness oscillation auto-reduction function****Trial run**

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

**Significant increase of measuring objects Multi-functional waveform graphic****<CAUTION>**

This software is applicable only to A5II, A5, A5IIE, A5E series.

To apply this software to conventional product (A, AII, E or A4 series), consult our distributors.

Hardware configuration

Personal computer	CPU	Pentium III 512MHz or more
	Memory	256MB or more (512MB recommended)
	Hard disk capacity	Vacancy of 512MB or more recommended
	OS	Windows® XP SP3 (32-bit Ver.), Windows® VISTA SP1 (32-bit Ver.) Windows® 7 (32-bit Ver., 64-bit Ver.) [English, Japanese, Chinese or Korean version]
Display	Serial communication port	USB port
	Resolution	1024 × 768pix or more (desirably 1024 × 768)
	Number of colors	24bit colors (TrueColor) or more

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

<http://industrial.panasonic.com/ww/products/motors-compressors/fa-motors>

Other Functions

Command Control Mode A5II A5

- Command control mode is available for Position, Speed (including eight internal velocities) and Torque.
- Using parameter settings, you can set up one optional command control mode or two command control modes by switching.
- According to suitable application utility, proper optional command control mode can be chosen.

Full-closed Control A5II A5

AB-phase linear scale (for general all-purpose products) or serial scale (for products with Panasonic's exclusive format) scales can be used (P.14).

SEMI F47 A5II A5 A5IIE A5E

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

Inrush Current Preventive Function A5II A5 A5IIE A5E

- 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.

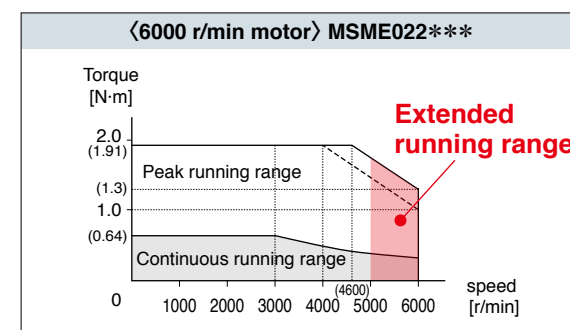
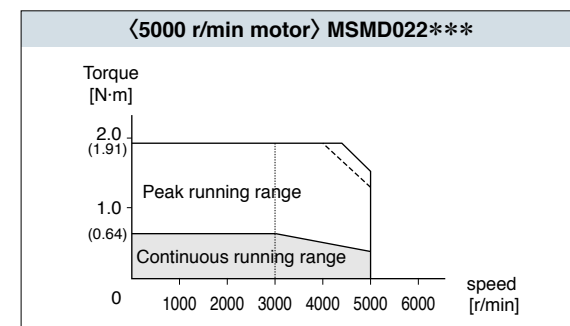
Regenerative Energy Discharge A5II A5 A5IIE A5E

- 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, B, G and frame H 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.

6000-rpm capability A5II A5 A5IIE A5E
(build to order item)

The MSME motor (under 750 W) can accommodate a maximum speed of 6000 r/min.

[Comparison of new and conventional 200 W]



• Gear head

Gear heads for 6000 r/min and 5000 r/min motors are available. Set 5000 r/min gear head only to 5000 r/min motor, and set 6000 r/min gear head only to 6000 r/min motor.

When customers prepare a gear head, use it as follows:

MSME → 6000 r/min
MSMD → 5000 r/min
MHMD → 5000 r/min

Dynamic Braking A5II A5 A5IIE A5E

- 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 dynamic brake circuit of H-frame is external.
- The desired action sequence can be set up to accommodate your machine requirements.

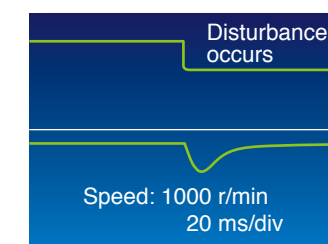
Parameter Initialization A5II A5 A5IIE A5E

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

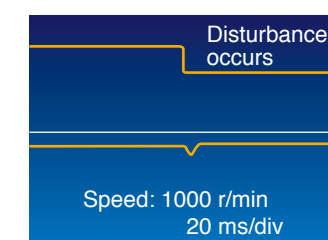
Disturbance Observer A5II A5 A5IIE A5E

By using a disturbance observer to add an estimated disturbance torque value to the torque canceling command, this function diminishes the impact of the disturbance torque, reduces vibration, and offsets any speed decline.

Disturbance observer function not in effect



Disturbance observer function in effect



Torque Feed Forward A5II A5 A5IIE A5E

The Torque Feed Forward function performs a comparison with feedback and calculates the amount of torque to add to the necessary torque command in the command for actuation.

Friction Torque Compensation A5II A5 A5IIE A5E

This function reduces the effect of machine-related friction and improves responsiveness. Two kinds of friction compensation can be set up: unbalanced load compensation, which compensates with a constant operational offset torque; and kinetic friction, which changes direction in response to the direction of movement.

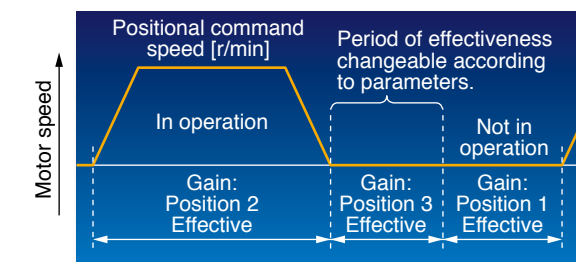
3-Step Gain A5II A5 A5IIE A5E

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.



Inertia Ratio Conversion A5II A5 A5IIE A5E

You can adjust right inertia ratio by Inertia Ratio Conversion input(J-SEL).

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 A5II A5 A5IIE A5E

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 Panatorm setup software provides an exclusive screen for a more simplified setup.

Torque Limiter Switching A5II A5 A5IIE A5E

You can use the I/Os to set up torque limits. These can be used for applications such as simplified pressure, tension control, and sensor-less homing.

Applicable international safety standards

A5II A5 A5IE A5E



		Driver	Motor
EC Directives	EMC Directives	EN55011 EN61000-6-2 IEC61800-3	—
	Low-Voltage Directives	EN61800-5-1	EN60034-1 EN60034-5
	Machinery Directives	ISO13849-1(PL d) (Cat. 3) EN61508(SIL2) EN62061(SILCL 2) EN61800-5-2(STO) IEC61326-3-1	—
	Functional safety *1		
UL Standards		UL508C (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)

Panasonic Testing Centre

Panasonic Service Europe, a division of

Panasonic Marketing Europe GmbH

Winsbergiring 15, 22525 Hamburg, F.R. Germany

- When export this product, follow statutory provisions of the destination country.
- *1 A5IE and A5E 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 product is not an object of China Compulsory Certification (CCC).

Applicable External Scales

A5II A5

Applicable External Scale	Manufacturer	Model No.	Resolution [μs]	Maximum Speed (m/s) ^{*3}
Parallel Type (AB-phase)	General	—	Maximum speed after 4 × multiplication: 4 Mpps	
Serial Type (Incremental)	Magnescale Co., Ltd.	SR75	0.01 to 1	3.3
		SR85	0.01 to 1	3.3
		SL700-PL101RP/RHP	0.1	10
		SL710-PL101RP/RHP	0.1	10
		BF1	0.001/0.01	0.4/1.8
	Nidec Sankyo Corporation	PSLH	0.1	6
Serial Type (Absolute)	DR. JOHANNES HEIDENHAIN GmbH	LIC2197P/LIC2199P	0.05/0.1	10
		LIC4193P/LIC4195P LIC4197P/LIC4199P	0.001 /0.005 /0.01	10
	Fagor Automation S.Coop.	SVAP	0.05	2.5
		SAP	0.05	2.5
		GAP	0.05	2.5
		LAP	0.1	2
	Magnescale Co., Ltd.	SR77	0.01 to 1	3.3
		SR87	0.01 to 1	3.3
	Mitutoyo Corporation	AT573A	0.05	2.5
		ST778A(L)	0.1	5
	Renishaw plc	RESOLUTE	0.001	0.4
			0.05	20
			0.1	40

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

Motor Line-up

Motor			Voltage	Rated output (kW)		Rated rotational speed (Max. speed) (r/min)	Rotary encoder		Enclosure (*1)	Features	Applications	
							20-bit incremental	17-bit absolute				
Low inertia	MSMD		100 V	0.05	0.1	3000 (5000)	○	○	IP65	• Leadwire type • Small capacity • Suitable for high speed application • Suitable for all applications	• Bonder • Semiconductor production equipment • Packing machines etc	
			200 V	0.2	0.4							
	MSME		200 V	0.75		3000 (4500)	○	○	IP67	• Small capacity • Suitable for high speed application • Suitable for all applications		
			100 V	0.05	0.1							3000 (6000)
			200 V	0.2	0.4							
			200 V	0.75		3000 (5000)	○	○	IP65(*2)	• Middle capacity • Suitable for the machines directly coupled with ball screw and high stiffness and high repetitive application		
	400 V	0.75										
	200 V	1.0	1.5									
	200 V	2.0	3.0									
Middle inertia	MDME		400 V	0.4	0.6	2000 (3000)	○	○	IP65(*2)	• Middle capacity • Suitable for low stiffness machines with belt driven	• Conveyors • Robots • Machine tool etc	
			200 V	1.0	1.5							
				2.0	3.0							
				4.0	5.0							
				7.5 (*3)								1500 (3000)
	MFME (Flat type) (*3)		200 V	1.5		2000 (3000)	○	○	IP67	• Middle capacity • Flat type and suitable for machines with space limitation	• Robots • Food machines etc	
				2.5								
				4.5								
	MGME (Low speed/High torque type) (*3)		200 V	0.9	2.0	1000 (2000)	○	○	IP65(*2)	• Middle capacity • Suitable for low speed and high torque application	• Conveyors • Robots • Textile machines etc	
				3.0								
				4.5 (*3)								
	High inertia	MHMD		100 V	0.2		3000 (5000)	○	○	IP65	• Leadwire type • Small capacity • Suitable for low stiffness machines with belt driven	• Conveyors • Robots etc
				200 V	0.4							
MHME			200 V	0.75		3000 (4500)	○	○	IP65(*2)	• Middle capacity • Suitable for low stiffness machines with belt driven, and large load moment of inertia	• Conveyors • Robots • LCD manufacturing equipment etc	
				1.0	1.5							
				2.0	3.0							
				4.0	5.0							
			7.5 (*3)		1500 (3000)							

(*1) Except for output shaft, and connector. (*2) IP67 motor is also available. (*3) Only IP67 motor is available.

* See the P.21 to P.28, driver and motor combination.

* For combination of elements of model number, refer to Index.

Servo Motor

M S M E 5 A Z G 1 S * *			Special specifications			
Symbol			Type			
MSMD			Low inertia (50 W to 750 W)			
MSME			Low inertia (50 W to 5.0 kW)			
MDME			Middle inertia (400 W to 15.0 kW)			
MFME			Middle inertia (1.5 kW to 4.5 kW)			
MGME			Middle inertia (0.9 kW to 6.0 kW)			
MHMD			High inertia (200 W to 750 W)			
MHME			High inertia (1.0 kW to 7.5 kW)			
Symbol			Rated output			
5A			50 W			
01			100 W			
02			200 W			
04			400 W			
06			600 W			
08			750 W			
09			0.9 kW			
10			1.0 kW			
15			1.5 kW			
20			2.0 kW			
Symbol			Specifications			
1			100 V			
2			200 V			
4			400 V			
Z			100 V/200 V common (50 W only)			
Symbol			Specifications			
G			Incremental			
S			Absolute			
Symbol			Specifications			
C			IP65 motor			
1			IP67 motor (MSMD, MHMD: IP65)			

* S: can be used in incremental.

Motor with reduction gear

M S M E 0 1 1 G 3 1 N			Gear ratio, gear type			
Symbol			Type			
MSMD			Low inertia (100 W to 750 W)			
MSME			Low inertia (100 W to 750 W)			
MHMD			High inertia (200 W to 750 W)			
Symbol			Rated output			
01			100 W			
02			200 W			
04			400 W			
08			750 W			
Symbol			Specifications			
1			100 V			
2			200 V			
Symbol			Specifications			
G			Incremental			
S			Absolute			
Symbol			Specifications			
C			IP65 motor			
1			IP67 motor (MSMD, MHMD: IP65)			

* S: can be used in incremental.

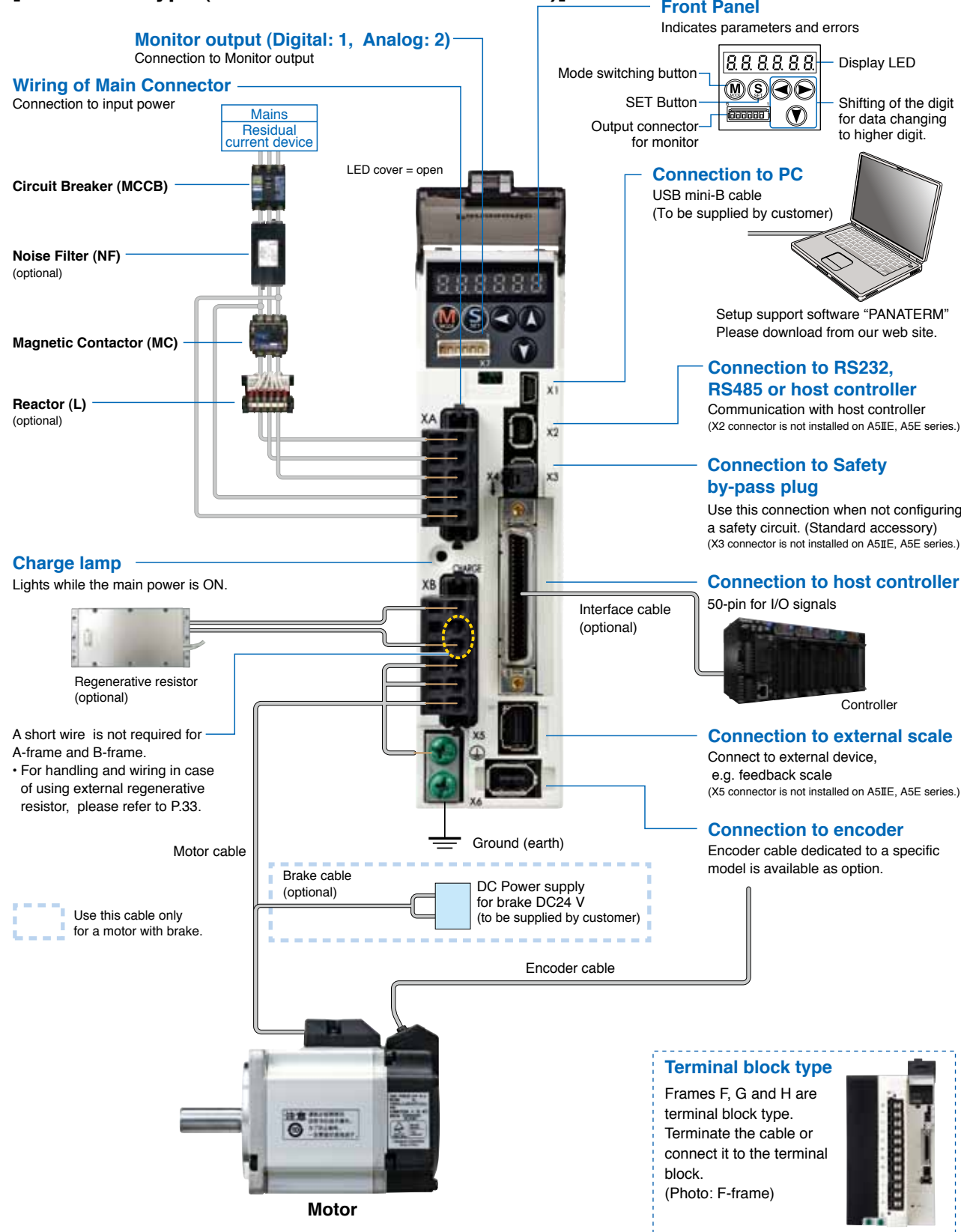
Servo Driver

M A D K T 1 5 0 5 * * *			Special specifications			
M A D K T 1 5 0 5 E * *			Special specifications			
Symbol			Specifications			
MAD			Frame A			
MBD			Frame B			
MCD			Frame C			
MDD			Frame D			
MED			Frame E			
MFD			Frame F			
MGD			Frame G			
MHD			Frame H			
Symbol			Specifications			
T1			10 A			
T2			15 A			
T3			30 A			
T4			35 A			
T5			50 A			
T7			75 A			
TA			100 A			
TB			150 A			
TC			300 A			
Symbol			Specifications			
1			Single phase, 100 V			
3			3-phase, 200 V			
4			3-phase, 400 V			
5			Single/3-phase, 200 V			
Symbol			Specifications			
05			5 A			
07			7.5 A			
10			10 A			
12			12 A			
20			20 A			
30			30 A			
40			40 A			
64			64 A			
90			90 A			
A2			120 A			
B4			240 A			

* A5IE, A5E series is up to F-frame.

Series

[Connector type (100/200 V: A-frame to E-frame)]

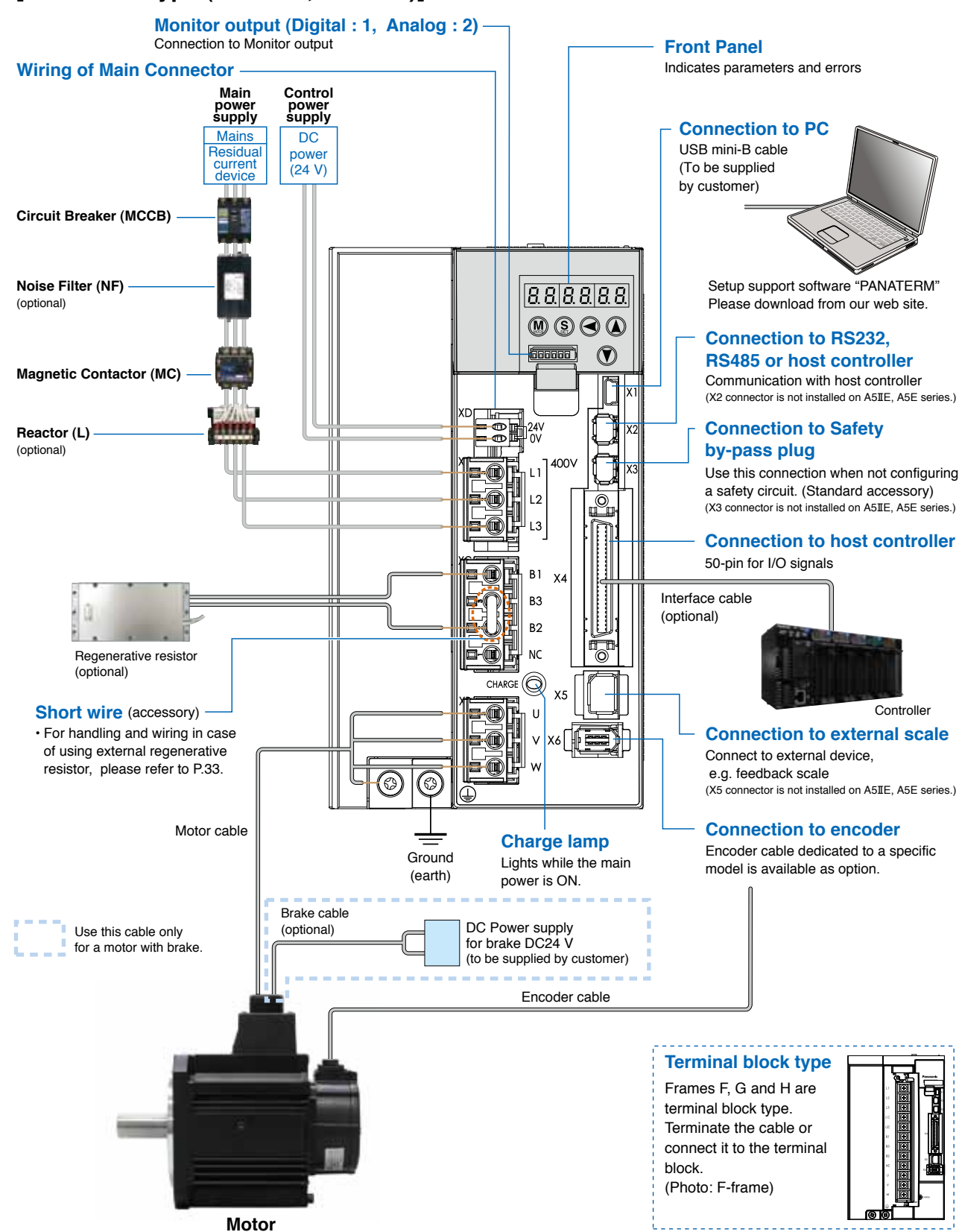


<Caution>

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.

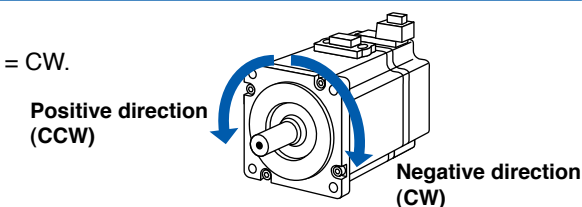
Example) Steel screw (M5) into steel section: 2.7 N·m to 3.3 N·m.

[Connector type (400 V: D, E-frame)]



<Note>

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



Driver and List of Applicable Peripheral Equipments

Driver	Applicable motor	Voltage *1	Rated output	Required Power (at the rated load)	Circuit breaker (rated current)	Noise filter (Single phase) (3-phase)	Surge absorber (Single phase) (3-phase)	Noise filter for signal	Rated operating current of magnetic contactor configuration *2	Diameter and withstand voltage of main circuit cable	Crimp terminal for main circuit terminal block *4	Diameter and withstand voltage of control power supply cable	Crimp terminal for control power supply terminal block	Diameter and withstand voltage of motor cable *5	Diameter and withstand voltage of brake cable
MADH MADK	MSME MSMD MHMD	Single phase, 100 V	50 W to 100 W	approx. 0.4 kVA	10 A	DV0P4170	DV0P4190		20 A (3P+1a)	0.75 mm ² /AWG18 600 VAC or more		0.75 mm ² /AWG18 600 VAC or more		0.75 mm ² /AWG18 600 VAC or more	0.28 mm ² to 0.75 mm ² /AWG22 to AWG18 100 VAC or more
		Single/3-phase, 200 V	50 W to 200 W	approx. 0.5 kVA		DV0P4170 DV0PM20042	DV0P4190 DV0P1450								
MBDH MBDK	MSME MSMD MHMD	Single 100 V	200 W	approx. 0.5 kVA		DV0P4170	DV0P4190								
		Single/3-phase, 200 V	400 W	approx. 0.9 kVA		DV0P4170 DV0PM20042	DV0P4190 DV0P1450								
MCDH MCDK	MSME MSMD MHMD	Single 100 V	400 W	approx. 0.9 kVA	15 A	DV0PM20042	DV0P4190								
		Single/3-phase, 200 V	750 W	approx. 1.3 kVA											
MDDH MDDK	MDME MHME MGME MSME MHME MFME MSME	Single/3-phase, 200 V	1.0 kW	approx. 1.8 kVA	20 A	DV0P4220	DV0P1450	DV0P1460	30 A (3P+1a)		Connection to exclusive connector		Connection to exclusive connector		
			0.9 kW	approx. 1.8 kVA											
			1.0 kW	approx. 1.8 kVA											
			1.5 kW	approx. 2.3 kVA											
	MDME MDME MSME MDME MHME MGME MSME MDME MFME MHME	3-phase, 400 V	400 W	approx. 0.9 kVA	10 A	FN258L-16-07 (Recommended component)	DV0PM20050		20 A (3P+1a)	2.0 mm ² /AWG14 600V VAC or more	Connection to exclusive connector	0.52 mm ² /AWG20 100 VAC or more		2.0 mm ² /AWG14 600V VAC or more	
			600 W	approx. 1.2 kVA											
			750 W	approx. 1.6 kVA											
			1.0 kW	approx. 1.8 kVA											
			0.9 kW												
MEDH MEDK	MDME MSME MHME	3-phase, 200 V	2.0 kW	approx. 3.3 kVA	30 A	DV0PM20043	DV0P1450	DV0P1460 RJ8035 (Recommended component) *6	60 A (3P+1a)			0.75 mm ² /AWG18 600 VAC or more			
			2.5 kW	approx. 3.8 kVA											
	MFME MSME MDME MHME MFME	3-phase, 400 V	2.0 kW	approx. 3.3 kVA	15 A	FN258L-16-07 (Recommended component)	DV0PM20050	DV0P1460	30 A (3P+1a)			0.52 mm ² /AWG20 100 VAC or more			
			2.5 kW	approx. 3.8 kVA											
MFDH MFDK	MGME MDME MHME MSME MGME MDME MHME MSME	3-phase, 200 V	2.0 kW	approx. 3.8 kVA	50 A	DV0P3410	DV0P1450	DV0P1460 RJ8035 (Recommended component) *6	60 A (3P+1a)	3.5 mm ² /AWG12 600 VAC or more	11 mm or smaller  Terminal block M5	0.75 mm ² /AWG18 600 VAC or more	11 mm or smaller  Terminal block M5	3.5 mm ² /AWG18 100 VAC or more	0.75 mm ² /AWG18 100 VAC or more
			3.0 kW	approx. 4.5 kVA											
			4.0 kW	approx. 6.0 kVA											
			4.5 kW	approx. 6.8 kVA											
			5.0 kW	approx. 7.5 kVA											
	MGME MSME MDME MHME MGME MSME MDME MHME	3-phase, 400 V	2.0 kW	approx. 3.8 kVA	30 A	FN258L-30-07 (Recommended component)	DV0PM20050	DV0P1460	60 A (3P+1a)		10 mm or smaller  Terminal block M4	0.75 mm ² /AWG18 100 VAC or more	7 mm or smaller  Terminal block M3		
			3.0 kW	approx. 4.5 kVA											
			4.0 kW	approx. 6.0 kVA											
			4.5 kW	approx. 6.8 kVA											
			5.0 kW	approx. 7.5 kVA											
MGDH MGDK	MDME MGME MHME	3-phase, 200 V	7.5 kW	approx. 11 kVA	60 A	FS5559-60-34 (Recommended component)	DV0P1450		100 A (3P+1a)	5.3 mm ² /AWG10 600 VAC or more	11 mm or smaller  Terminal block M5	0.75 mm ² /AWG18 600 VAC or more	10 mm or smaller  Terminal block M5	13.3 mm ² /AWG6 600 VAC or more	
			6.0 kW	approx. 9.0 kVA											
	MDME MGME MHME	3-phase, 400 V	7.5 kW	approx. 11 kVA	30 A	FN258-42-07 or FN258-42-33 (Recommended component)	DV0PM20050	DV0P1460 RJ8095 (Recommended component) *6	60 A (3P+1a)		16 mm or smaller  Terminal block M6	0.75 mm ² /AWG18 600 VAC or more	10 mm or smaller  Terminal block M4	21.1 mm ² /AWG4 600 VAC or more	
			6.0 kW	approx. 9.0 kVA											
			7.5 kW	approx. 11 kVA											
MHDH MHDK	MDME	3-phase, 200 V	11 kW	approx. 17 kVA	100 A	FS5559-80-34 (Recommended component)	DV0P1450		150 A (3P+1a)	13.3 mm ² /AWG6 600 VAC or more	16 mm or smaller  Terminal block M6	0.75 mm ² /AWG18 600 VAC or more	10 mm or smaller  Terminal block M4	21.1 mm ² /AWG4 600 VAC or more	
			15 kW	approx. 22 kVA	125 A										
		3-phase, 400 V	11 kW	approx. 17 kVA	50 A	FN258-42-07 or FN258-42-33 (Recommended component)	DV0PM20050		100 A (3P+1a)			0.75 mm ² /AWG18 100 VAC or more		21.1 mm ² /AWG4 600 VAC or more	
			15 kW	approx. 22 kVA	60 A										

*1 Select peripheral equipments for single/3phase common specification according to the power source.

*2 For the external dynamic brake resistor, use the magnetic contactor with the same rating as that for the main circuit.

*3 When use the external regenerative resistor of the option (DV0PM20058, DV0PM20059), use the cable with the same diameter as the main circuit cable.

*4 For the ground screw, use the same crimp terminal as that for the main circuit terminal block.

*5 The diameter of the ground cable and the external dynamic brake resistor cable must be equal to, or larger than that of the motor cable.

The motor cable is a shield cable, which conforms to the EC Directives and UL Standards. (G, H-frame only)

*6 Use thses products to suit an international standard.

• Related page

Noise filter P.250 “Composition of Peripheral Equipments”

Surge absorber.....P.253 “Composition of Peripheral Equipments”

Noise filter for signal.....P.254 “Composition of Peripheral Equipments”

Motor/brake connector P.186, P.187 “Specifications of Motor connector”

• About circuit breaker and magnetic contactor

To comply to EC Directives, install a circuit break er 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.

<Remarks>

• 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 °C 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)

Driver		Terminal block screw		Terminal cover fastening screw	
Frame	Terminal name	Nominal size	Fastening torque (N•m)	Nominal size	Fastening torque (N•m)
F(200 V)	L1, L2, L3, L1C, L2C, B1, B2, B3, NC, U, V, W	M5	1.0 to 1.7	M3	0.19 to 0.21
F(400 V)	24V, 0V	M3	0.4 to 0.6		
	L1, L2, L3, B1, B2, B3, NC, U, V, W	M4	0.7 to 1.0	M3	0.3 to 0.5
G	L1C, L2C, 24V, 0V, DB1, DB2, DB3, DB4, NC	M5	1.0 to 1.7		
	L1, L2, L3, B1, B2, NC, U, V, W	M5	2.0 to 2.4	M5	2.0 to 2.5
H	L1C, L2C, 24V, 0V, DB1, DB2	M4	0.7 to 1.0		
	L1, L2, L3, B1, B2, NC, U, V, W	M6	2.2 to 2.5		

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)	Nominal size	Fastening torque (N•m)
A to E	M4	0.7 to 0.8	M2.6	0.3 to 0.35
G	M5	1.4 to 1.6		
H	M6	2.4 to 2.6		

<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			Power capacity (at rated load (kVA)	Optional parts															
Motor series	Power supply	Output (W)	Part No. Note) 1	Rating/ Spec. (page)	A5II series A5 series Part No. (Speed, Position, Torque, Full-Closed type Note) 2	A5IIE series A5E series Part No. (Position control type Note) 3,4	Frame		Encoder Cable		Motor Cable		Brake Cable	External Regenerative Resistor	Reactor (Single phase 3-phase)	Noise Filter (Single phase 3-phase)								
									20-bit Incremental Note) 5	17-bit Absolute Note) 4,5,8	without Brake Note) 5	with Brake Note) 5	Note) 5											
Low inertia	MSMD (Leadwire type) 3000 r/min	Single phase 100 V	50	MSMD5AZ □ 1 *	49	MAD ◇ T1105	MAD ◇ T1105E	A-frame	Approx. 0.4	MFECA 0 * * 0EAM	MFECA 0 * * 0EAE Note) 7		MFMCA 0 * * 0EED	MFMCB 0 * * 0GET	DV0P4280	DV0P227	DV0P4170							
			100	MSMD011 □ 1 *	51	MAD ◇ T1107	MAD ◇ T1107E	A-frame	Approx. 0.4															
			200	MSMD021 □ 1 *	53	MBD ◇ T2110	MBD ◇ T2110E	B-frame	Approx. 0.5									DV0P4283	DV0P228					
			400	MSMD041 □ 1 *	55	MCD ◇ T3120	MCD ◇ T3120E	C-frame	Approx. 0.9											DV0P4282	DV0PM20042			
		Single phase/ 3-phase 200 V	50	MSMD5AZ □ 1 *	50	MAD ◇ T1505	MAD ◇ T1505E	A-frame	Approx. 0.5						DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042							
			100	MSMD012 □ 1 *	52	MAD ◇ T1505	MAD ◇ T1505E		Approx. 0.5															
			200	MSMD022 □ 1 *	54	MAD ◇ T1507	MAD ◇ T1507E		Approx. 0.5									DV0P4283	DV0P228 DV0P220	DV0PM20042				
			400	MSMD042 □ 1 *	56	MBD ◇ T2510	MBD ◇ T2510E	B-frame	Approx. 0.9															
			750	MSMD082 □ 1 *	57	MCD ◇ T3520	MCD ◇ T3520E	C-frame	Approx. 1.3															
	MSME (Connector type) 3000 r/min	Single phase 100 V	50	MSME5AZ □ 1 *	65	MAD ◇ T1105	MAD ◇ T1105E	A-frame	Approx. 0.4	MFECA 0 * * 0MJD (For movable, direction of motor shaft)	MFECA 0 * * 0MJE (For movable, direction of motor shaft)		MFMCA 0 * * 0NJD (For movable, direction of motor shaft)	MFMCB 0 * * 0PJT (For movable, direction of motor shaft)	DV0P4280	DV0P227	DV0P4170							
			100	MSME011 □ 1 *	67	MAD ◇ T1107	MAD ◇ T1107E	A-frame	Approx. 0.4															
			200	MSME021 □ 1 *	69	MBD ◇ T2110	MBD ◇ T2110E	B-frame	Approx. 0.5									DV0P4283	DV0P228					
			400	MSME041 □ 1 *	71	MCD ◇ T3120	MCD ◇ T3120E	C-frame	Approx. 0.9															
		Single phase/ 3-phase 200 V	50	MSME5AZ □ 1 *	66	MAD ◇ T1505	MAD ◇ T1505E	A-frame	Approx. 0.5						MFECA 0 * * 0TJD (For fixed, direction of motor shaft)	MFECA 0 * * 0TJE (For fixed, direction of motor shaft)	MFMCA 0 * * 0RJD (For fixed, direction of motor shaft)	MFMCB 0 * * 0SJT (For fixed, direction of motor shaft)	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042			
			100	MSME012 □ 1 *	68	MAD ◇ T1505	MAD ◇ T1505E		Approx. 0.5															
			200	MSME022 □ 1 *	70	MAD ◇ T1507	MAD ◇ T1507E		Approx. 0.5													DV0P4283	DV0P228 DV0P220	DV0PM20042
			400	MSME042 □ 1 *	72	MBD ◇ T2510	MBD ◇ T2510E	B-frame	Approx. 0.9															
			750	MSME082 □ 1 *	73	MCD ◇ T3520	MCD ◇ T3520E	C-frame	Approx. 1.3															
High inertia	MHMD (Leadwire type) 3000 r/min	Single phase 100 V	200	MHMD021 □ 1 *	59	MBD ◇ T2110	MBD ◇ T2110E	B-frame	Approx. 0.5	MFECA 0 * * 0EAM	MFECA 0 * * 0EAE Note) 7		MFMCA 0 * * 0EED	MFMCB 0 * * 0GET	DV0P4283	DV0P228	DV0P4170							
			400	MHMD041 □ 1 *	61	MCD ◇ T3120	MCD ◇ T3120E	C-frame	Approx. 0.9						DV0P4282		DV0PM20042							
		Single phase/ 3-phase 200 V	200	MHMD022 □ 1 *	60	MAD ◇ T1507	MAD ◇ T1507E	A-frame	Approx. 0.5						DV0P4283	DV0P227 DV0P220	DV0P4170 DV0PM20042							
			400	MHMD042 □ 1 *	62	MBD ◇ T2510	MBD ◇ T2510E	B-frame	Approx. 0.9							DV0P228								
			750	MHMD082 □ 1 *	63	MCD ◇ T3520	MCD ◇ T3520E	C-frame	Approx. 1.3							DV0P220		DV0PM20042						

Note) 1 Rotary encoder specifications: □ Motor specification: * (refer to P.16)

Note) 2 ◇ : Drivers series K: A5Ⅱ series H: A5 series

Note) 3 ◇ : Drivers series K: A5ⅡE series H: A5E series

Note) 4 Because A5ⅡE, A5E series drivers (dedicated for position control) do not support the 17-bit absolute specification, only 20-bit incremental type can be used in combination.

Note) 5 Cable length: ** (03: 3 m, 05: 5 m, 10: 10 m, 20: 20 m) (Example. 3 m: MFECA0030EAM)

Note) 6 Cables for opposite to output shaft cannot be used with 50 W or 100 W motor.

Note) 7 When you use a 17-bit absolute encoder as an incremental encoder, please use the encoder cable MFECA0**0EAD.

Note) 8 Please note that a battery is not supplied together with 17-bit absolute encoder cable (with battery box). Please buy the battery part number “DV0P2990” separately.

• Selection of cable for MSME motor

(Movable: For application where the cable is movable.)
(Fixed: For application where the cable is fixed.)

• Encoder cable

Example: MFECA0**0 ◇ △ □

◇ : Cable type		△ : Cable direction		□ : Encoder Specifications	
Symbol	Specifications	Symbol	Specifications	Symbol	Specifications
M	Movable	J	Direction of motor shaft	D	20-bit Incremental
T	Fixed	K	Opposite direction of motor shaft	E	17-bit Absolute

• Motor cable

Example: MFMCA0**0 ◇ △ D

◇ : Cable type		△ : Cable direction	
Symbol	Specifications	Symbol	Specifications
N	Movable	J	Direction of motor shaft
R	Fixed	K	Opposite direction of motor shaft

• Brake cable

Example: MFMCB0**0 ◇ △ T

◇ : Cable type		△ : Cable direction	
Symbol	Specifications	Symbol	Specifications
P	Movable	J	Direction of motor shaft
S	Fixed	K	Opposite direction of motor shaft

• Options

Title			Part No.	Page
Interface Cable			DV0P4360	197
Interface Conversion Cable			DV0P4120	
			DV0P4121	
			DV0P4130	
			DV0P4131	
			DV0P4132	
Connector Kit for Power Supply Input Connection	A-frame to D-frame	Single row type	DV0PM20032	200
		Double row type	DV0PM20033	
Connector Kit for Motor Connection	A-frame to D-frame		DV0PM20034	201
Connector Kit for Motor/Encoder Connection			DV0P4290	202
			DV0P4380	
			DV0PM20035	
Connector Kit for Motor/Brake Connection			DV0PM20040	206
Connector Kit	RS485, RS232 Safety Interface External Scale Encoder Analog Monitor Signal		DV0PM20024	198
			DV0PM20025	
			DV0P4350	199
			DV0PM20026	
			DV0PM20010	
			DV0PM20031	
Battery For Absolute Encoder			DV0P2990	207
Battery Box Note) 8			DV0P4430	
Mounting Bracket	A-frame		DV0PM20027	208
	B-frame		DV0PM20028	
	C-frame		DV0PM20029	
Encoder Cable	without Battery Box		MFECA0**0EAD	188
			MFECA0**0EAM	
			MFECA0**0MJD	189
			MFECA0**0MKD	
			MFECA0**0TJD	
			MFECA0**0TKD	
	with Battery Box Note) 8		MFECA0**0EAE	188
			MFECA0**0MJE	189
			MFECA0**0MKE	
			MFECA0**0TJE	
	MFECA0**0TKE			
Motor Cable	without Brake		MFMCA0**0EED	191
			MFMCA0**0NJD	
			MFMCA0**0NKD	
			MFMCA0**0RJD	
			MFMCA0**0RKD	
Brake Cable			MFMCB0**0GET	196
			MFMCB0**0PJT	
			MFMCB0**0PKT	
			MFMCB0**0SJT	
		MFMCB0**0SKT		
External Regenerative Resistor	50 Ω 25 W		DV0P4280	210
	100 Ω 25 W		DV0P4281	
	25 Ω 50 W		DV0P4282	
	50 Ω 50 W		DV0P4283	
	30 Ω 100 W		DV0P4284	
	20 Ω 130 W		DV0P4285	
Reactor	DV0P220, DV0P221, DV0P222, DV0P223, DV0P224, DV0P225, DV0P227, DV0P228, DV0P20047			209
Noise Filter	DV0P4170, DV0PM20042 DV0P4220, DV0PM20043			250
	DV0P3410			251
Surge Absorber	Single phase		DV0P4190	253
	3-phase (200 V)		DV0P1450	
Noise Filter for Signal Lines			DV0P1460	254

A5 Family

Table of Part Numbers and Options

0.4 kW to 5.0 kW IP65 motor

Motor					Driver			Power capacity (at rated load (kVA)	Optional parts											
Motor series	Power supply	Output (W)	Part No. Note) 1	Rating/ Spec. (page)	A5II series A5 series Part No. (Speed, Position, Torque, Full-Closed type Note) 2	A5IE series A5E series Part No. (Position control type Note) 3,4	Frame		Encoder Cable		Motor Cable		Brake Cable	External Regenerative Resistor	Reactor (Single phase 3-phase)	Noise Filter				
									20-bit Incremental Note) 5	17-bit Absolute Note) 4,5,8	without Brake Note) 5	with Brake Note) 5	Note) 5							
Low inertia	MSME 3000 r/min	Single phase/ 3-phase 200 V	1000	MSME102 □ C *	74	MDD ◇ T5540	MDD ◇ T5540E	D-frame	Approx. 1.8	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P228 DV0P222	DV0P4220		
			1500	MSME152 □ C *	75	MDD ◇ T5540	MDD ◇ T5540E		Approx. 2.3								DV0PM20047 DV0P222			
		3-phase 200 V	2000	MSME202 □ C *	76	MED ◇ T7364	MED ◇ T7364E	E-frame	Approx. 3.3							MFMCA 0**3ECT	MFMCA 0**3FCT	DV0P4285 Note) 6	DV0P4285 x2 in parallel	DV0P223
			3000	MSME302 □ C *	77	MFD ◇ TA390	MFD ◇ TA390E	F-frame	Approx. 4.5				DV0P224 DV0P225	DV0P3410						
			4000	MSME402 □ C *	78	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 6											
			5000	MSME502 □ C *	79	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 7.5											
		3-phase 400 V	750	MSME084 □ C *	104	MDD ◇ T2412	MDD ◇ T2412E	D-frame	Approx. 1.6	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCE 0**2FCD	—	DV0PM20048	— Note) 7	Recommended components P.252		
			1000	MSME104 □ C *	105	MDD ◇ T3420	MDD ◇ T3420E		Approx. 1.8											
			1500	MSME154 □ C *	106	MDD ◇ T3420	MDD ◇ T3420E	Approx. 2.3												
			2000	MSME204 □ C *	107	MED ◇ T4430	MED ◇ T4430E	E-frame	Approx. 3.3				MFMCA 0**3ECT	MFMCA 0**3FCT		DV0PM20049 x2 in parallel				
			3000	MSME304 □ C *	108	MFD ◇ T5440	MFD ◇ T5440E	F-frame	Approx. 4.5											
			4000	MSME404 □ C *	109	MFD ◇ TA464	MFD ◇ TA464E		Approx. 6											
			5000	MSME504 □ C *	110	MFD ◇ TA464	MFD ◇ TA464E	Approx. 7.5												
		Middle inertia	MDME 2000 r/min	Single phase/ 3-phase 200 V	1000	MDME102 □ C *	80	MDD ◇ T3530	MDD ◇ T3530E	D-frame	Approx. 1.8	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P228 DV0P222	DV0P4220
					1500	MDME152 □ C *	81	MDD ◇ T5540	MDD ◇ T5540E		Approx. 2.3								DV0PM20047 DV0P222	
3-phase 200 V	2000			MDME202 □ C *	82	MED ◇ T7364	MED ◇ T7364E	E-frame	Approx. 3.3	MFMCA 0**3ECT	MFMCA 0**3FCT							DV0P4285 Note) 7	DV0P4285 x2 in parallel	DV0P223
	3000			MDME302 □ C *	83	MFD ◇ TA390	MFD ◇ TA390E	F-frame	Approx. 4.5						DV0P224 DV0P225	DV0P3410				
	4000			MDME402 □ C *	84	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 6											
	5000			MDME502 □ C *	85	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 7.5											
3-phase 400 V	400			MDME044 □ C *	111	MDD ◇ T2407	MDD ◇ T2407E	D-frame	Approx. 0.9	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCE 0**2FCD	—	DV0PM20048	— Note) 7	Recommended components P.252		
	600			MDME064 □ C *	112	MDD ◇ T2407	MDD ◇ T2407E		Approx. 1.2											
	1000			MDME104 □ C *	113	MDD ◇ T2412	MDD ◇ T2412E		Approx. 1.8											
	1500			MDME154 □ C *	114	MDD ◇ T3420	MDD ◇ T3420E		Approx. 2.3											
	2000			MDME204 □ C *	115	MED ◇ T4430	MED ◇ T4430E	E-frame	Approx. 3.3				MFMCA 0**3ECT	MFMCA 0**3FCT		DV0PM20049 x2 in parallel				
	3000			MDME304 □ C *	116	MFD ◇ T5440	MFD ◇ T5440E	F-frame	Approx. 4.5											
	4000			MDME404 □ C *	117	MFD ◇ TA464	MFD ◇ TA464E		Approx. 6											
	5000			MDME504 □ C *	118	MFD ◇ TA464	MFD ◇ TA464E	Approx. 7.5												
MGME (Low speed/ High torque type)	1000 r/min			Single phase/ 3-phase 200 V	900	MGME092 □ C *	92	MDD ◇ T5540	MDD ◇ T5540E	D-frame	Approx. 1.8	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCA **2FCD	—	DV0P4284	DV0P228 DV0P221	DV0P4220
					2000	MGME202 □ C *	93	MFD ◇ TA390	MFD ◇ TA390E	F-frame	Approx. 3.8								DV0P223	
				3-phase 200 V	3000	MGME302 □ C *	94	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 4.5	MFMCA 0**3ECT	MFMCA 0**3FCT	x2 in parallel	DV0P224	DV0P3410				
					3-phase 400 V	900	MGME094 □ C *	125	MDD ◇ T3420	MDD ◇ T3420E	D-frame				Approx. 1.8	MFECA 0**0ESD		MFECA 0**0ESE		MFMCD 0**2ECD
			2000	MGME204 □ C *		126	MFD ◇ T5440	MFD ◇ T5440E	F-frame	Approx. 3.8										
			3000	MGME304 □ C *	127	MFD ◇ TA464	MFD ◇ TA464E	Approx. 4.5												
High inertia	MHME 2000 r/min		Single phase/ 3-phase 200 V	1000	MHME102 □ C *	97	MDD ◇ T3530	MDD ◇ T3530E	D-frame	Approx. 1.8	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P228/ DV0P222	DV0P4220	
				1500	MHME152 □ C *	98	MDD ◇ T5540	MDD ◇ T5540E		Approx. 2.3								DV0PM20047/ DV0P222		
		3-phase 200 V	2000	MHME202 □ C *	99	MED ◇ T7364	MED ◇ T7364E	E-frame	Approx. 3.3	MFMCE 0**2ECD							MFMCE 0**2FCD	DV0P4285 Note) 6	DV0P4285 x2 in parallel	DV0P223
			3000	MHME302 □ C *	100	MFD ◇ TA390	MFD ◇ TA390E	F-frame	Approx. 4.5					DV0P224 DV0P225	DV0P3410					
			4000	MHME402 □ C *	101	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 6											
			5000	MHME502 □ C *	102	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 7.5											
		3-phase 400 V	1000	MHME104 □ C *	130	MDD ◇ T2412	MDD ◇ T2412E	D-frame	Approx. 1.8	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCE 0**2FCD	—	DV0PM20049	— Note) 7	Recommended components P.252		
			1500	MHME154 □ C *	131	MDD ◇ T3420	MDD ◇ T3420E		Approx. 2.3											
			2000	MHME204 □ C *	132	MED ◇ T4430	MED ◇ T4430E	E-frame	Approx. 3.3				MFMCA 0**3ECT	MFMCA 0**3FCT		DV0PM20049 x2 in parallel				
			3000	MHME304 □ C *	133	MFD ◇ T5440	MFD ◇ T5440E	F-frame	Approx. 4.5											
			4000	MHME404 □ C *	134	MFD ◇ TA464	MFD ◇ TA464E		Approx. 6											
			5000	MHME504 □ C *	135	MFD ◇ TA464	MFD ◇ TA464E	Approx. 7.5												

A5 Family

Table of Part Numbers and Options

400 W to 15.0 kW IP67 motor (MSME
MDME
MFME)

Motor					Driver			Power capacity at rated load (kVA)	Optional parts															
Motor series	Power supply	Output (W)	Part No. Note) 1	Rating/ Spec. (page)	A5II series A5 series Part No. (Speed, Position, Torque, Full-Closed type Note) 2	A5IIE series A5E series Part No. (Position control type Note) 3,4	Frame		Encoder Cable		Motor Cable		Brake Cable	External Regenerative Resistor	Reactor Single phase 3-phase	Noise Filter								
									20-bit Incremental Note) 5	17-bit Absolute Note) 4,5,9	without Brake Note) 5	with Brake Note) 5	Note) 5											
Low inertia	MSME 3000 r/min	Single phase/ 3-phase 200 V	1000	MSME102 □ 1 *	74	MDD ◇ T5540	MDD ◇ T5540E	D-frame	Approx. 1.8	MFECA 0**0ETD	MFECA 0**0ETE		MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P228 DV0P222 DV0PM20047 DV0P222	DV0P4220						
			1500	MSME152 □ 1 *	75	MDD ◇ T5540	MDD ◇ T5540E		Approx. 2.3								DV0P4285 Note) 7		DV0P223	DV0PM20043				
		3-phase 200 V	2000	MSME202 □ 1 *	76	MED ◇ T7364	MED ◇ T7364E	E-frame	Approx. 3.3							MFMCA 0**3ECT	MFMCA 0**3FCT	DV0P4285 ×2 in parallel	DV0P224	DV0P3410				
			3000	MSME302 □ 1 *	77	MFD ◇ TA390	MFD ◇ TA390E	F-frame	Approx. 4.5										DV0P225					
			4000	MSME402 □ 1 *	78	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 6										— Note) 8					
			5000	MSME502 □ 1 *	79	MFD ◇ TB3A2	MFD ◇ TB3A2E	Approx. 7.5																
		3-phase 400 V	750	MSME084 □ 1 *	104	MDD ◇ T2412	MDD ◇ T2412E	D-frame	Approx. 1.6	MFECA 0**0ETD	MFECA 0**0ETE		MFMCD 0**2ECD	MFMCE 0**2FCD	—	DV0PM20048	— Note) 8	Recommended components P.252						
			1000	MSME104 □ 1 *	105	MDD ◇ T3420	MDD ◇ T3420E		Approx. 1.8										DV0PM20049					
			1500	MSME154 □ 1 *	106	MDD ◇ T3420	MDD ◇ T3420E	E-frame	Approx. 2.3							MFMCA 0**3ECT			MFMCA 0**3FCT	DV0PM20049 ×2 in parallel				
			2000	MSME204 □ 1 *	107	MED ◇ T4430	MED ◇ T4430E		Approx. 3.3															
			3000	MSME304 □ 1 *	108	MFD ◇ T5440	MFD ◇ T5440E	F-frame	Approx. 4.5															
			4000	MSME404 □ 1 *	109	MFD ◇ TA464	MFD ◇ TA464E		Approx. 6															
			5000	MSME504 □ 1 *	110	MFD ◇ TA464	MFD ◇ TA464E	Approx. 7.5																
Middle inertia	MDME 2000 r/min	Single phase/ 3-phase 200 V	1000	MDME102 □ 1 *	80	MDD ◇ T3530	MDD ◇ T3530E	D-frame	Approx. 1.8	MFECA 0**0ETD	MFECA 0**0ETE		MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P228 DV0P222 DV0PM20047 DV0P222	DV0P4220						
			1500	MDME152 □ 1 *	81	MDD ◇ T5540	MDD ◇ T5540E		Approx. 2.3								DV0P4285 Note) 7		DV0P223	DV0PM20043				
		3-phase 200 V	2000	MDME202 □ 1 *	82	MED ◇ T7364	MED ◇ T7364E	E-frame	Approx. 3.3							MFMCA 0**3ECT	MFMCA 0**3FCT	DV0P4285 ×2 in parallel	DV0P224	DV0P3410				
			3000	MDME302 □ 1 *	83	MFD ◇ TA390	MFD ◇ TA390E	F-frame	Approx. 4.5										DV0P225					
			4000	MDME402 □ 1 *	84	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 6										— Note) 6	— Note) 6		DV0P4285 ×3 in parallel	— Note) 8	Recommended components P.252
			5000	MDME502 □ 1 *	85	MFD ◇ TB3A2	MFD ◇ TB3A2E	F-frame	Approx. 7.5															
			7500	MDME752 □ 1 *	86	MGD ◇ TC3B4	—	G-frame	Approx. 11															
			11000	MDMEC12 □ 1 *	87	MHD ◇ TC3B4		H-frame	Approx. 17															
			15000	MDMEC52 □ 1 *	88	MHD ◇ TC3B4			Approx. 22															
		3-phase 400 V	400	MDME044 □ 1 *	111	MDD ◇ T2407	MDD ◇ T2407E	D-frame	Approx. 0.9	MFECA 0**0ETD	MFECA 0**0ETE		MFMCD 0**2ECD	MFMCE 0**2FCD	—	DV0PM20048	— Note) 8	Recommended components P.252						
			600	MDME064 □ 1 *	112				Approx. 1.2										DV0PM20049					
			1000	MDME104 □ 1 *	113	MDD ◇ T2412	MDD ◇ T2412E		Approx. 1.8															
			1500	MDME154 □ 1 *	114	MDD ◇ T3420	MDD ◇ T3420E		Approx. 2.3							MFMCA 0**3ECT			MFMCA 0**3FCT					
			2000	MDME204 □ 1 *	115	MED ◇ T4430	MED ◇ T4430E	E-frame	Approx. 3.3															
			3000	MDME304 □ 1 *	116	MFD ◇ T5440	MFD ◇ T5440E	F-frame	Approx. 4.5													DV0PM20049 ×2 in parallel		
			4000	MDME404 □ 1 *	117	MFD ◇ TA464	MFD ◇ TA464E		Approx. 6															
			5000	MDME504 □ 1 *	118	MFD ◇ TA464	MFD ◇ TA464E	F-frame	Approx. 7.5															
			7500	MDME754 □ 1 *	119	MGD ◇ TB4A2	—	G-frame	Approx. 11							— Note) 6			— Note) 6		DV0PM20049 ×3 in parallel			
			11000	MDMEC14 □ 1 *	120	MHD ◇ TB4A2		H-frame	Approx. 17															
			15000	MDMEC54 □ 1 *	121	MHD ◇ TB4A2			Approx. 22															
		MFME (Flat type) 2000 r/min	Single phase/ 3-phase 200 V	1500	MFME152 □ 1 *	89	MDD ◇ T5540	MDD ◇ T5540E	D-frame	Approx. 2.3	MFECA 0**0ETD	MFECA 0**0ETE		MFMCA 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0PM20047 DV0P222	DV0P4220					
				2500	MFME252 □ 1 *	90	MED ◇ T7364	MED ◇ T7364E	E-frame	Approx. 3.8								DV0P4285 Note) 7		DV0P224	DV0PM20043			
			3-phase 200 V	4500	MFME452 □ 1 *	91	MFD ◇ TB3A2	MFD ◇ TB3A2E	F-frame	Approx. 6.8	MFMCD 0**3ECT	MFMCA 0**3FCT	DV0P4285 ×2 in parallel	— Note) 8	DV0P3410									
				1500	MFME154 □ 1 *	122	MDD ◇ T3420	MDD ◇ T3420E	D-frame	Approx. 2.3				MFMCF 0**2ECD		MFMCE 0**2FCD	—	DV0PM20048 DV0PM20049	— Note) 8	Recommended components P.252				
			2500	MFME254 □ 1 *	123	MED ◇ T4430	MED ◇ T4430E	E-frame	Approx. 3.8															
			4500	MFME454 □ 1 *	124	MFD ◇ TA464	MFD ◇ TA464E	F-frame	Approx. 6.8															

Note) 1 Rotary encoder specifications: □ Motor specification: * (refer to P.16)
Note) 2 ◇ : Drivers series K: A5Ⅱ series H: A5 series Note) 3 ◇ : Drivers series K: A5ⅡE series H: A5E series
Note) 4 Because A5ⅡE, A5E series drivers (dedicated for position control) do not support the 17-bit absolute specification, only 20-bit incremental type can be used in combination.
Note) 5 Cable length: ** (03: 3 m, 05: 5 m, 10: 10 m, 20: 20 m), (Example. 3 m: MFECA0030EAM)

Note) 6 Recommend to get the connector kit of options.
Note) 7 Other combinations exist, and refer to P.210 for details.
Note) 8 Reactor should be prepared by the user.
Note) 9 Please note that a battery is not supplied together with 17-bit absolute encoder cable (with battery box).
Please buy the battery part number “DV0P2990” separately.

Options (IP67 motor)				
Title			Part No.	Page
Interface Cable			DV0P4360	197
Interface Conversion Cable			DV0P4120	
			DV0P4121	
			DV0P4130	
			DV0P4131	
			DV0P4132	
Connector Kit for Power Supply Input Connection	A-frame to D-frame	Single row type	DV0PM20032	200
		Double row type	DV0PM20033	
	E-frame (200 V)		DV0PM20044	
	D-frame (400 V)		DV0PM20051	
	E-frame (400 V)		DV0PM20052	
Connector Kit for Control Power Supply Input Connection	D-frame and E-frame (400 V)		DV0PM20053	201
Connector Kit for Motor Connection	A-frame to D-frame		DV0PM20034	
	E-frame (200 V)		DV0PM20046	
	D-frame (400 V)		DV0PM20054	
Connector Kit for Regenerative Resistor	E-frame		DV0PM20045	
	D-frame (400 V)		DV0PM20055	
Connector Kit for Motor/Encoder Connection			DV0PM20036	203
			DV0PM20037	204
			DV0PM20038	
			DV0PM20039	
Connector Kit	RS485, RS232		DV0PM20024	198
	Safety		DV0PM20025	
	Interface		DV0P4350	
	External Scale		DV0PM20026	199
	Encoder		DV0PM20010	
	Analog Monitor Signal		DV0PM20031	
Battery For Absolute Encoder			DV0P2990	207
Battery Box Note) 9			DV0P4430	207
Mounting Bracket	D-frame		DV0PM20030	208
Encoder Cable	without Battery Box		MFECA0**0ETD	190
	with Battery Box Note) 9		MFECA0**0ETE	
Motor Cable	without Brake	MFMCA0**2ECD	191	
		MFMCD0**2ECD	192	
		MFMCE0**2ECD		
		MFMCF0**2ECD	193	
		MFMCA0**3ECT		
		MFMCD0**3ECT		
	with Brake	MFMCA0**2FCD	194	
		MFMCE0**2FCD		
MFMCA0**3FCT	195			
External Regenerative Resistor	50 Ω 25 W		DV0P4280	210
	100 Ω 25 W		DV0P4281	
	25 Ω 50 W		DV0P4282	
	50 Ω 50 W		DV0P4283	
	30 Ω 100 W		DV0P4284	
	20 Ω 130 W		DV0P4285	
	120 Ω 80 W		DV0PM20048	
	80 Ω 190 W		DV0PM20049	
Reactor	DV0P220, DV0P221, DV0P222, DV0P223, DV0P224, DV0P225, DV0P227, DV0P228, DV0PM20047		209	
Noise Filter	DV0P4170, DV0PM20042 DV0P4220, DV0PM20043		250	
	DV0P3410		251	
Surge Absorber	Single phase		DV0P4190	253
	3-phase (200V)		DV0P1450	
	3-phase (400V)		DV0PM20050	
Noise Filter for Signal Lines			DV0P1460	254

A5 Family

Table of Part Numbers and Options

0.9 kW to 7.5 kW IP67 motor (MGME)
(MHME)

Motor					Driver			Power capacity at rated load (kVA) <th colspan="9">Optional parts</th>	Optional parts										
Motor series	Power supply	Output (W)	Part No. Note) 1	Rating/ Spec. (page)	A5II series A5 series Part No. (Speed, Position, Torque, Full-Closed type Note) 2	A5IIE series A5E series Part No. (Position control type Note) 3,4	Frame		Encoder Cable		Motor Cable		Brake Cable	External Regenerative Resistor	Reactor Single phase 3-phase	Noise Filter			
									20-bit Incremental Note) 5	17-bit Absolute Note) 4,5,9	without Brake Note) 5	with Brake Note) 5	Note) 5						
Middle inertia	MGME Low speed/ High torque type 1000 r/min	Single phase/ 3-phase 200 V	900	MGME092 □ 1 *	92	MDD ◇ T5540	MDD ◇ T5540E	D-frame	Approx. 1.8	MFECA 0**0ETD	MFECA 0**0ETE		MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P228 DV0P221	DV0P4220	
		3-phase 200 V	2000	MGME202 □ 1 *	93	MFD ◇ TA390	MFD ◇ TA390E	F-frame	Approx. 3.8				MFMCA 0**3ECT	MFMCA 0**3FCT		DV0P4285 x2 in parallel	DV0P223	DV0P3410	
			3000	MGME302 □ 1 *	94	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 4.5								DV0P224		
			4500	MGME452 □ 1 *	95	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 7.5								—	Recommended components P.252	
		3-phase 200 V	6000	MGME602 □ 1 *	96	MGD ◇ TC3B4	—	G-frame	Approx. 9.0	— Note) 6	— Note) 6	DV0P4285 x3 in parallel	— Note) 7						
			3-phase 400 V	900	MGME094 □ 1 *	125	MDD ◇ T3420	MDD ◇ T3420E	D-frame	Approx. 1.8	MFECA 0**0ETD	MFECA 0**0ETE		MFMCD 0**2ECD	MFMCE 0**2FCD	—	DV0PM20048	— Note) 7	Recommended components P.252
				2000	MGME204 □ 1 *	126	MFD ◇ T5440	MFD ◇ T5440E	F-frame	Approx. 3.8				MFMCA 0**3ECT	MFMCA 0**3FCT		DV0PM20049 x2 in parallel		
				3000	MGME304 □ 1 *	127	MFD ◇ TA464	MFD ◇ TA464E		Approx. 4.5									
		4500		MGME454 □ 1 *	128	MFD ◇ TA464	MFD ◇ TA464E	Approx. 7.5		—									
		High inertia	MHME 2000 r/min	Single phase/ 3-phase 200 V	1000	MHME102 □ 1 *	97	MDD ◇ T3530	MDD ◇ T3530E	D-frame	Approx. 1.8	MFECA 0**0ETD	MFECA 0**0ETE		MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P228 DV0P222
1500	MHME152 □ 1 *				98	MDD ◇ T5540	MDD ◇ T5540E	Approx. 2.3	DV0PM20047 DV0P222										
3-phase 200 V	2000			MHME202 □ 1 *	99	MED ◇ T7364	MED ◇ T7364E	E-frame	Approx. 3.3	MFMCE 0**2ECD	MFMCE 0**2FCD				DV0P4285 Note) 8	DV0P223		DV0PM20043	
	3000			MHME302 □ 1 *	100	MFD ◇ TA390	MFD ◇ TA390E	F-frame	Approx. 4.5	MFMCA 0**3ECT	MFMCA 0**3FCT				DV0P4285 x2 in parallel	DV0P224		DV0P3410	
	4000			MHME402 □ 1 *	101	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 6							DV0P225			
	5000			MHME502 □ 1 *	102	MFD ◇ TB3A2	MFD ◇ TB3A2E		Approx. 7.5							—		—	Recommended components P.252
	7500			MHME752 □ 1 *	103	MGD ◇ TC3B4	—	G-frame	Approx. 11	— Note) 6	— Note) 6				DV0P4285 x3 in parallel	— Note) 7			
3-phase 400 V	1000			MHME104 □ 1 *	130	MDD ◇ T2412	MDD ◇ T2412E	D-frame	Approx. 1.8	MFECA 0**0ETD	MFECA 0**0ETE		MFMCD 0**2ECD	MFMCE 0**2FCD	—	DV0PM20048	— Note) 7	Recommended components P.252	
	1500			MHME154 □ 1 *	131	MDD ◇ T3420	MDD ◇ T3420E		Approx. 2.3							DV0PM20049			
	2000			MHME204 □ 1 *	132	MED ◇ T4430	MED ◇ T4430E	E-frame	Approx. 3.3				MFMCE 0**2ECD	MFMCA 0**3FCT		DV0PM20049 x2 in parallel			
	3000			MHME304 □ 1 *	133	MFD ◇ T5440	MFD ◇ T5440E	F-frame	Approx. 4.5										
	4000			MHME404 □ 1 *	134	MFD ◇ TA464	MFD ◇ TA464E		Approx. 6										
	5000			MHME504 □ 1 *	135	MFD ◇ TA464	MFD ◇ TA464E		Approx. 7.5				— Note) 6	— Note) 6					
	7500			MHME754 □ 1 *	136	MGD ◇ TB4A2	—	G-frame	Approx. 9.0										

Note) 1 Rotary encoder specifications: □ Motor specification: * (refer to P.16)

Note) 2 ◇ : Drivers series K: A5II series H: A5 series

Note) 3 ◇ : Drivers series K: A5IE series H: A5E series

Note) 4 Because A5IE, A5E series drivers (dedicated for position control) do not support the 17-bit absolute specification, only 20-bit incremental type can be used in combination.

Note) 5 Cable length: ** (03: 3 m, 05: 5 m, 10: 10 m, 20: 20 m), (Example. 3 m: MFECA0030EAM)

Note) 6 Recommend to get the connector kit of options.

Note) 7 Reactor should be prepared by the user.

Note) 8 Other combinations exist, and refer to P.210 for details.

Note) 9 Please note that a battery is not supplied together with 17-bit absolute encoder cable (with battery box). Please buy the battery part number “DV0P2990” separately.

• Options (IP67 motor)		
Title	Part No.	Page
Interface Cable	DV0P4360	197
Interface Conversion Cable	DV0P4120	
	DV0P4121	
	DV0P4130	
	DV0P4131	
Connector Kit for Power Supply Input Connection	DV0P4132	200
	A-frame to D-frame Single row type	
	DV0PM20032	
	Double row type	
	DV0PM20033	
Connector Kit for Control Power Supply Input Connection	E-frame (200 V)	201
	DV0PM20044	
	D-frame (400 V)	
	DV0PM20051	
Connector Kit for Regenerative Resistor	E-frame (400 V)	201
	DV0PM20052	
	D-frame and E-frame (400 V)	
	DV0PM20053	
	A-frame to D-frame	
Connector Kit for Motor Connection	DV0PM20034	201
	E-frame (200 V)	
	DV0PM20046	
	D-frame (400 V)	
Connector Kit for Regenerative Resistor	DV0PM20054	201
	DV0PM20045	
Connector Kit for Regenerative Resistor	D-frame (400 V)	201
	DV0PM20055	
	DV0PM20036	
	DV0PM20037	
	DV0PM20038	
Connector Kit for Motor/Encoder Connection	DV0PM20039	205
	DV0PM20031	
	RS485, RS232	
	DV0PM20024	
	Safety	
Connector Kit	DV0PM20025	198
	Interface	
	DV0P4350	
	External Scale	
	DV0PM20026	
Connector Kit	Encoder	199
	DV0PM20010	
	Analog Monitor Signal	
	DV0PM20031	
	DV0PM20031	
Battery For Absolute Encoder	DV0P2990	207
	DV0P4430	
	Battery Box Note) 9	
	DV0P4430	
	DV0P4430	
Mounting Bracket	D-frame	208
	DV0PM20030	
Encoder Cable	without Battery Box	190
	MFECA0**0ETD	
Motor Cable	with Battery Box Note) 9	190
	MFECA0**0ETE	
	without Brake	
	MFMCA0**2ECD	
	MFMCD0**2ECD	
	MFMCE0**2ECD	
	MFMCF0**2ECD	
	MFMCA0**3ECT	
	MFMCD0**3ECT	
	MFMCA0**2FCD	
External Regenerative Resistor	MFMCE0**2FCD	210
	MFMCA0**3FCT	
	50 Ω 25 W	
	DV0P4280	
	100 Ω 25 W	
Reactor	DV0P4281	209
	25 Ω 50 W	
	DV0P4282	
	50 Ω 50 W	
	DV0P4283	
	30 Ω 100 W	
	DV0P4284	
	20 Ω 130 W	
Noise Filter	DV0P4285	250
	120 Ω 80 W	
	DV0PM20048	
Surge Absorber	80 Ω 190 W	251
	DV0PM20049	
	DV0P220, DV0P221, DV0P222, DV0P223, DV0P224, DV0P225, DV0P227, DV0P228, DV0PM20047	
Noise Filter for Signal Lines	DV0P4170, DV0PM20042	254
	DV0P4220, DV0PM20043	
	DV0P3410	
Surge Absorber	Single phase	253
	DV0P4190	
	3-phase (200 V)	
Noise Filter for Signal Lines	DV0P1450	253
	DV0PM20050	
Noise Filter for Signal Lines	3-phase (400 V)	254
	DV0PM20050	

Basic Specifications	Input power	100 V	Main circuit		Single phase, 100 V to 120 V	+10 % −15 %	50 Hz/60 Hz
			Control circuit		Single phase, 100 V to 120 V	+10 % −15 %	50 Hz/60 Hz
		200 V	Main circuit	A-frame to D-frame	Single/3-phase, 200 V to 240 V	+10 % −15 %	50 Hz/60 Hz
				E-frame to H-frame	3-phase, 200 V to 230 V	+10 % −15 %	50 Hz/60 Hz
			Control circuit	A-frame to D-frame	Single phase, 200 V to 240 V	+10 % −15 %	50 Hz/60 Hz
				E-frame to H-frame	Single phase, 200 V to 230 V	+10 % −15 %	50 Hz/60 Hz
		400 V	Main circuit	D-frame to H-frame	3-phase, 380 V to 480 V	+10 % −15 %	50 Hz/60 Hz
			Control circuit	D-frame to H-frame	DC 24 V ± 15 %		
	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 % to 85 %RH (free from condensation ^{*1})			
		Altitude		Lower than 1000 m			
		Vibration		5.88 m/s ² or less, 10 Hz to 60 Hz (No continuous use at resonance frequency)			
	Control method			IGBT PWM Sinusoidal wave drive			
	Encoder feedback			17-bit (131072 resolution) absolute encoder, 7-wire serial 20-bit (1048576 resolution) incremental encoder, 5-wire serial			
	Feedback scale feedback		A/B phase	A/B phase, initialization signal defferential input.			
			serial	Manufacturers that support serial communication scale: DR. JOHANNES HEIDENHAIN GmbH Fagor Automation S.Coop. Magnescale Co., Ltd. Mitutoyo Corporation Nidec Sankyo Corporation Renishaw plc			
	Parallel I/O 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 (16Bit A/D : 1 input, 12Bit A/D : 2 inputs)			
			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	Connection with PC etc.			
			RS232	1 : 1 communication			
			RS485	1 : n communication up to 31 axes to a host.			
	Safety function			Used for functional safety.			
	Front panel			(1) 5 keys (2) LED (6-digit) (3) Connector for monitor (Analog monitor output (2ch), Digital monitor output (1ch))			
	Regeneration			A, B, G and 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 (external resistor is also available to G-frame) H-frame: External 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.

*2 Not applicable to 2DOF control system.

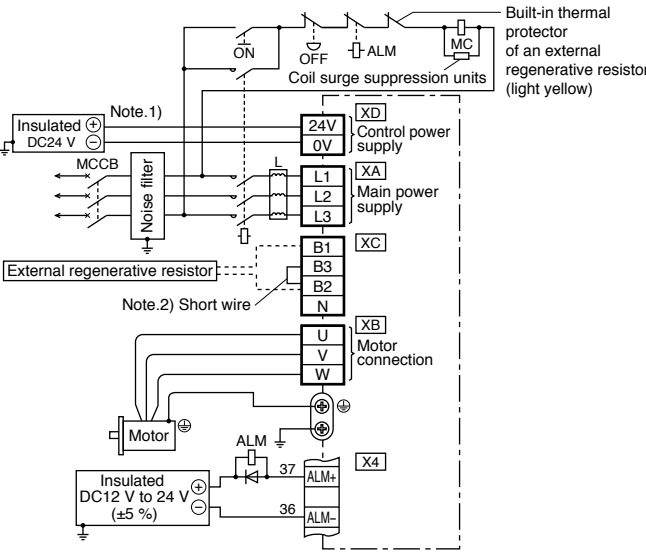
Function	Position control	Control input		(1) Deviation counter clear (2) Command pulse inhibition (3) Electric gear (4) Damping control switching etc.
		Control output		Positioning complete (In-position) etc.
		Pulse input	Max. command pulse frequency	Exclusive interface for Photo-coupler: 500 kpps Exclusive interface for line driver : 4 Mpps
			Input pulse signal format	Differential input ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)
			Electronic gear (Division/Multiplication of command pulse)	1/1000 times to 1000 times
			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.
		Instantaneous Speed Observer		Available
		Damping Control		Available
		2DOF settings		Only available at A5II Series
	Speed control	Control input		(1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2 (3) Selection of internal velocity setup 3 (4) Speed zero clamp etc.
		Control output		Speed arrival etc.
		Analog input	Velocity command input	Speed command input can be provided by means of analog voltage. Parameters are used for scale setting and command polarity. (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 8speed 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		Speed zero clamp input is enabled.
		Instantaneous Speed Observer		Available
		Speed Control filter		Available
		2DOF settings		Only available at A5II Series
	Torque control ^{*2}	Control input		Speed zero clamp, Torque command sign input etc.
		Control output		Speed arrival etc.
		Analog input	Torque command input	Speed command input can be provided by means of analog voltage. Parameters are used for scale setting and command polarity. (3 V/rated torque Default)
	Full-closed control ^{*2}	Speed limit function		Speed limit value with parameter is enabled.
		Control input		(1) Deviation counter clear (2) Command pulse inhibition (3) Command dividing gradual increase switching (4) Damping control switching etc.
		Control output		Full-closed positioning complete etc.
		Pulse input	Max. command pulse frequency	Exclusive interface for Photo-coupler: 500 kpps Exclusive interface for line driver : 4 Mpps
			Input pulse signal format	Differential input
			Electronic gear (Division/ Multiplication of command pulse)	1/1000 times to 1000 times
			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.
		Setup range of division/multiplication of feedback scale		1/40 times to 160 times
		Damping 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.
		Traceability of alarm data		The alarm data history can be referred to.

Basic Specifications	Input power	100 V	Main circuit		Single phase, 100 V to 120 V	+10 % −15 %	50 Hz/60 Hz
			Control circuit		Single phase, 100 V to 120 V	+10 % −15 %	50 Hz/60 Hz
		200 V	Main circuit	A-frame to D-frame	Single/3-phase, 200 V to 240 V	+10 % −15 %	50 Hz/60 Hz
				E-frame to F-frame	3-phase, 200 V to 230 V	+10 % −15 %	50 Hz/60 Hz
			Control circuit	A-frame to D-frame	Single phase, 200 V to 240 V	+10 % −15 %	50 Hz/60 Hz
				E-frame to F-frame	Single phase, 200 V to 230 V	+10 % −15 %	50 Hz/60 Hz
		400 V	Main circuit	D-frame to F-frame	3-phase, 380 V to 480 V	+10 % −15 %	50 Hz/60 Hz
			Control circuit	D-frame to F-frame	DC 24 V ± 15 %		
	Environment	temperature		Ambient temperature: 0 °C to 50 °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 % to 85 %RH (free from condensation*1)			
		Altitude		Lower than 1000 m			
		Vibration		5.88 m/s ² or less, 10 Hz to 60 Hz (No continuous use at resonance frequency)			
	Control method			IGBT PWM Sinusoidal wave drive			
	Encoder feedback			20-bit (1048576 resolution) incremental encoder, 5-wire serial			
	Parallel I/O 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	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	Connection with PC etc.			
	Front panel			(1) 5 keys (2) LED (6-digit) (3) Analog monitor output (2ch)			
	Regeneration			A, 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			Built-in			
	Control mode			(1) Position control (2) Internal velocity control (3) Position/ Internal velocity control			

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

Function	Position control	Control input		(1) Deviation counter clear (2) Command pulse inhibition (3) Electric gear (4) Damping control switching etc.	
		Control output		Positioning complete (In-position) etc.	
		Pulse input	Max. command pulse frequency	Exclusive interface for Photo-coupler: 500 kpps Exclusive interface for line driver : 4 Mpps	
			Input pulse signal format	Differential input ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)	
			Electronic gear (Division/ Multiplication of command pulse)	1/1000 times to 1000 times	
			Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input	
		Instantaneous Speed Observer		Available	
		Damping Control		Available	
		2DOF settings		Only available at A5II E Series	
	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.	
		Traceability of alarm data		The alarm data history can be referred to.	

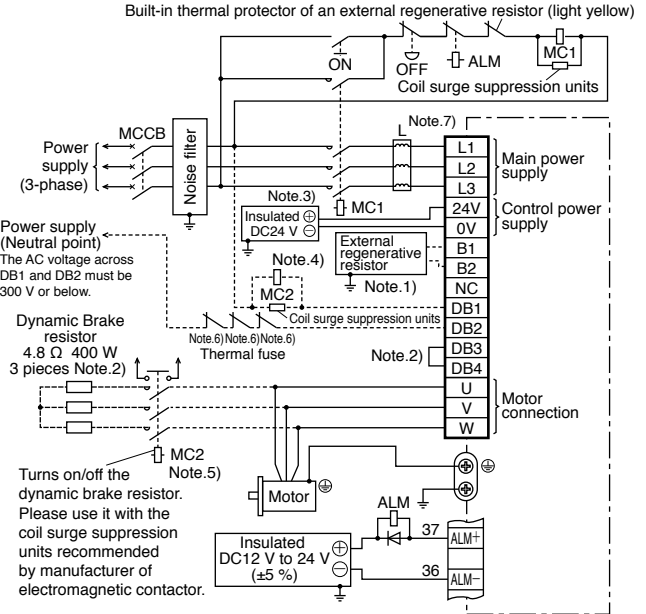
In Case of 3-phase, D-frame and E-frame, 400 V type



Note.1) Shielding the circuit is recommended for the purpose of noise reduction.
Note.2)

Frame No.	Short wire (Accessory)	Built-in regenerative resistor	Connection of the connector XC	
			In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.
E-frame	with	with	- Remove the short wire accessory from between B2-B3. - Connect an external regenerative resistor between B1-B2.	Shorted between B2-B3 with an attached short wire

In Case of 3-phase, G-frame, 400 V type



Note.1) About regenerative resistor

Frame No.	Short bar (Accessory)	Built-in regenerative resistor	Connection of terminal block	
			In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.
G-frame	without	without	Connect an external regenerative resistor between B1-B2.	Open between B1-B2

Note.2) About dynamic brake resistor

Frame No.	Short bar (Accessory)	Built-in dynamic brake resistor.	Connection of terminal block	
			In case of using an external dynamic brake resistor.	In case of not using an external dynamic brake resistor.
G-frame	with	with	- Remove attached short bar between DB3-DB4. - Connect external dynamic brake resistor as shown above.	- Shorted with attached short bar between DB3-DB4. - Open between DB1-DB2

<common for G & H frame>

Note.3) Shielding the circuit is recommended for the purpose of noise reduction.

Note.4) Magnetic contactor MC2 must be the same rating as the contactor MC1 in the main circuit.

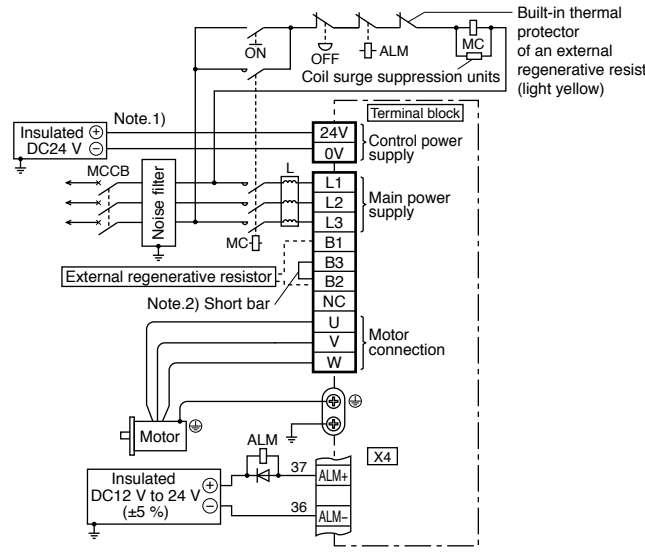
Note.5) Servo may be turned on in the external sequence if the contact deposits: to protect the system, provide the auxiliary contact.

Note.6) Provide an external protective device (e.g. thermal fuse) to monitor the temperature of the external dynamic brake resistor.

Note.7) Reactor should be prepared by the customer.

* Refer to P.186, P.187, Specifications of Motor connector.

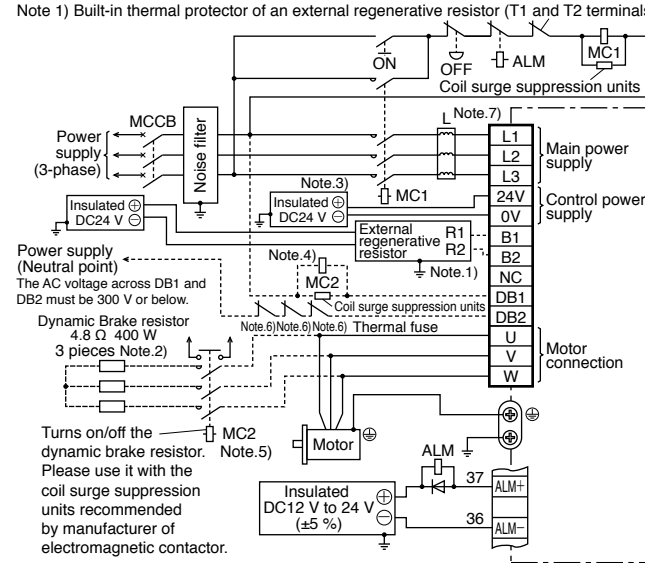
In Case of 3-phase, F-frame, 400 V type



Note.1) Shielding the circuit is recommended for the purpose of noise reduction.
Note.2)

Frame No.	Short bar (Accessory)	Built-in regenerative resistor	Connection of terminal block	
			In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.
F-frame	with	with	- Remove the short bar accessory from between B2-B3. - Connect an external regenerative resistor between B1-B2.	Shorted between B2-B3 with an attached short bar

In Case of 3-phase, H-frame, 400 V type



Note.1) About regenerative resistor

Frame No.	Short bar (Accessory)	Built-in regenerative resistor	Connection of terminal block	
			In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.
H-frame	without	without	(External regenerative resistor terminal) - Terminal R1, R2 connect to B1, B2. - Terminal T1, T2 connection as shown above - Terminal 24 V, 0 V connect to DC power supply of DC24 V. - E terminal connect to the ground	Open between B1-B2

Specification of external regenerative resistor, please refer to P.139, "Options Components".

Note.2) About dynamic brake resistor

Frame No.	Short bar (Accessory)	Built-in dynamic brake resistor.	Connection of terminal block	
			In case of using an external dynamic brake resistor.	In case of not using an external dynamic brake resistor.
H-frame	without	without	Connect external dynamic brake resistor as shown above.	Open between DB1-DB2

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).

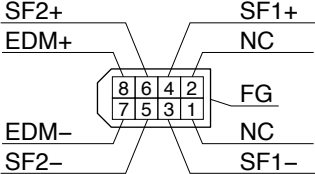
When STO function operates, the servo driver turns off the servo ready output signal (S-RDY) and enters safety state.

This is an alarm condition and the 7-seg LED on the front panel displays the error code number.

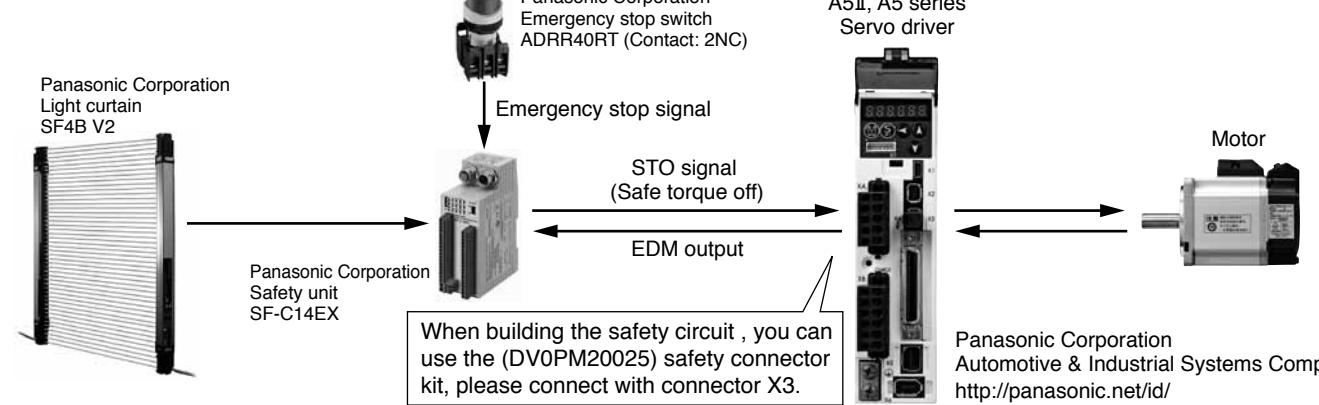
Safety Precautions

- 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.

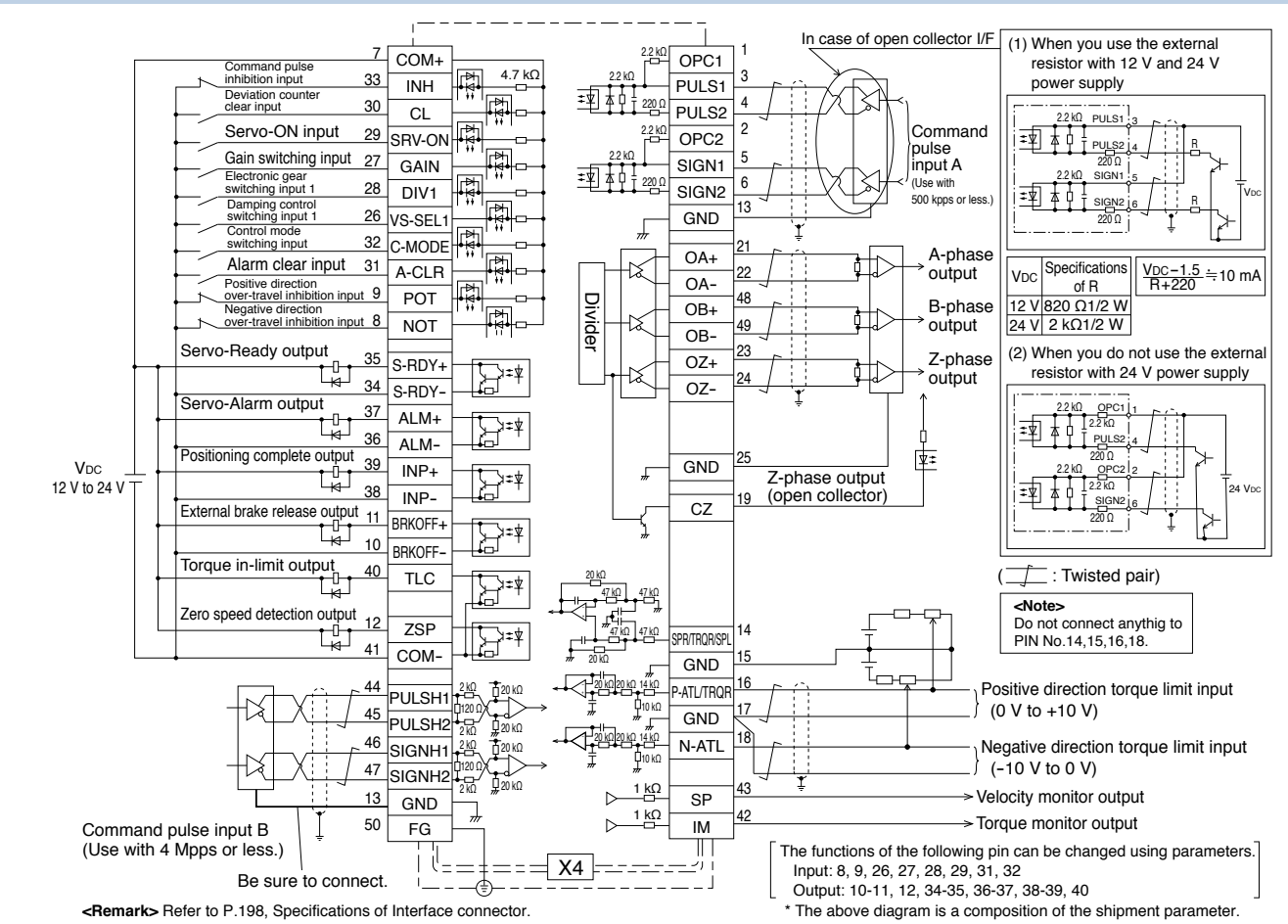
[Connector pin assignment]
(Viewed from cable)



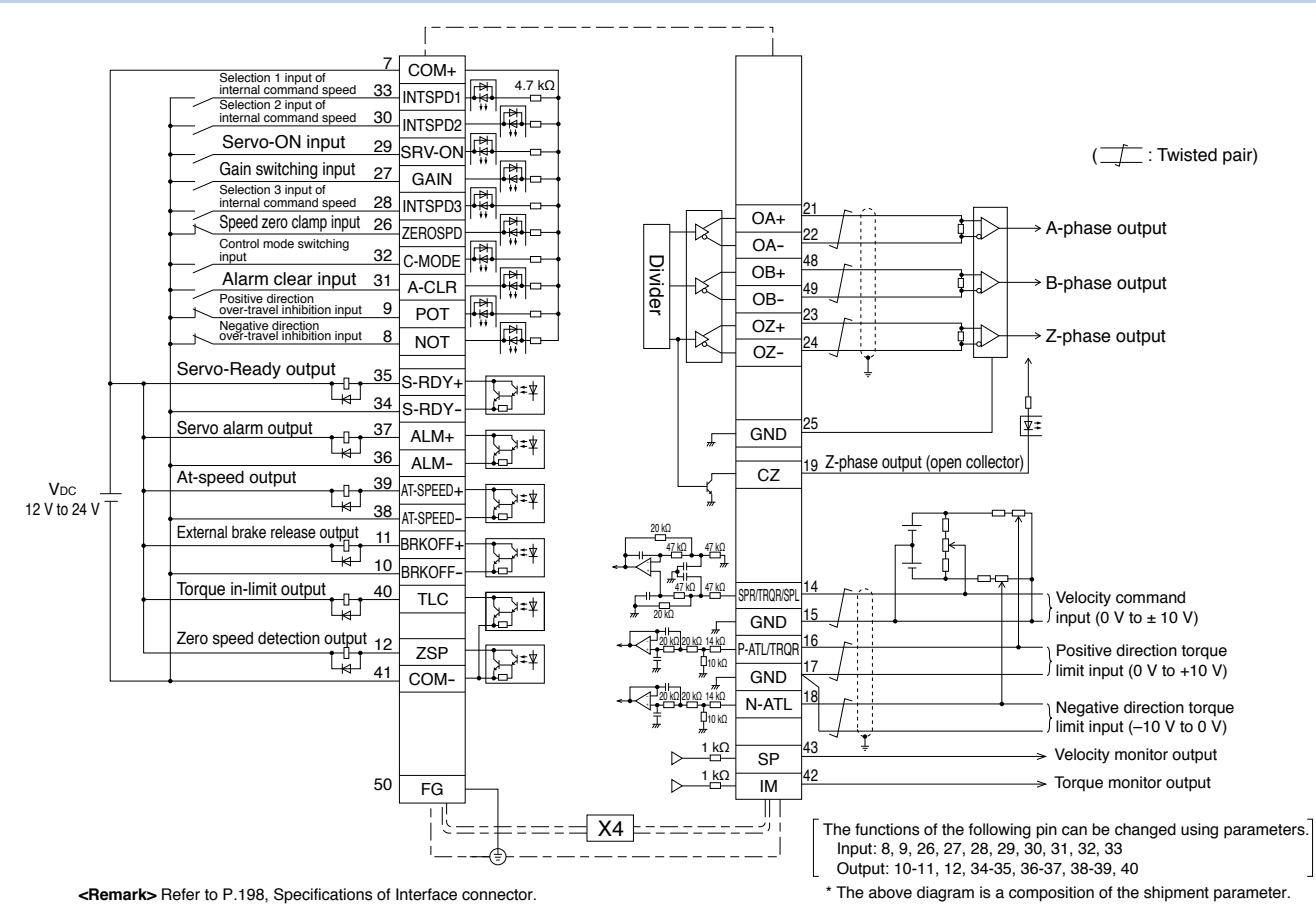
• System configuration



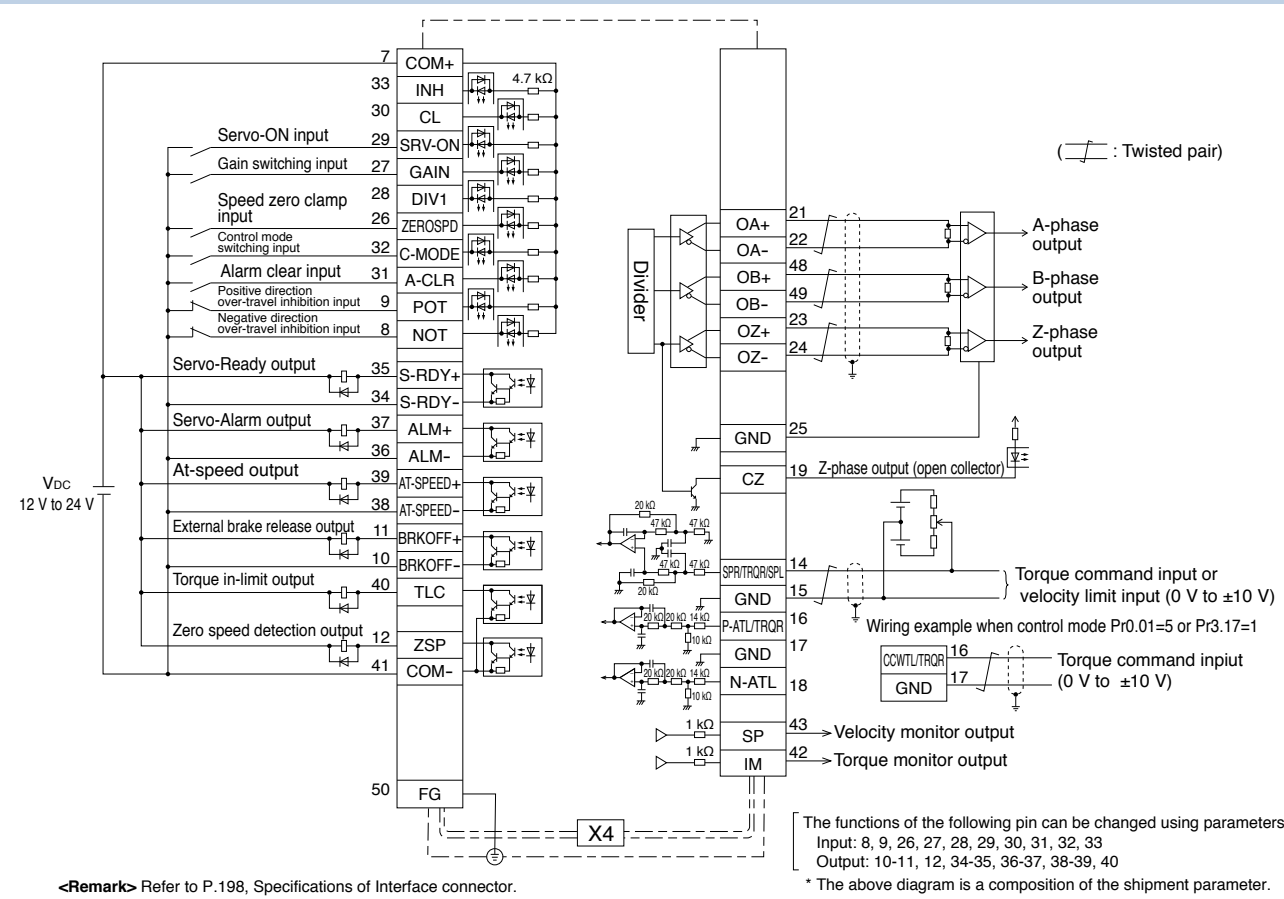
Wiring Example of Position Control Mode



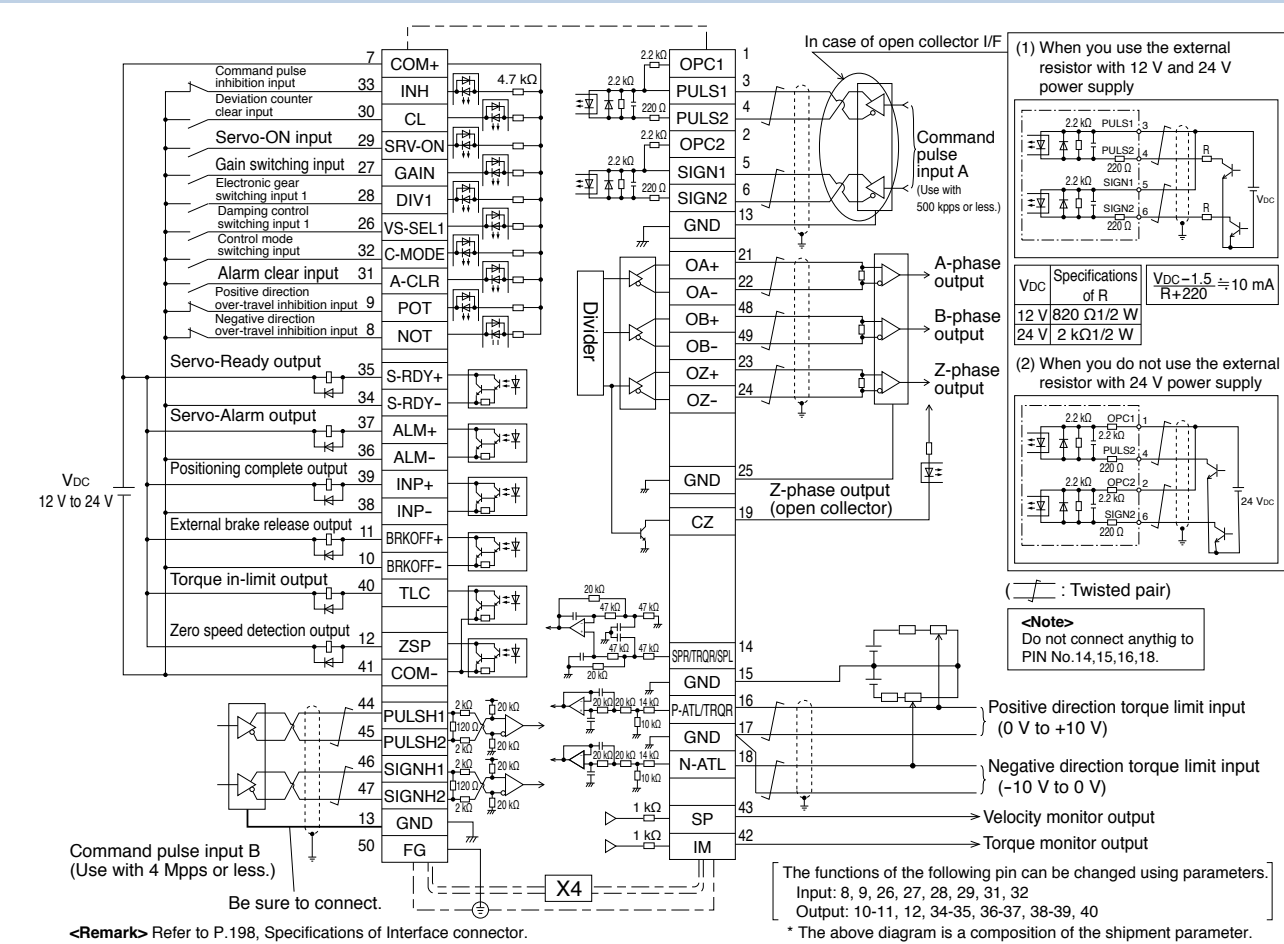
Wiring Example of Velocity Control Mode (Excluding A5IE, A5E series)



Wiring Example of Torque Control Mode (Excluding A5IE, A5E series)



Wiring Example of Full-closed Control Mode (Excluding A5IE, A5E series)



Applicable External Scale

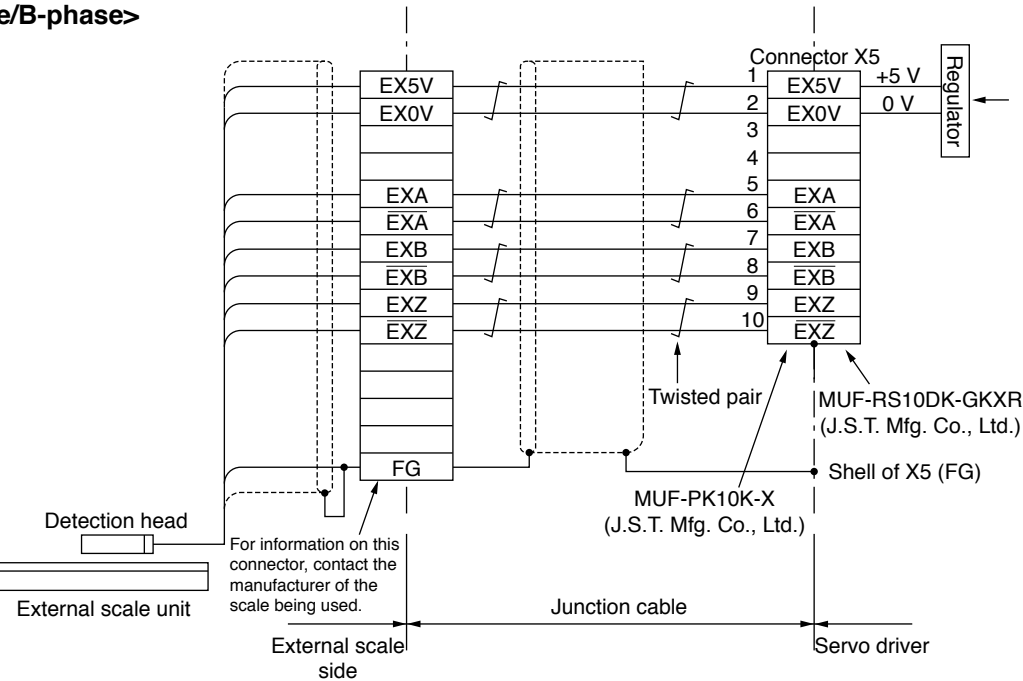
The manufacturers applicable external scales for this product are as follows.

- DR. JOHANNES HEIDENHAIN GmbH
- Fagor Automation S.Coop.
- Magnescale Co., Ltd.
- Mitutoyo Corporation
- Nidec Sankyo Corporation
- Renishaw plc

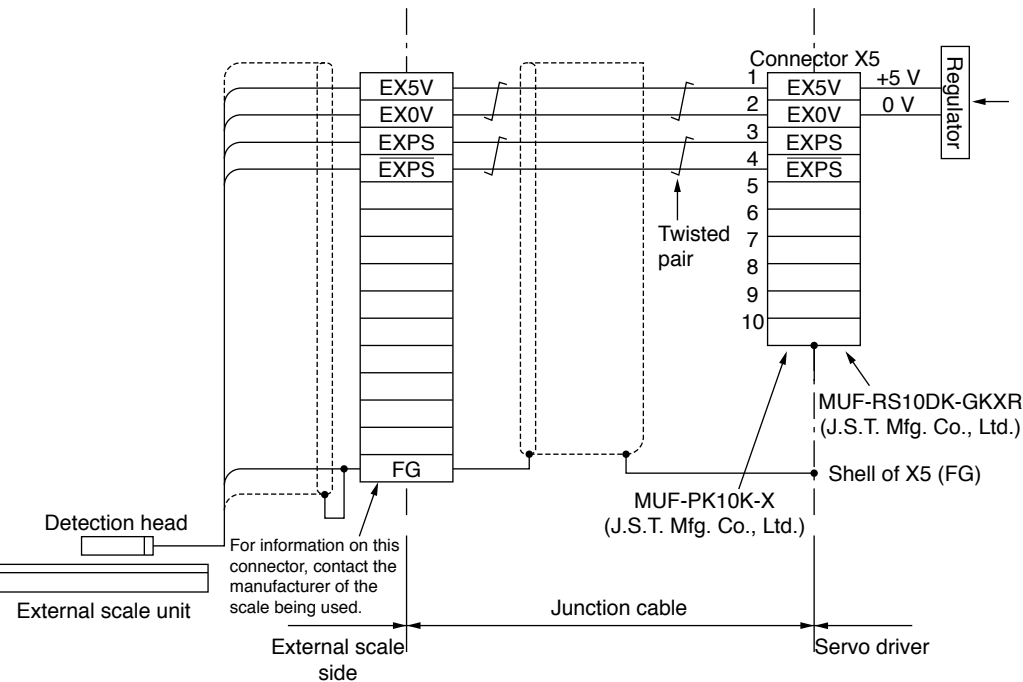
* For the details of the external scale product, contact each company.

Wiring Diagram of X5

<A-phase/B-phase>



<Serial>



In Case of 20-bit Incremental Encoder

MSMD 50 W to 750 W, MHMD 200 W to 750 W

MSME 50 W to 750 W (200 V)

<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.

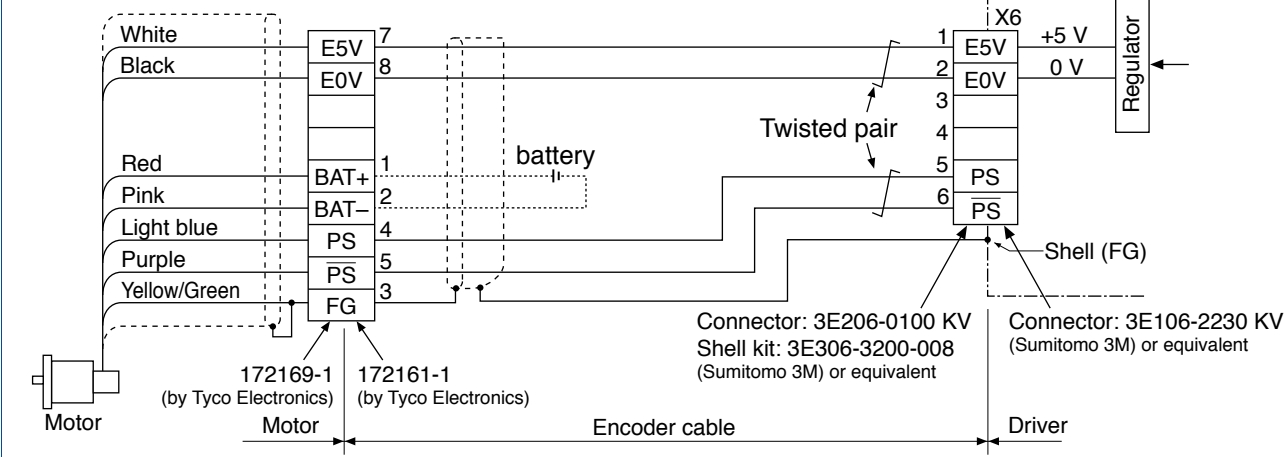
[Connector pin assignment (Motor side)]

MSME 750 W (400 V), 1.0 kW to 5.0 kW, MDME 400 W to 15.0 kW, MFME 1.5 kW to 4.5 kW

MGME 0.9 kW to 6.0 kW, MHME 1.0 kW to 7.5 kW

[Connector pin assignment] Refer to P.186, P.187 “Specifications of Motor connector”.

MSMD 50 W to 750 W, MHMD 200 W to 750 W



Connector: JN6CR07PM2 (by Japan Aviation Electronics Ind.)

Connector: JN6FR07SM1 (by Japan Aviation Electronics Ind.)

Connector: 3E206-0100 KV
Shell kit: 3E306-3200-008 (Sumitomo 3M) or equivalent

Connector: 3E106-2230 KV (Sumitomo 3M) or equivalent

Motor

Encoder cable

Driver

- 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.

(Viewed from cable)

Diagram illustrating the connection between a Motor, an Encoder cable, and a Driver.

Motor: (IP65 motor) N/MS3102A20-29P, (IP67 motor) JN2AS10ML3-R (by Japan Aviation Electronics Ind.)

Encoder cable: (IP65 motor) N/MS3057-12A, (IP67 motor) JN2DS10SL1-R (by Japan Aviation Electronics Ind.)

Driver: Connector: 3E206-0100 KV, Shell kit: 3E306-3200-008 (Sumitomo 3M) or equivalent, Connector: 3E106-2230 KV (Sumitomo 3M) or equivalent

The diagram shows the wiring connections between the Motor, Encoder cable, and Driver, including a Regulator and a Twisted pair.

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- *1 The height of the safety by-pass provided plug is one of the 14 mm or 24 mm to connector X3.

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
 X7: For analog monitor signal connection

XA: Main power input terminals
 Control power input terminals

XB: Terminals for external regenerative resistor
 Terminals for motor connection

Rack mount type
 (Option: Front-end mounting)

Base mount type
 (Standard: Back-end mounting)

Mass: 0.8 kg

Connector of driver side			A5II, A5	A5IE, A5E
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	●	—
Connector X3	2040537-1 (or equivalent)	Tyco Electronics	●	—
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	●	●
Connector X7	530140610 (or equivalent)	Japan Molex Inc.	●	●

Connector of power and motor side (Attached to the driver)			A5II, A5	A5IE, A5E
Connector XA	05JFAT-SAXGF	J.S.T. Mfg. Co., Ltd.	●	●
Connector XB	06JFAT-SAXGF	J.S.T. Mfg. Co., Ltd.	●	●

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
X7: For analog monitor signal connection

XA:
Main power
input terminals
Control power
input terminals

XB:
Terminals for external
regenerative resistor
Terminals for motor
connection

Dimensions (mm):

- Top view: 55, 47, 7, 5.2, 150, 170, 180
- Front view: 22.4, 2.5, 20.4, 125, 18, 27, 24, 4.5, 2.5, 130, 70, 3.5, 5.2, 43, 6, 140
- Base mount type (Standard: Back-end mounting): 5.2, 43, 6, 140

Rack mount type
(Option: Front-end mounting)

Base mount type
(Standard:
Back-end mounting)

Mass: 1.0 kg

Mass: 1.0 kg

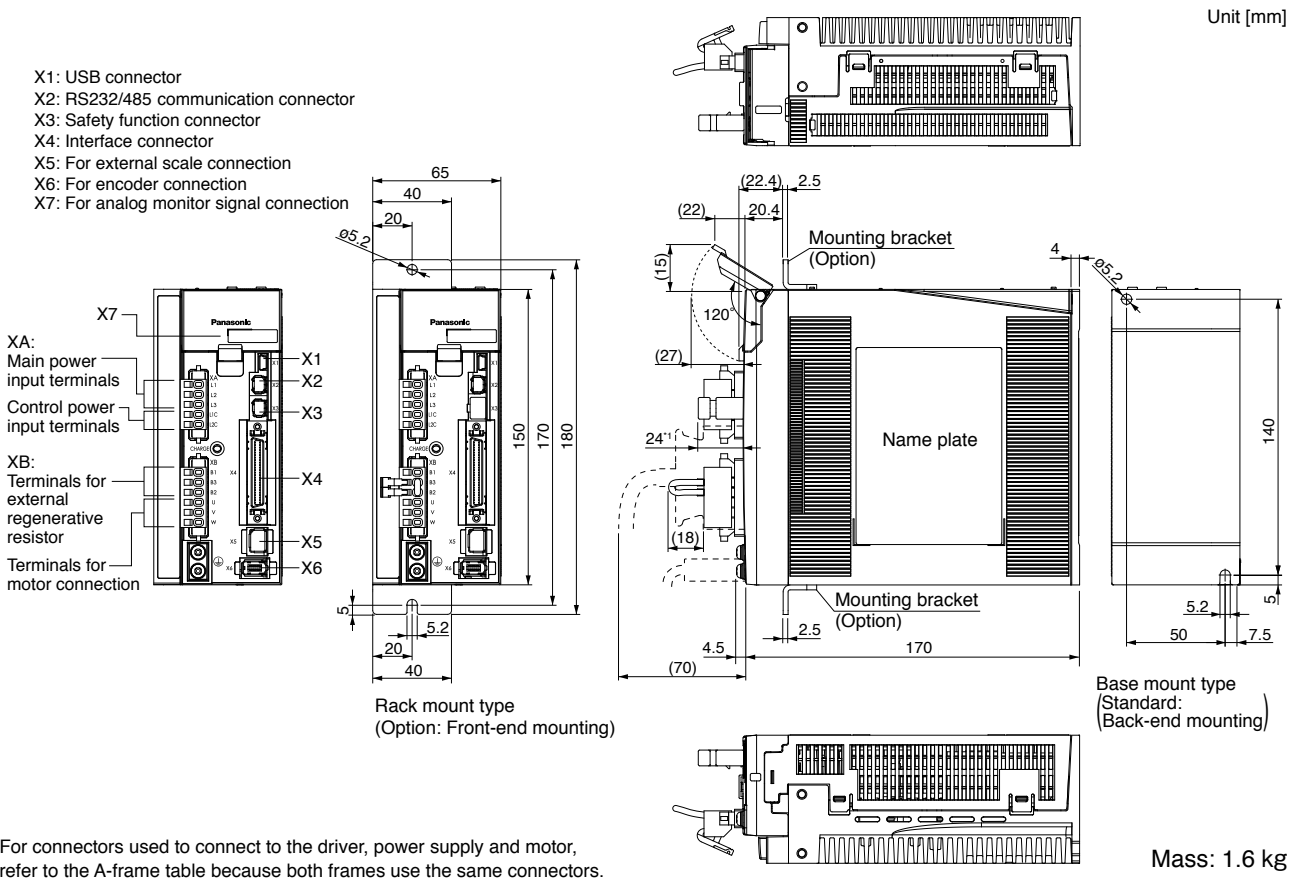
A5 Family

Dimensions of Driver

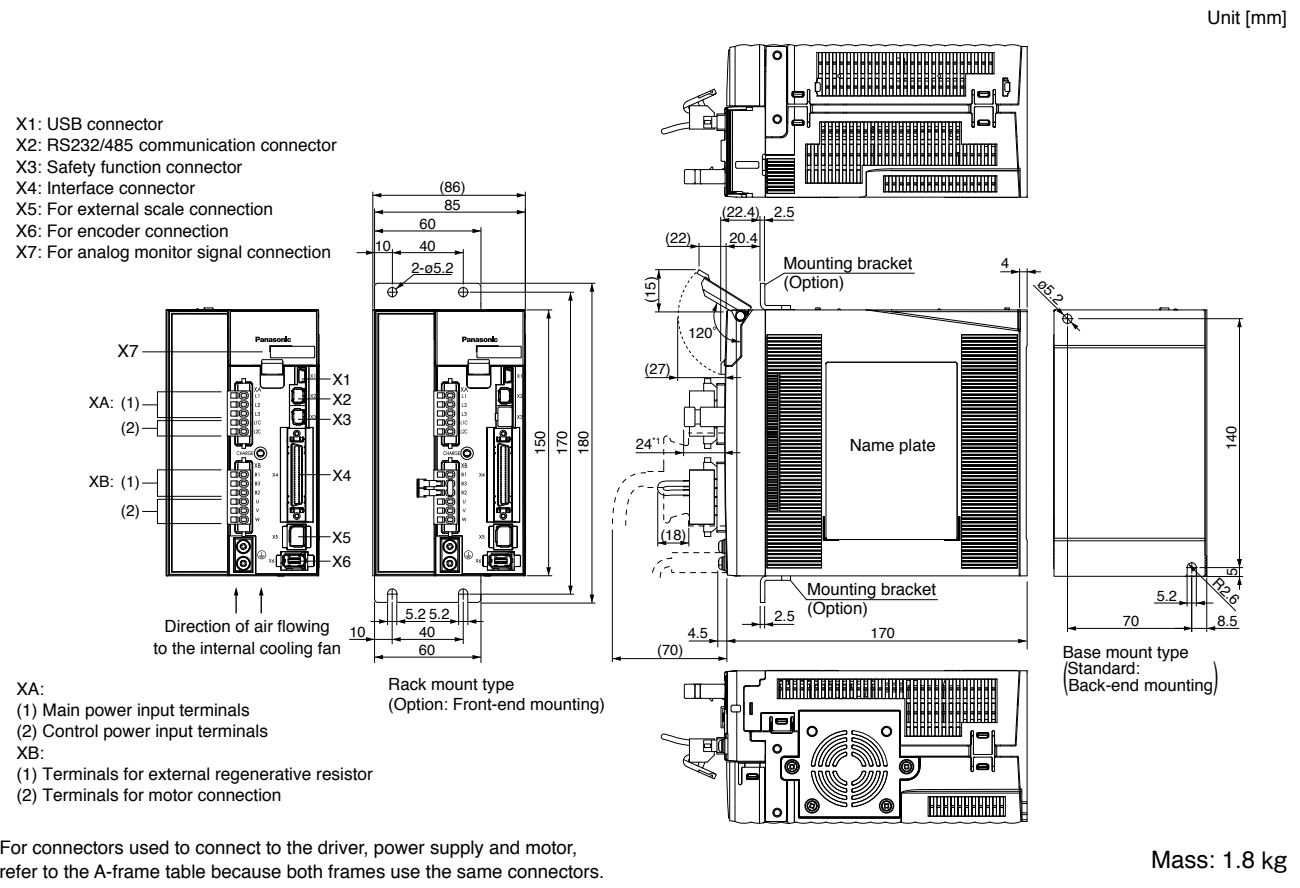
● The size of A5II, A5 series and A5II E, A5E series is same.

*1 The height of the safety by-pass provided plug is one of the 14 mm or 24 mm to connector X3.

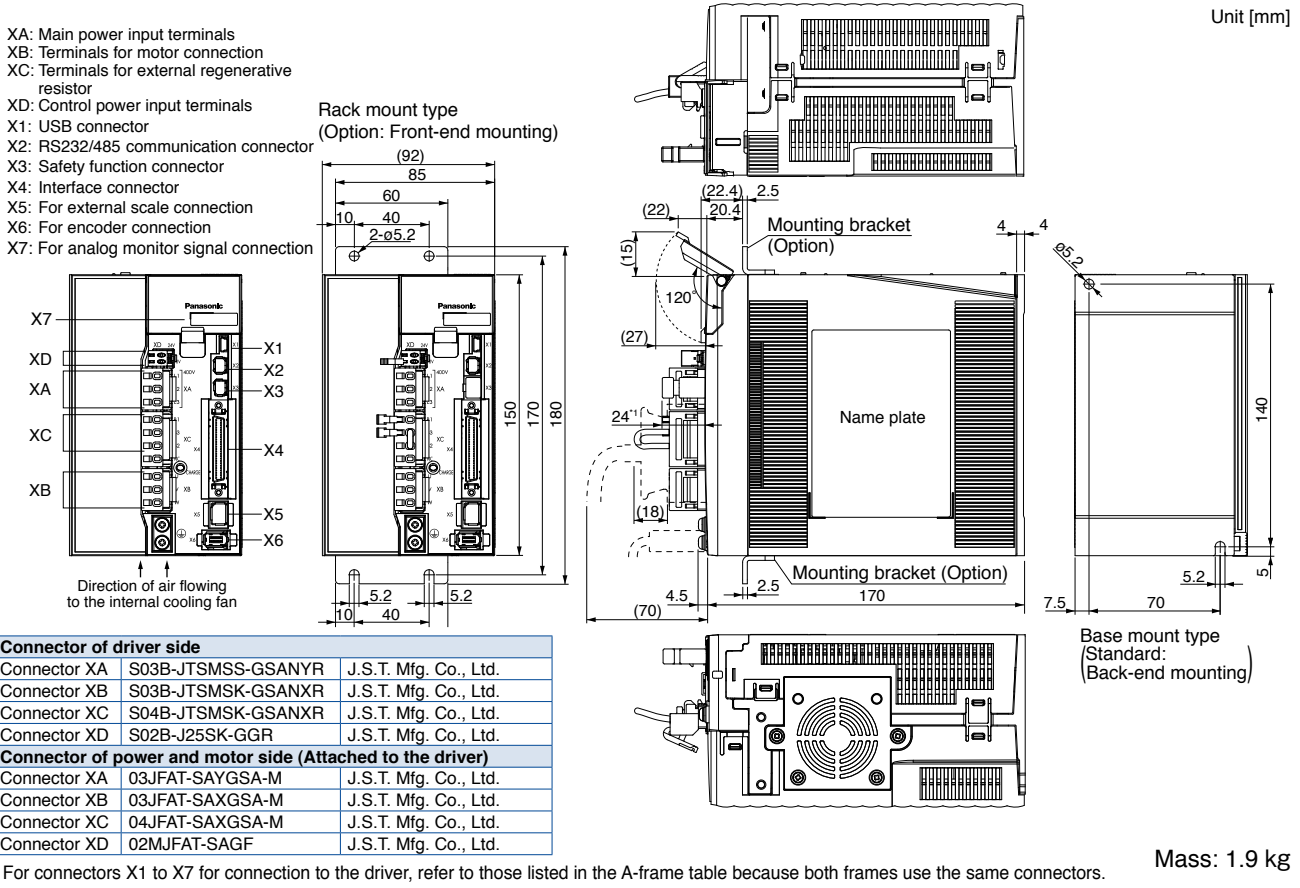
C-frame



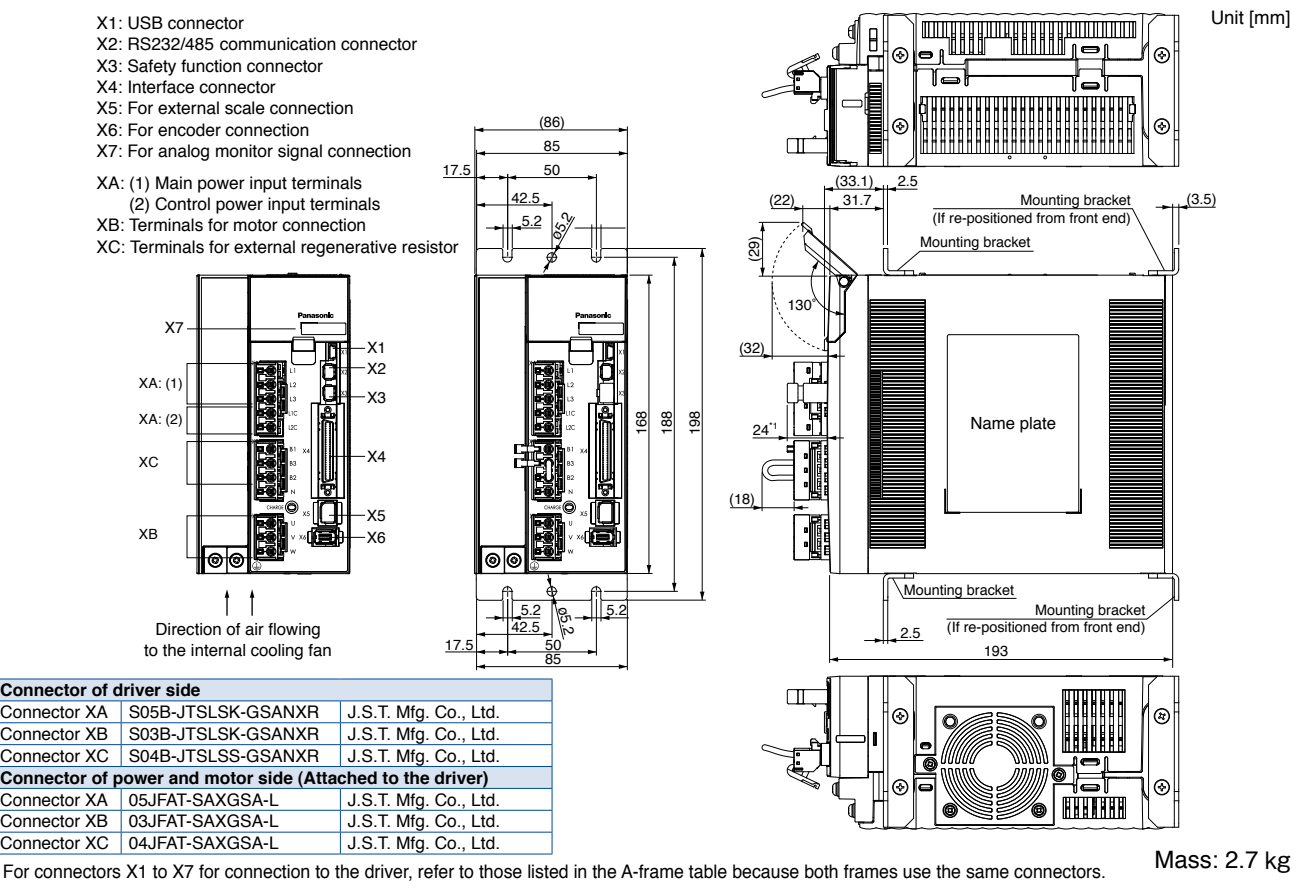
D-frame (200 V)



D-frame (400 V)



E-frame (200 V)



Dimensions of Driver

*1 The height of the safety by-pass provided plug is one of the 14 mm or 24 mm to connector X3.

* For connectors X1 to X7 for connection to the driver, refer to those listed in the A-frame table because both frames use the same connectors.

Mass: 4.8 kg

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

			AC100 V	
Motor model *1	IP65		MSMD5AZG1□	MSMD5AZS1□
	IP67		—	—
Applicable driver *2	Model No.	A5II, A5 series	MAD◇T1105	
		A5IE, A5E series	MAD◇T1105E	—
	Frame symbol		A-frame	
Power supply capacity (kVA)			0.5	
Rated output (W)			50	
Rated 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) Note)1		Without option	No limit Note)2	
		DV0P4280	No limit Note)2	
Rated rotational speed (r/min)			3000	
Max. rotational speed (r/min)			5000	
Moment of inertia of rotor ($\times 10^{-4}$ kg·m ²)		Without brake	0.025	
		With brake	0.027	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	131072

Motor Specifications

Specifications

		AC100 V	
Motor model *1	IP65	MSMD011G1□	MSMD011S1□
	IP67	—	—
Applicable driver *2	Model No.	MAD◇T1107	
	A5IE, A5E series	MAD◇T1107E	—
Frame symbol		A-frame	
Power supply capacity (kVA)		0.4	
Rated output (W)		100	
Rated torque (N·m)		0.32	
Momentary Max. peak torque (N·m)		0.95	
Rated current (A(rms))		1.7	
Max. current (A(o-p))		7.2	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0P4280	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.051	
	With brake	0.054	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		131072

- Brake specifications** (For details, refer to P.183)
 (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 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

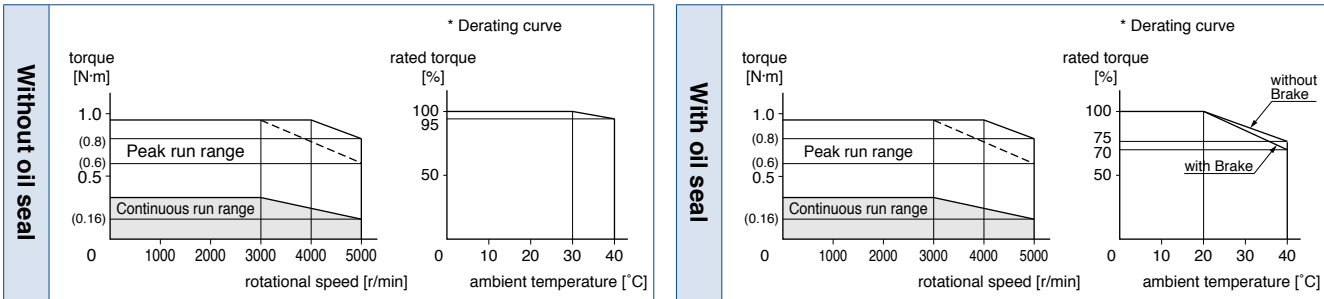
- Permissible load** (For details, refer to P.183)

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 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.42.

- *1 Motor specifications: □
- *2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

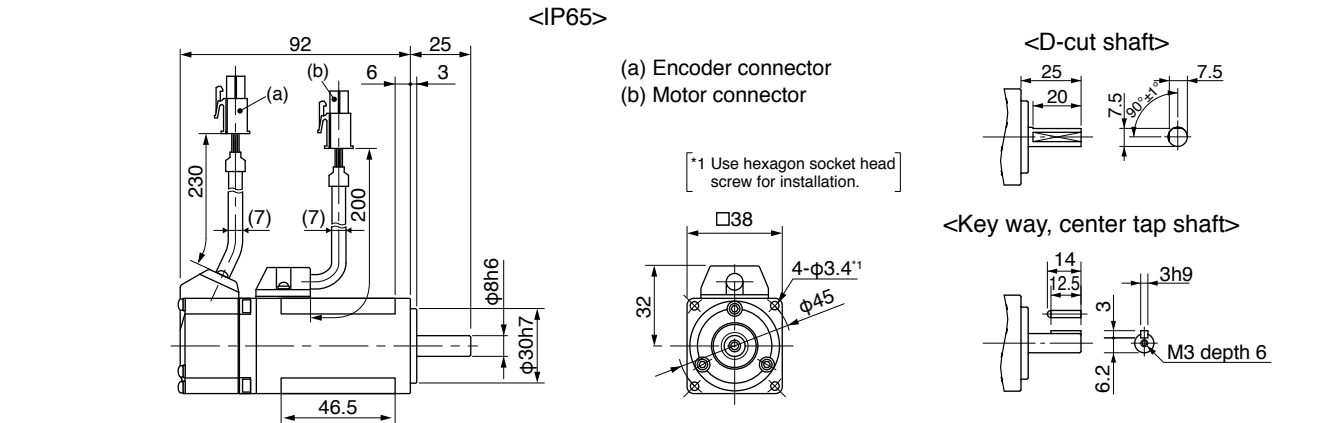
Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

<Without Brake>

Mass: 0.47 kg



* For the dimensions with brake, refer to the right page.

- 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	IP65	MSMD012G1□	MSMD012S1□
	IP67	—	—
Applicable driver *2	Model No.	MAD◇T1505	
	A5IE, A5E series	MAD◇T1505E	—
Frame symbol		A-frame	
Power supply capacity (kVA)		0.5	
Rated output (W)		100	
Rated 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) Note)1	Without option	No limit Note)2	
	DV0P4281	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.051	
	With brake	0.054	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		131072

- Brake specifications** (For details, refer to P.183)
 (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 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

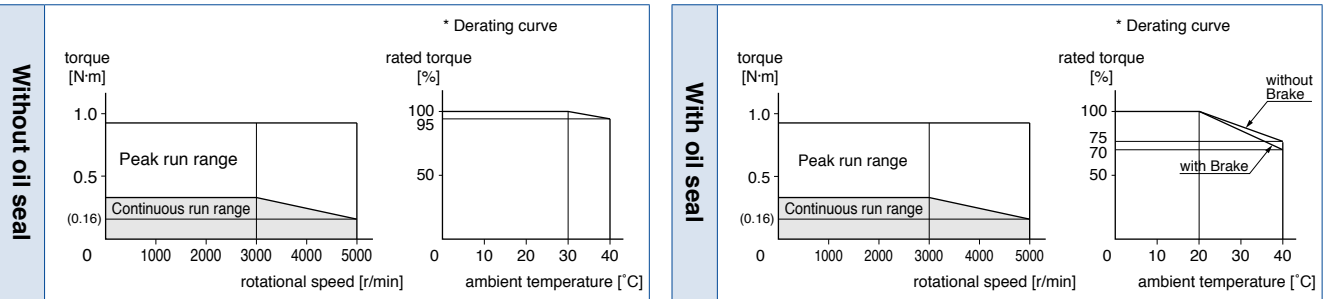
- Permissible load** (For details, refer to P.183)

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 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.42.

- *1 Motor specifications: □
- *2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

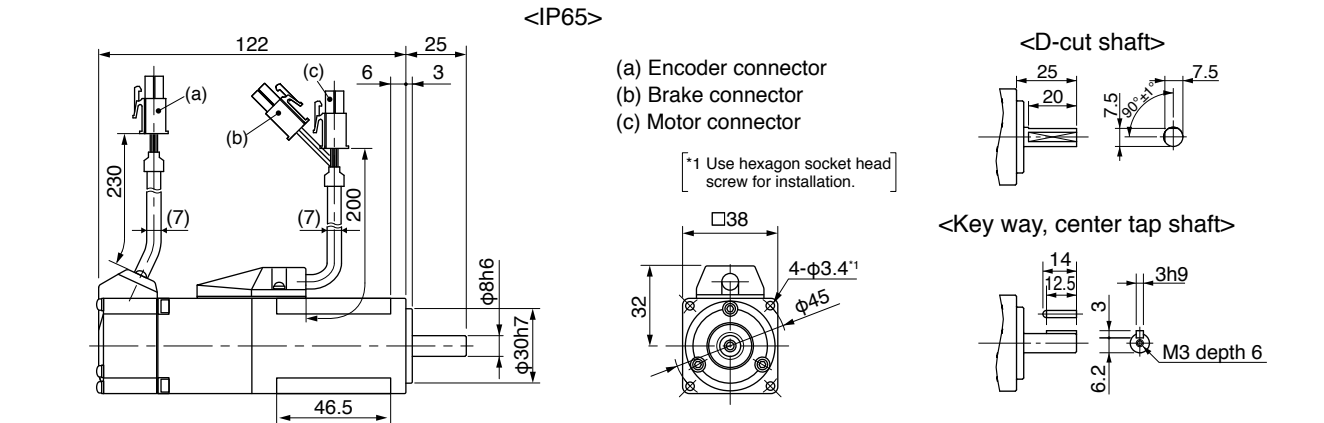
Torque characteristics (at AC200 V of power voltage)



Dimensions

<With Brake>

Mass: 0.68 kg



* For the dimensions without brake, refer to the left page.

- 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.

			AC100 V	
Motor model ※1	IP65		MSMD021G1□	MSMD021S1□
	IP67		—	—
Applicable driver ※2	Model No.	A5II, A5 series	MBD◇T2110	
		A5IIE, A5E series	MBD◇T2110E	—
	Frame symbol		B-frame	
Power supply capacity (kVA)			0.5	
Rated output (W)			200	
Rated 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) Note)1		Without option	No limit Note)2	
		DV0P4283	No limit Note)2	
Rated rotational speed (r/min)			3000	
Max. rotational speed (r/min)			5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.14	
		With brake	0.16	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	1048576

Specifications

			AC100 V	
Motor model ※1	IP65		MSMD041G1□	MSMD041S1□
	IP67		—	—
Applicable driver ※2	Model No.	A5II, A5 series	MCD◇T3120	
		A5IIE, A5E series	MCD◇T3120E	—
	Frame symbol		C-frame	
Power supply capacity (kVA)			0.9	
Rated output (W)			400	
Rated torque (N·m)			1.3	
Momentary Max. peak torque (N·m)			3.8	
Rated current (A(rms))			4.6	
Max. current (A(o-p))			19.5	
Regenerative brake frequency (times/min) Note1	Without option		No limit Note2	
	DV0P4282		No limit Note2	
Rated rotational speed (r/min)			3000	
Max. rotational speed (r/min)			5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		0.26	
	With brake		0.28	
Recommended moment of inertia ratio of the load and the rotor Note3			30 times or less	
Rotary encoder specifications Note5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	1048576 131072

• Brake specifications

(For details, refer to P.183)

(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) Note4	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.183)

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

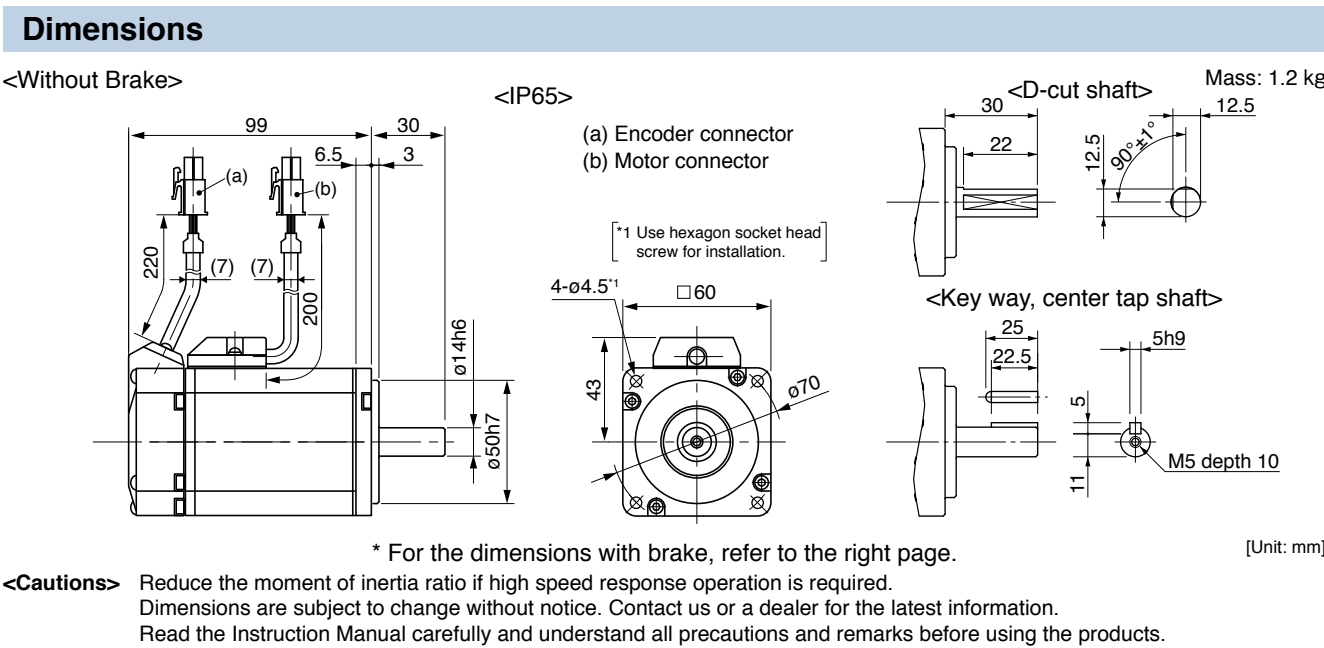
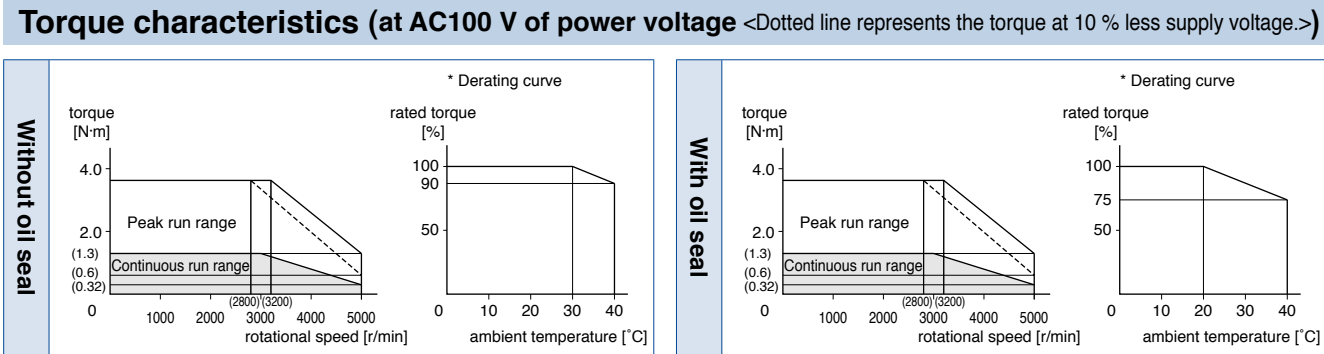
• For details of Note 1 to Note 5, refer to P.182, P.183.

• Dimensions of Driver, refer to P.43.

※1 Motor specifications: □

※2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

※3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.



Motor Specifications

200 V MSMD 750 W [Low inertia, Small capacity]

Specifications

			AC200 V	
Motor model ※ 1	IP65		MSMD082G1□	MSMD082S1□
	IP67		—	—
Applicable driver ※ 2	Model No.	A5Ⅱ, A5 series	MCD◇T3520	
		A5ⅡE, A5E series	MCD◇T3520E	—
	Frame symbol		C-frame	
Power supply capacity (kVA)		1.3		
Rated output (W)		750		
Rated torque (N·m)		2.4		
Momentary Max. peak torque (N·m)		7.1		
Rated current (A(rms))		4.0		
Max. current (A(o-p))		17.0		
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)		4500		
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		0.87	
	With brake		0.97	
Recommended moment of inertia ratio of the load and the rotor Note3		20 times or less		
Rotary encoder specifications Note5		20-bit Incremental	17-bit Absolute	
Resolution per single turn		1048576	131072	

- **Brake specifications** (For details, refer to P.183)
(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) Note)4	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.183)

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

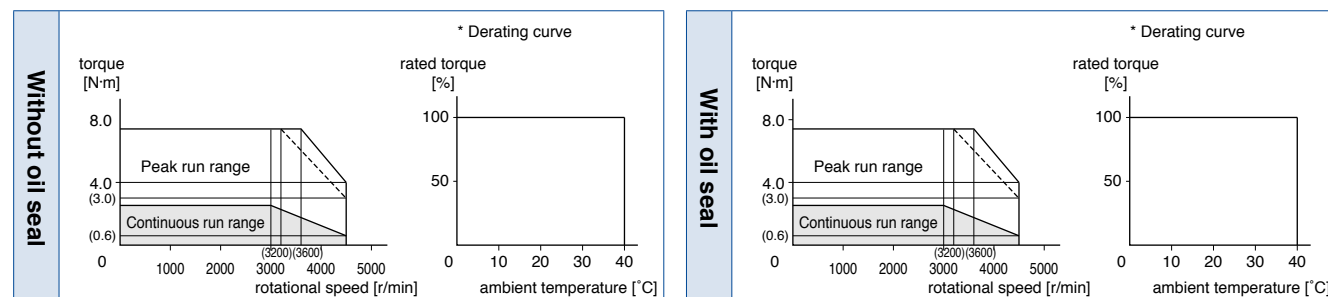
- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.43.

- *1 Motor specifications: ☐

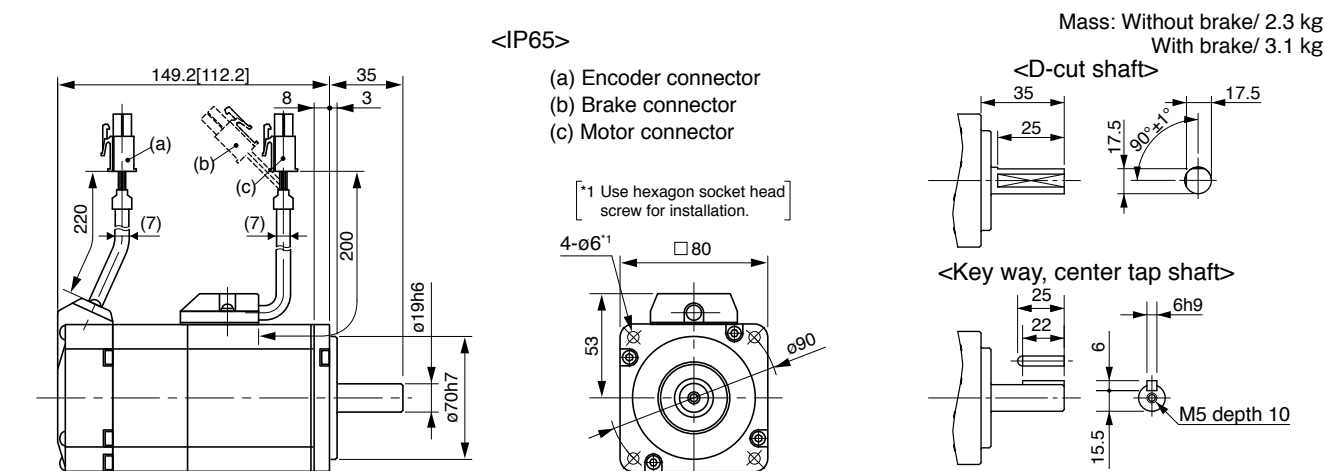
- *2 The product that the end of driver model designation has "E" is "Position control type".
Detail of model designation, refer to P.16.

- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



* Figures in [] represent the dimensions without brake.

[Unit: mm]

- <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.

MEMO

Specifications

		AC100 V	
Motor model *1	IP65	MHMD021G1□	MHMD021S1□
	IP67	—	—
Applicable driver *2	Model No.	A5II, A5 series	MBD◇T2110
	A5IE, A5E series	MBD◇T2110E	—
Frame symbol		B-frame	
Power supply capacity (kVA)		0.5	
Rated output (W)		200	
Rated 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) Note1	Without option	No limit	Note2
	DV0P4283	No limit	Note2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.42	
	With brake	0.45	
Recommended moment of inertia ratio of the load and the rotor Note3		30 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

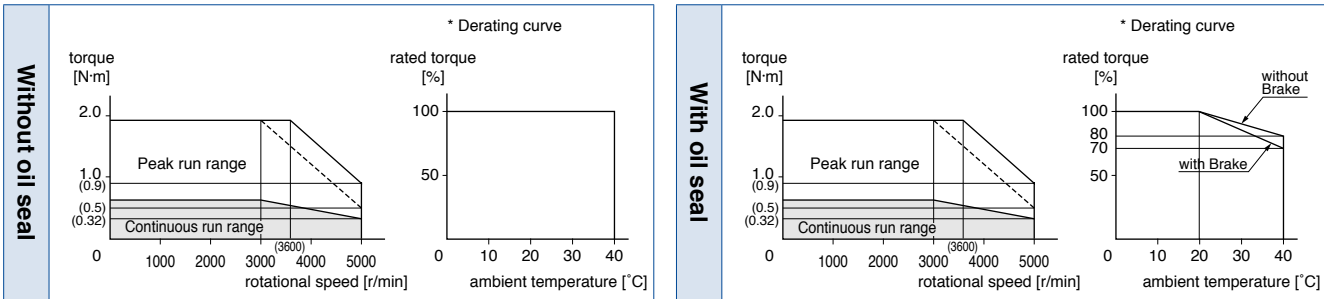
• **Permissible load** (For details, refer to P.183)

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

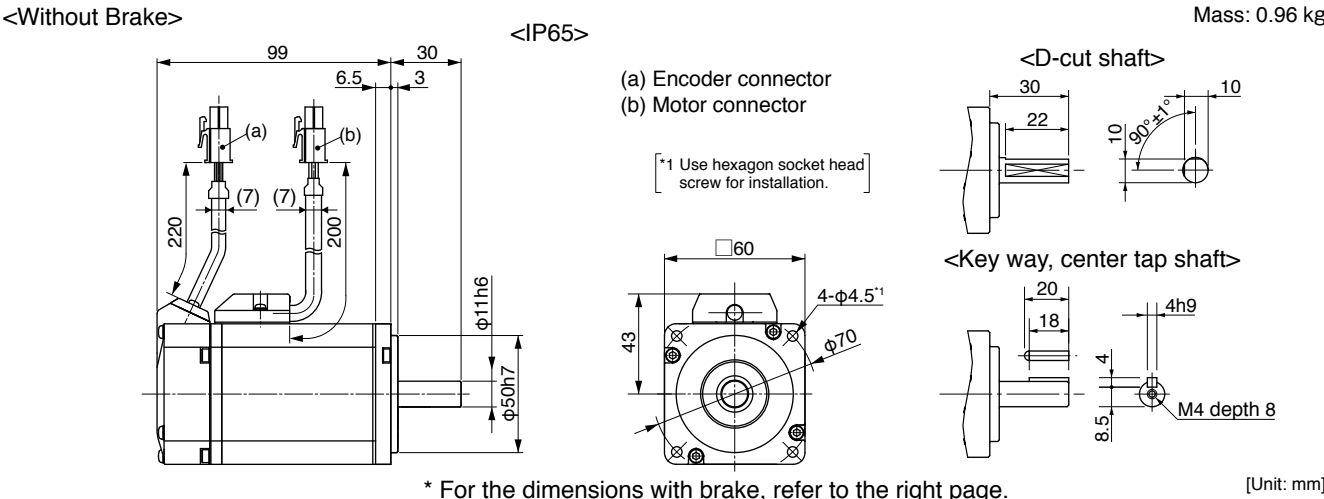
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.42.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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	IP65	MHMD022G1□	MHMD022S1□
	IP67	—	—
Applicable driver *2	Model No.	A5II, A5 series	MAD◇T1507
	A5IE, A5E series	MAD◇T1507E	—
Frame symbol		A-frame	
Power supply capacity (kVA)		0.5	
Rated output (W)		200	
Rated torque (N·m)		0.64	
Momentary Max. peak torque (N·m)		1.91	
Rated current (A(rms))		1.6	
Max. current (A(o-p))		6.9	
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)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.42	
	With brake	0.45	
Recommended moment of inertia ratio of the load and the rotor Note3		30 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

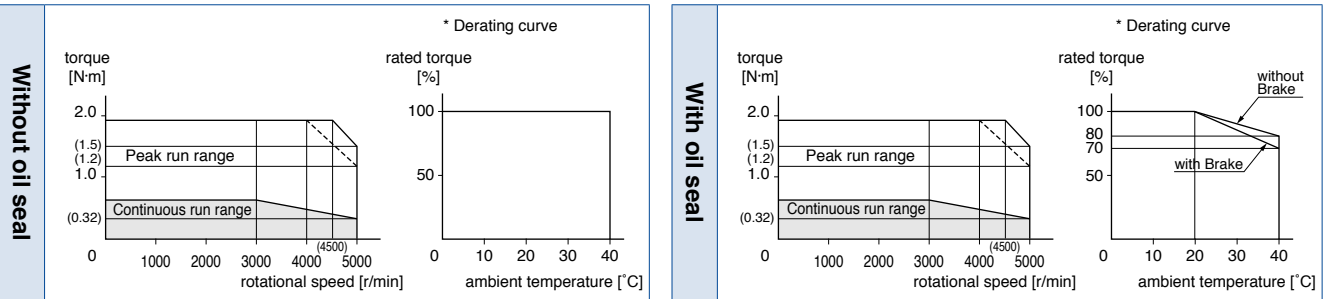
• **Permissible load** (For details, refer to P.183)

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

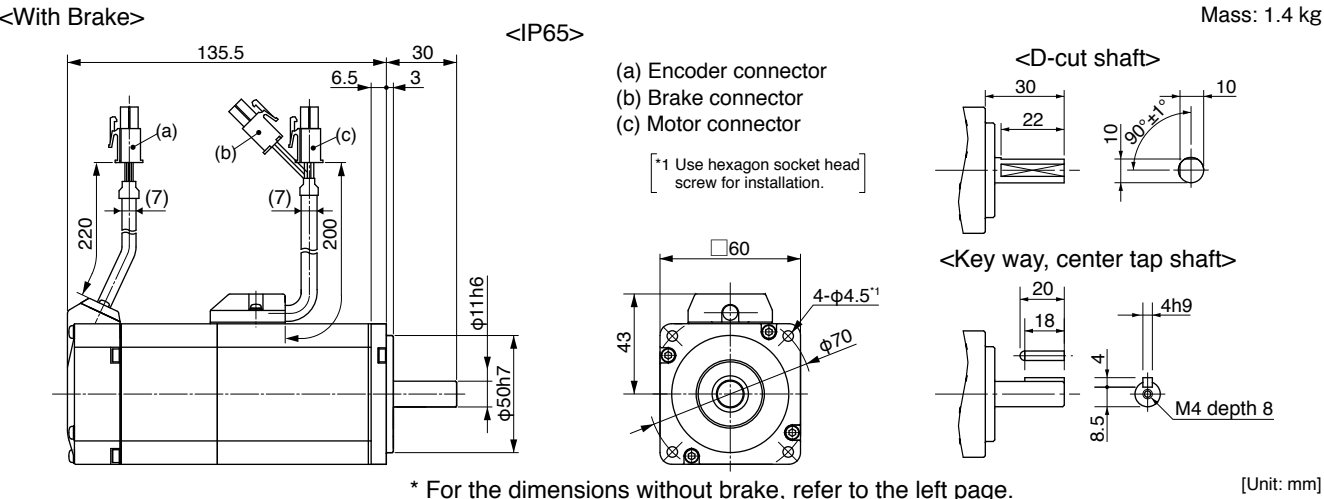
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.42.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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 *1	IP65	MHMD041G1□	MHMD041S1□
	IP67	—	—
Applicable driver *2	Model No.	A5II, A5 series	MCD◇T3120
	A5IE, A5E series	MCD◇T3120E	—
Frame symbol		C-frame	
Power supply capacity (kVA)		0.9	
Rated output (W)		400	
Rated torque (N·m)		1.3	
Momentary Max. peak torque (N·m)		3.8	
Rated current (A(rms))		4.6	
Max. current (A(o-p))		19.5	
Regenerative brake frequency (times/min) Note)1	Without option	No limit	Note)2
	DV0P4282	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.67	
	With brake	0.70	
Recommended moment of inertia ratio of the load and the rotor		30 times or less	
Rotary encoder specifications	Note)5		
	Resolution per single turn		
		20-bit Incremental	17-bit Absolute
		1048576	131072

- Brake specifications** (For details, refer to P.183)
 (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) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

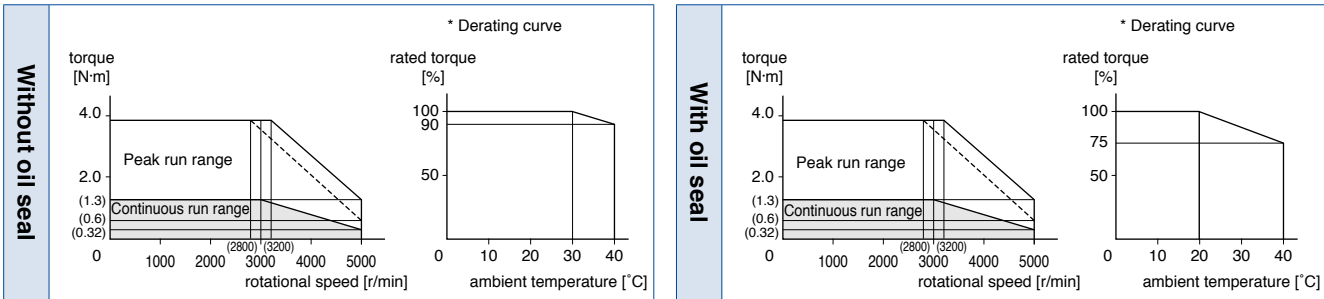
- Permissible load** (For details, refer to P.183)

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

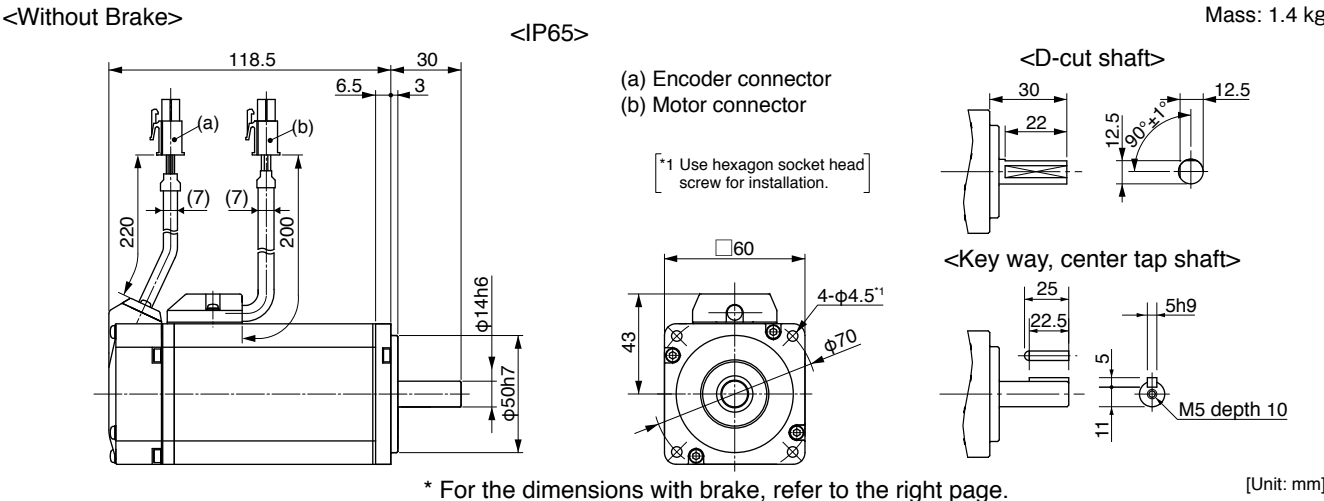
- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.43.

- *1 Motor specifications: □
- *2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



- 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	IP65	MHMD042G1□	MHMD042S1□
	IP67	—	—
Applicable driver *2	Model No.	A5II, A5 series	MBD◇T2510
	A5IE, A5E series	MBD◇T2510E	—
Frame symbol		B-frame	
Power supply capacity (kVA)		0.9	
Rated output (W)		400	
Rated torque (N·m)		1.3	
Momentary Max. peak torque (N·m)		3.8	
Rated current (A(rms))		2.6	
Max. current (A(o-p))		11.0	
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)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.67	
	With brake	0.70	
Recommended moment of inertia ratio of the load and the rotor		30 times or less	
Rotary encoder specifications	Note)5		
	Resolution per single turn		
		20-bit Incremental	17-bit Absolute
		1048576	131072

- Brake specifications** (For details, refer to P.183)
 (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) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

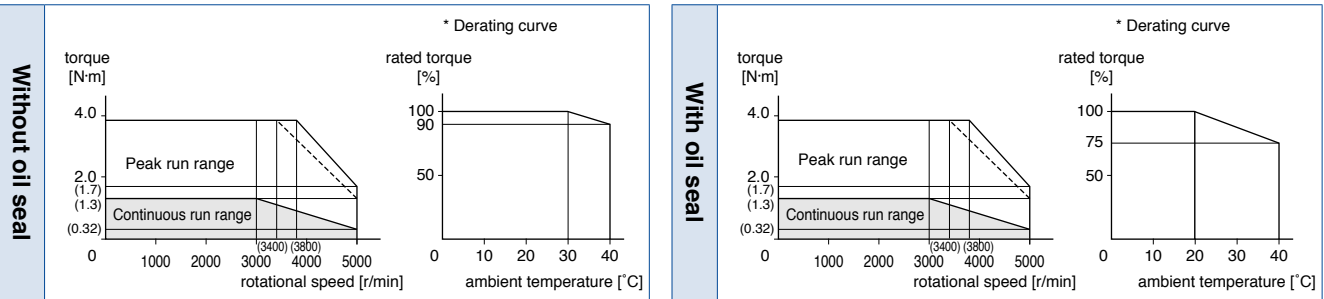
- Permissible load** (For details, refer to P.183)

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

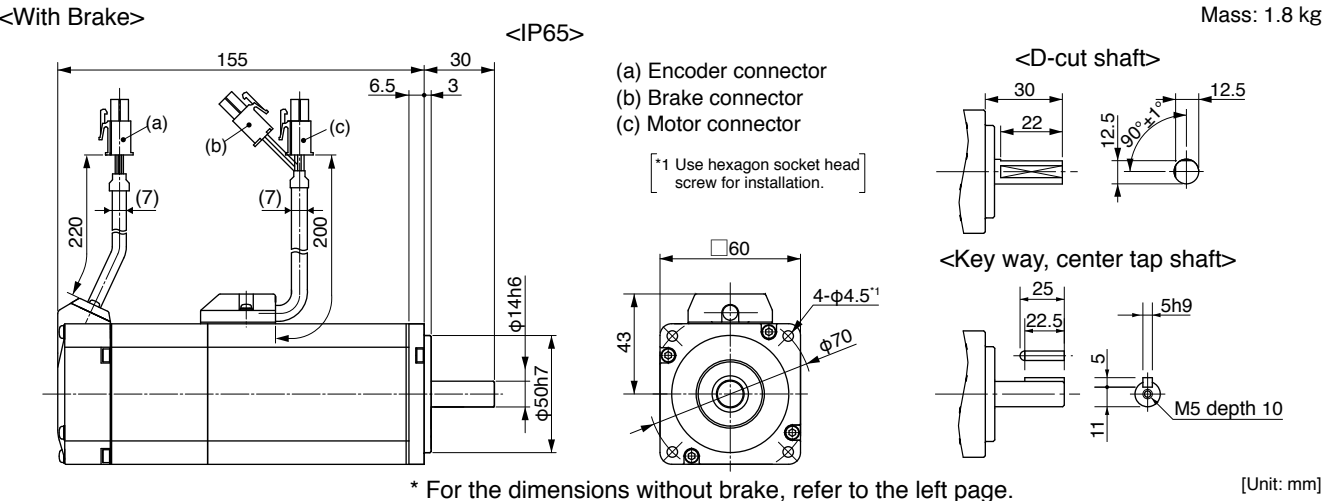
- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.42.

- *1 Motor specifications: □
- *2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



- 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.

			AC200 V	
Motor model * 1	IP65		MHMD082G1□	MHMD082S1□
	IP67		—	—
Applicable driver * 2	Model No.	A5II, A5 series	MCD◇T3520	
		A5IIE, A5E series	MCD◇T3520E	—
	Frame symbol		C-frame	
Power supply capacity (kVA)			1.3	
Rated output (W)			750	
Rated torque (N·m)			2.4	
Momentary Max. peak torque (N·m)			7.1	
Rated current (A(rms))			4.0	
Max. current (A(o-p))			17.0	
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)			4500	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		1.51	
	With brake		1.61	
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
Resolution per single turn			1048576	131072

- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Without oil seal

torque [N·m]

rated torque [%]

* Derating curve

Peak run range

Continuous run range

rotational speed [r/min]

ambient temperature [°C]

With oil seal

torque [N·m]

rated torque [%]

* Derating curve

Peak run range

Continuous run range

rotational speed [r/min]

ambient temperature [°C]

<IP65>

(a) Encoder connector
 (b) Brake connector
 (c) Motor connector

*1 Use hexagon socket head screw for installation.

Mass: Without brake/ 2.5 kg
 With brake/ 3.5 kg

<D-cut shaft>

<Key way, center tap shaft>

<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.

This image shows a full page of a worksheet designed for handwriting practice. It features 20 evenly spaced, horizontal dashed lines across the entire width of the page. The background is plain white, and there are no margins, text, or other markings present.

			AC100 V	
Motor model ※1	IP65		—	—
	IP67		MSME5AZG1□	MSME5AZS1□
Applicable driver ※2	Model No.	A5II, A5 series	MAD◇T1105	
		A5IIE, A5E series	MAD◇T1105E	—
	Frame symbol		A-frame	
Power supply capacity (kVA)			0.4	
Rated output (W)			50	
Rated 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) Note)1	Without option		No limit Note)2	
	DV0P4280		No limit Note)2	
Rated rotational speed (r/min)			3000	
Max. rotational speed (r/min)			6000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		0.025	
	With brake		0.027	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
Resolution per single turn			1048576	131072

- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

With oil seal

*** Derating curve**

torque [N·m]

rated torque [%]

rotational speed [r/min]

ambient temperature [°C]

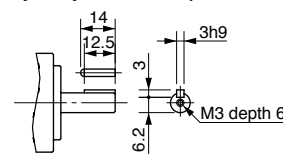
Peak run range

Continuous run range

without Brake

with Brake

Mass: 0.31 kg



[Unit: mm]

MSME 50 W [Low inertia, Small capacity]

			AC200 V	
Motor model ※1	IP65		—	—
	IP67		MSME5AZG1□	MSME5AZS1□
Applicable driver ※2	Model No.	A5II, A5 series	MAD◇T1505	
		A5IIE, A5E series	MAD◇T1505E	—
	Frame symbol		A-frame	
Power supply capacity (kVA)			0.5	
Rated output (W)			50	
Rated 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) Note)1		Without option	No limit Note)2	
		DVOP4280	No limit Note)2	
Rated rotational speed (r/min)			3000	
Max. rotational speed (r/min)			6000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.025	
		With brake	0.027	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	1048576

- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

With oil seal

The figure contains two graphs for a motor with an oil seal.

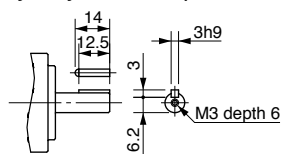
Left Graph: Torque vs. Rotational Speed

- Y-axis:** torque [N·m], with values 0.5, (0.3), 0.25, and (0.08).
- X-axis:** rotational speed [r/min], with values 0, 1000, 2000, 3000, 4000, 5000, and 6000.
- Operating Regions:**
 - Peak run range:** Indicated by a horizontal line at 0.25 N·m from 0 to 3000 r/min.
 - Continuous run range:** Indicated by a shaded area from 0.08 N·m up to the peak run range, extending to 6000 r/min.

Right Graph: Rated Torque vs. Ambient Temperature

- Y-axis:** rated torque [%], with values 100, 70, 60, and 50.
- X-axis:** ambient temperature [°C], with values 0, 10, 20, 30, and 40.
- Derating Curve:**
 - without Brake:** A line starting at 100% torque at 20°C and decreasing to approximately 75% at 40°C.
 - with Brake:** A line starting at 60% torque at 20°C and decreasing to approximately 55% at 40°C.

Mass: 0.51 kg



Unit: mm]

Specifications

		AC100 V	
Motor model *1	IP65	—	—
	IP67	MSME011G1□	MSME011S1□
Applicable driver *2	Model No.	A5II, A5 series	MAD◇T1107
	A5IE, A5E series	MAD◇T1107E	—
Frame symbol		A-frame	
Power supply capacity (kVA)		0.4	
Rated output (W)		100	
Rated 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) Note)1	Without option	No limit	Note)2
	DV0P4280	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		6000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.051	
	With brake	0.054	
Recommended moment of inertia ratio of the load and the rotor		30 times or less	
Rotary encoder specifications	Note)5		20-bit Incremental
	Resolution per single turn		1048576
		17-bit Absolute	
		131072	

• **Brake specifications** (For details, refer to P.183)
(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 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.183)

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

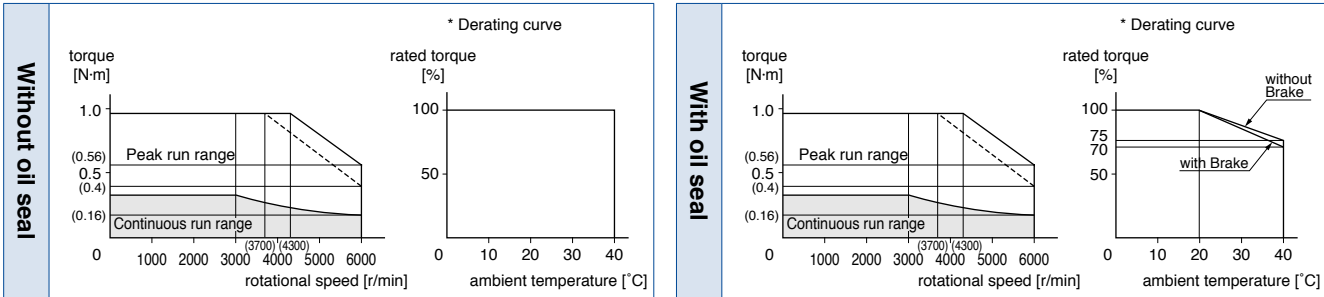
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.42.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

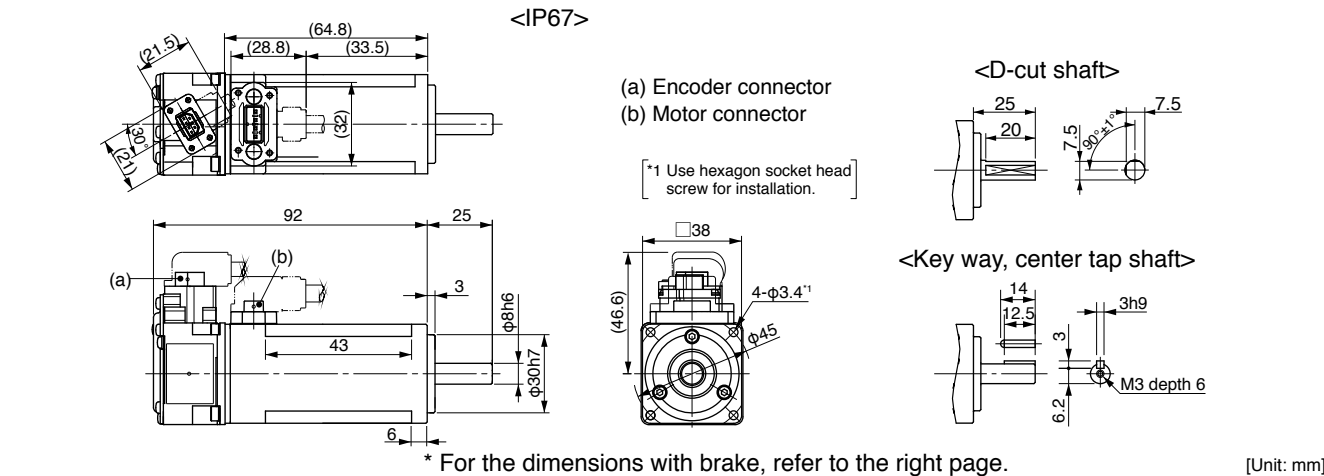
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions <In Case of Without Brake, Cable direction to output shaft.>

• Motor cables for opposite to output shaft cannot be used with 100 W motor. Mass: 0.46 kg



<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	IP65	—	—
	IP67	MSME012G1□	MSME012S1□
Applicable driver *2	Model No.	A5II, A5 series	MAD◇T1505
	A5IE, A5E series	MAD◇T1505E	—
Frame symbol		A-frame	
Power supply capacity (kVA)		0.5	
Rated output (W)		100	
Rated 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) Note)1	Without option	No limit	Note)2
	DV0P4280	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		6000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.051	
	With brake	0.054	
Recommended moment of inertia ratio of the load and the rotor		30 times or less	
Rotary encoder specifications	Note)5		20-bit Incremental
	Resolution per single turn		1048576
		17-bit Absolute	
		131072	

• **Brake specifications** (For details, refer to P.183)
(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 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.183)

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

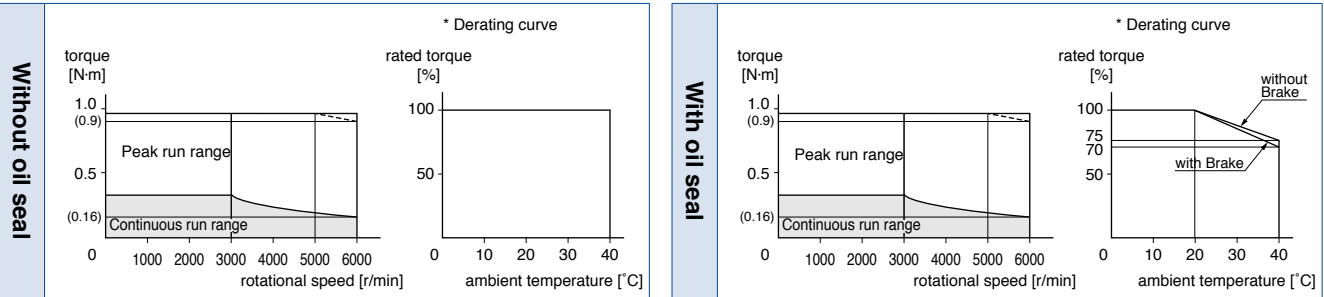
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.42.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

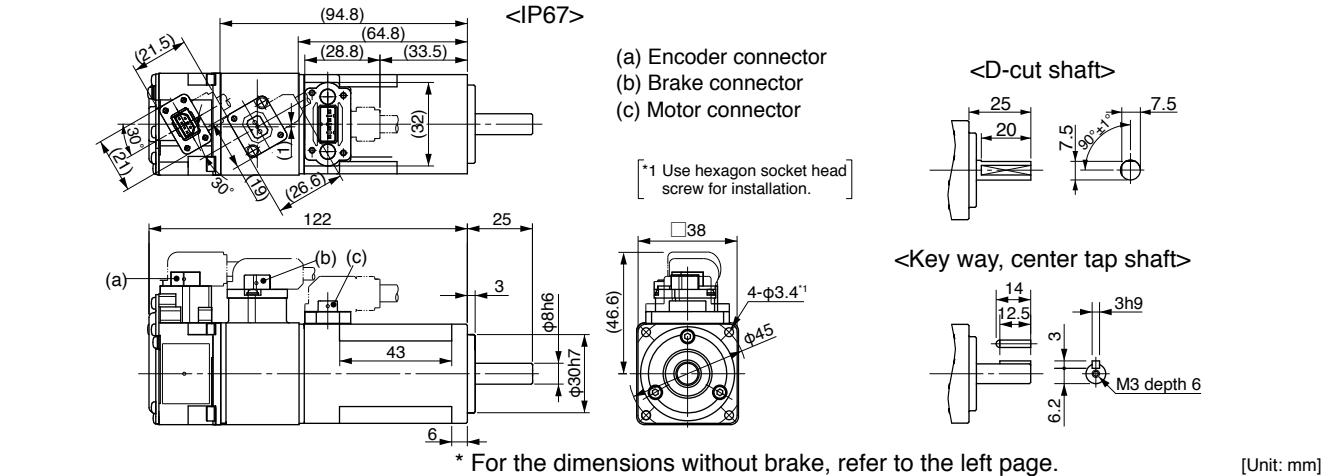
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions <In Case of With Brake, Cable direction to output shaft.>

• Motor cables for opposite to output shaft cannot be used with 100 W motor. Mass: 0.66 kg



<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 *1	IP65	—	—
	IP67	MSME021G1□	MSME021S1□
Applicable driver *2	Model No.	MBD◇T2110	
	A5IE, A5E series	MBD◇T2110E	—
Frame symbol		B-frame	
Power supply capacity (kVA)		0.5	
Rated output (W)		200	
Rated 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) Note)1	Without option	No limit	Note)2
	DV0P4283	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		6000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.14	
	With brake	0.16	
Recommended moment of inertia ratio of the load and the rotor		30 times or less	
Rotary encoder specifications		20-bit Incremental	17-bit Absolute
		Resolution per single turn	1048576 131072

• Brake specifications (For details, refer to P.183)
 (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) Note)4	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.183)

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

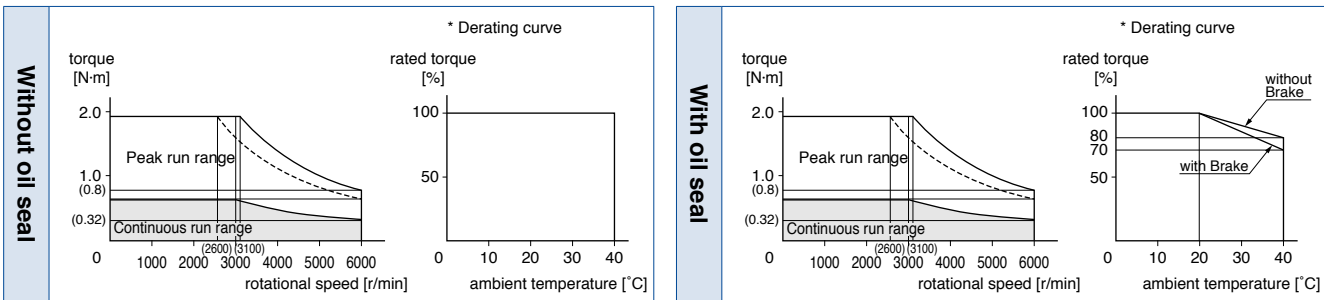
• For details of Note 1 to Note 5, refer to P.182, P.183.
 • Dimensions of Driver, refer to P.42.

*1 Motor specifications: □

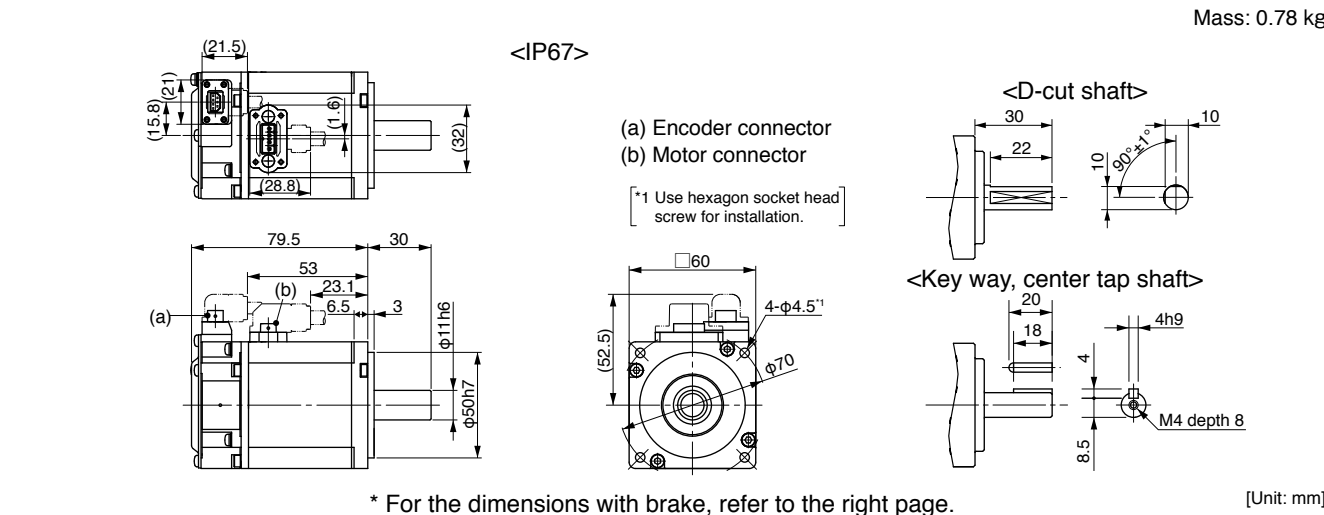
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions <In Case of Without Brake, Cable direction to output shaft.>



<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	IP65	—	—
	IP67	MSME022G1□	MSME022S1□
Applicable driver *2	Model No.	MAD◇T1507	
	A5IE, A5E series	MAD◇T1507E	—
Frame symbol		A-frame	
Power supply capacity (kVA)		0.5	
Rated output (W)		200	
Rated 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) Note)1	Without option	No limit	Note)2
	DV0P4283	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		6000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.14	
	With brake	0.16	
Recommended moment of inertia ratio of the load and the rotor		30 times or less	
Rotary encoder specifications		20-bit Incremental	17-bit Absolute
		Resolution per single turn	1048576 131072

• Brake specifications (For details, refer to P.183)
 (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) Note)4	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.183)

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

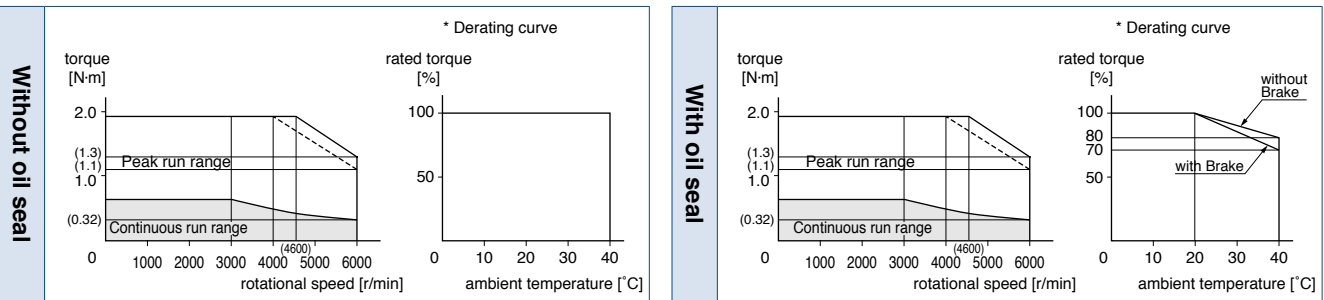
• For details of Note 1 to Note 5, refer to P.182, P.183.
 • Dimensions of Driver, refer to P.42.

*1 Motor specifications: □

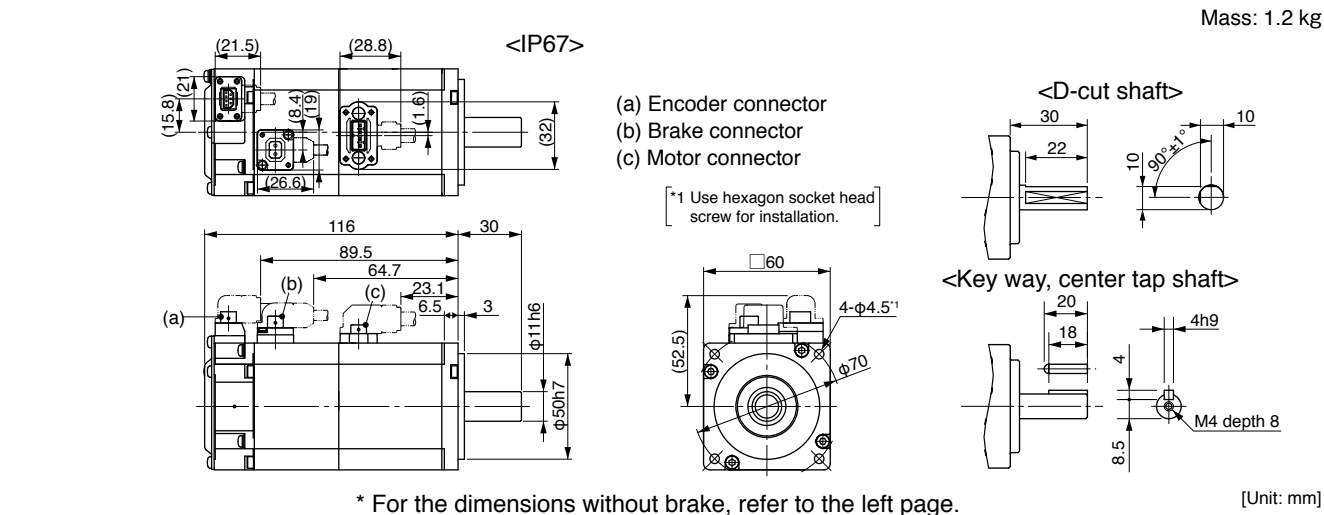
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions <In Case of With Brake, Cable direction to output shaft.>



<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 *1	IP65	—	—
	IP67	MSME041G1□	MSME041S1□
Applicable driver *2	Model No.	A5II, A5 series	MCD◇T3120
	A5IE, A5E series	MCD◇T3120E	—
	Frame symbol	C-frame	
Power supply capacity (kVA)		0.9	
Rated output (W)		400	
Rated torque (N·m)		1.3	
Momentary Max. peak torque (N·m)		3.8	
Rated current (A(rms))		4.6	
Max. current (A(o-p))		19.5	
Regenerative brake frequency (times/min) Note1	Without option	No limit	Note2
	DV0P4282	No limit	Note2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		6000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.26	
	With brake	0.28	
Recommended moment of inertia ratio of the load and the rotor Note3		30 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

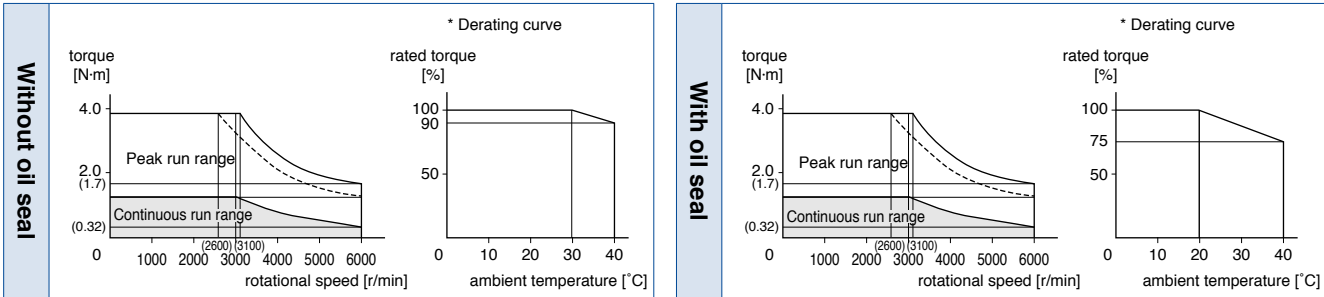
• **Permissible load** (For details, refer to P.183)

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

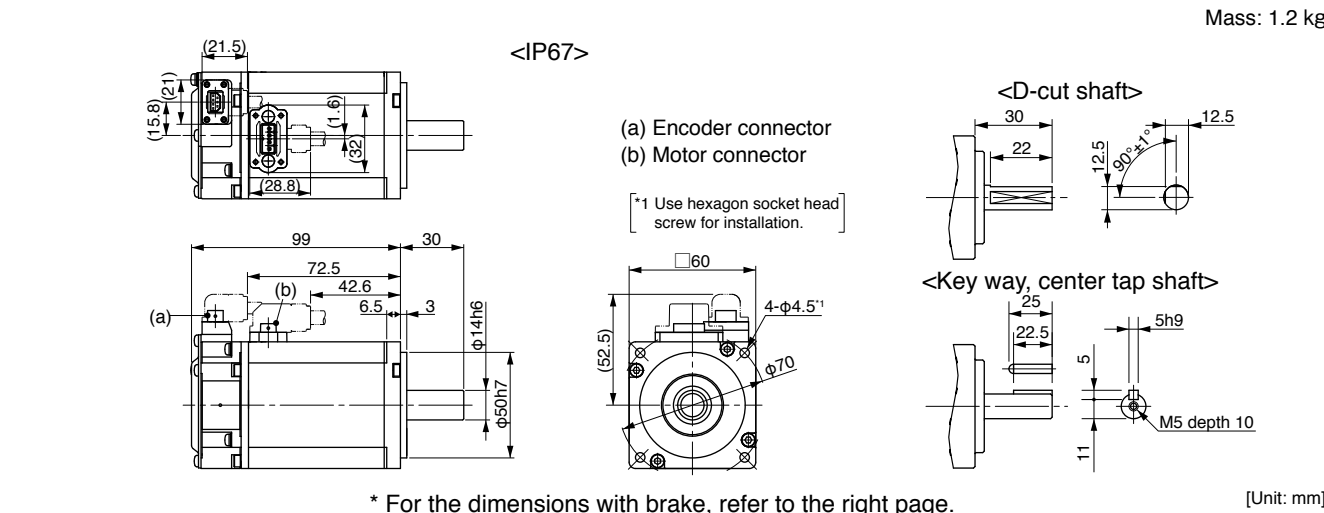
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions <In Case of Without Brake, Cable direction to output shaft.>



<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	IP65	—	—
	IP67	MSME042G1□	MSME042S1□
Applicable driver *2	Model No.	A5II, A5 series	MBD◇T2510
	A5IE, A5E series	MBD◇T2510E	—
	Frame symbol	B-frame	
Power supply capacity (kVA)		0.9	
Rated output (W)		400	
Rated torque (N·m)		1.3	
Momentary Max. peak torque (N·m)		3.8	
Rated current (A(rms))		2.4	
Max. current (A(o-p))		10.2	
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 ⁻⁴ kg·m ²)	Without brake	0.26	
	With brake	0.28	
Recommended moment of inertia ratio of the load and the rotor Note3		30 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

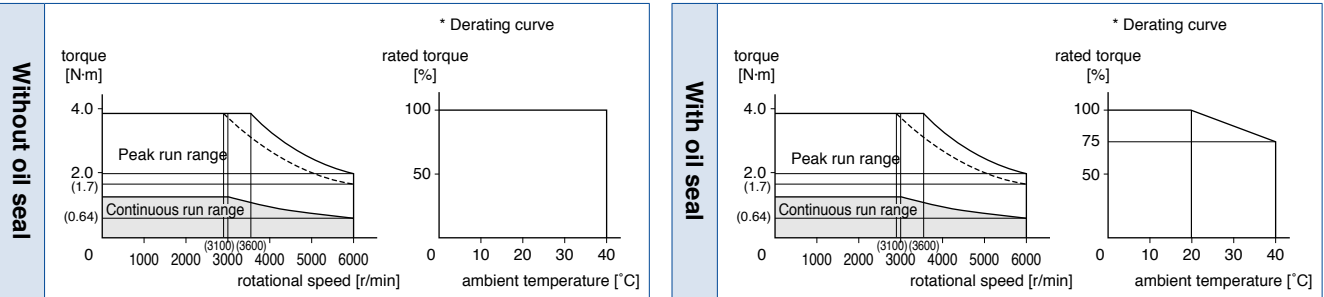
• **Permissible load** (For details, refer to P.183)

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

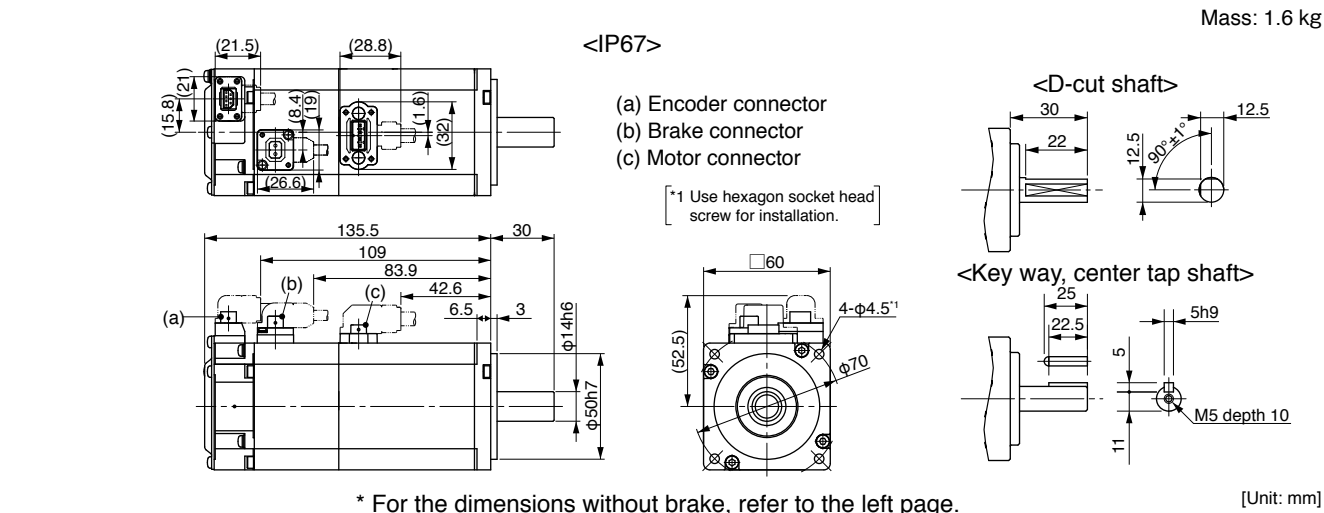
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.42.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions <In Case of With Brake, Cable direction to output shaft.>



<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.

			AC200 V	
Motor model ※1	IP65		—	—
	IP67		MSME082G1□	MSME082S1□
Applicable driver ※2	Model No.	A5II, A5 series	MCD◇T3520	
		A5IIE, A5E series	MCD◇T3520E	—
	Frame symbol		C-frame	
Power supply capacity (kVA)		1.3		
Rated output (W)		750		
Rated torque (N·m)		2.4		
Momentary Max. peak torque (N·m)		7.1		
Rated current (A(rms))		4.1		
Max. current (A(o-p))		17.4		
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)		6000		
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		0.87	
	With brake		0.97	
Recommended moment of inertia ratio of the load and the rotor Note)3		20 times or less		
Rotary encoder specifications Note)5		20-bit Incremental		17-bit Absolute
Resolution per single turn		1048576		131072

- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Figure 10 displays two sets of derating curves for torque and rated torque versus ambient temperature. The left set is for the 'Without oil seal' condition, and the right set is for the 'With oil seal' condition. Both sets include a torque graph (left) and a rated torque graph (right).

Without oil seal:

- Torque Graph:** The y-axis is torque [N·m] with values 0.6, 3.0, 4.0, and 8.0. The x-axis is rotational speed [r/min] with values 0, 1000, 2000, 3000, 4000, 5000, and 6000. The 'Peak run range' is shaded from 3000 to 3600 r/min. The 'Continuous run range' is shaded from 0 to 3000 r/min. A dashed line indicates the torque derating curve.
- Rated Torque Graph:** The y-axis is rated torque [%] with values 0, 50, and 100. The x-axis is ambient temperature [°C] with values 0, 10, 20, 30, and 40. The rated torque is constant at 100% until 30°C, then derates to approximately 40% at 40°C.

With oil seal:

- Torque Graph:** The y-axis is torque [N·m] with values 0.6, 3.0, 4.0, and 8.0. The x-axis is rotational speed [r/min] with values 0, 1000, 2000, 3000, 4000, 5000, and 6000. The 'Peak run range' is shaded from 3000 to 3600 r/min. The 'Continuous run range' is shaded from 0 to 3000 r/min. A dashed line indicates the torque derating curve.
- Rated Torque Graph:** The y-axis is rated torque [%] with values 0, 50, and 100. The x-axis is ambient temperature [°C] with values 0, 10, 20, 30, and 40. The rated torque is constant at 100% until 30°C, then derates to approximately 40% at 40°C.

Mass: Without brake/ 2.3 kg
With brake/ 3.1 kg

<IP67>

(a) Encoder connector
(b) Brake connector
(c) Motor connector

[*1 Use hexagon socket head screw for installation.]

<D-cut shaft>

<Key way, center tap shaft>

* Figures in [] represent the dimensions without brake.

[Unit: mm]

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			AC200 V	
Motor model *1	IP65		MSME102GC□	MSME102SC□
	IP67		MSME102G1□	MSME102S1□
Applicable driver *2	Model No.	A5Ⅱ, A5 series	MDD◇T5540	
		A5ⅡE, A5E series	MDD◇T5540E	—
	Frame symbol		D-frame	
Power supply capacity (kVA)			1.8	
Rated output (W)			1000	
Rated torque (N·m)			3.18	
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) Note)1	Without option		No limit Note)2	
	DVOP4284		No limit Note)2	
Rated rotational speed (r/min)			3000	
Max. rotational speed (r/min)			5000	
Moment of inertia of rotor ($\times 10^{-4}$ kg·m ²)	Without brake		2.03	
	With brake		2.35	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	1048576

- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

With oil seal

torque [N·m]

Peak run range

Continuous run range

rotational speed [r/min]

rated torque [%]

* Derating curve

ambient temperature [°C]

Mass: Without brake/ 3.5 kg
With brake/ 4.5 kg

Key way dimensions

(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

[Unit: mm]

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Specifications

		AC200 V	
Motor model *1	IP65	MSME152GC□	MSME152SC□
	IP67	MSME152G1□	MSME152S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T5540
	A5IE, A5E series	MDD◇T5540E	—
	Frame symbol	D-frame	
Power supply capacity (kVA)		2.3	
Rated output (W)		1500	
Rated torque (N·m)		4.77	
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) Note)1	Without option	No limit Note)2	
	DV0P4284	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	2.84	
	With brake	3.17	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

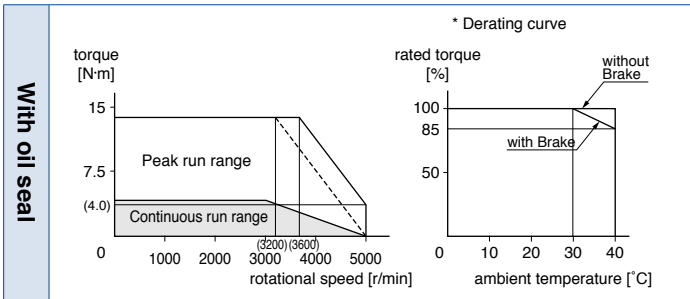
• **Permissible load** (For details, refer to P.183)

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

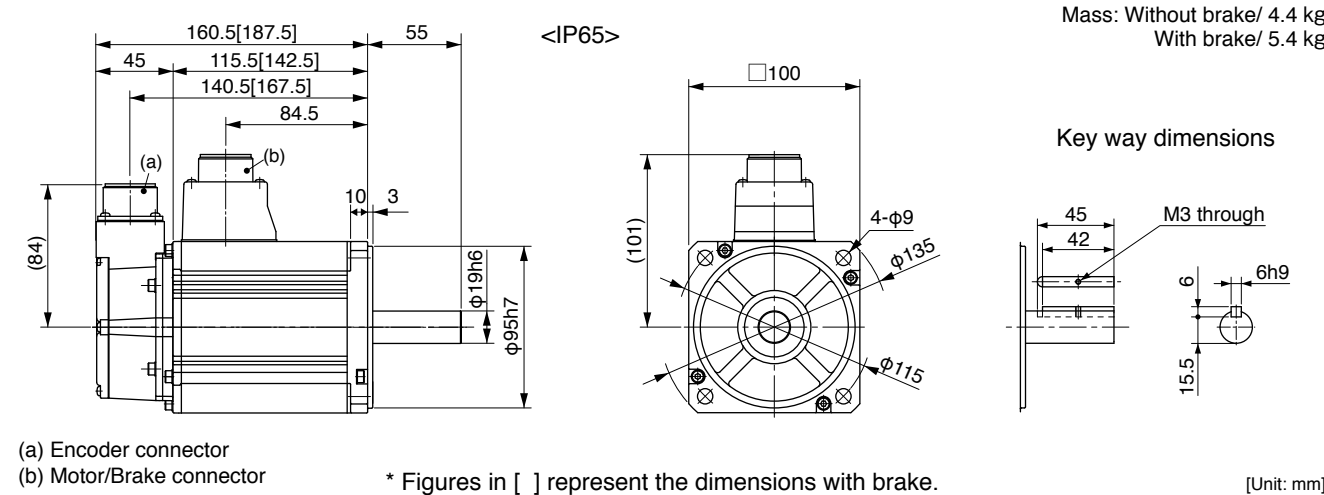
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.137.)



(a) Encoder connector
(b) Motor/Brake connector
* Figures in [] represent the dimensions with brake.
[Unit: mm]
<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	IP65	MSME202GC□	MSME202SC□
	IP67	MSME202G1□	MSME202S1□
Applicable driver *2	Model No.	A5II, A5 series	MED◇T7364
	A5IE, A5E series	MED◇T7364E	—
	Frame symbol	E-frame	
Power supply capacity (kVA)		3.3	
Rated output (W)		2000	
Rated torque (N·m)		6.37	
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) Note)1	Without option	No limit Note)2	
	DV0P4285	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	3.68	
	With brake	4.01	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

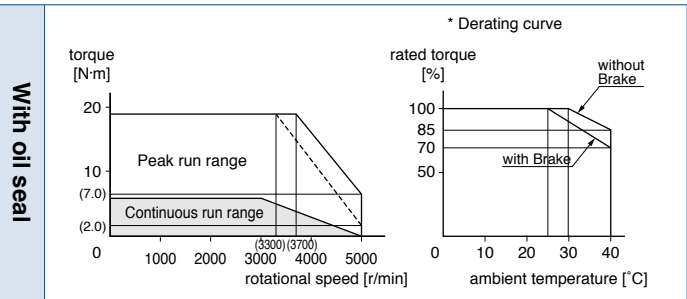
• **Permissible load** (For details, refer to P.183)

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

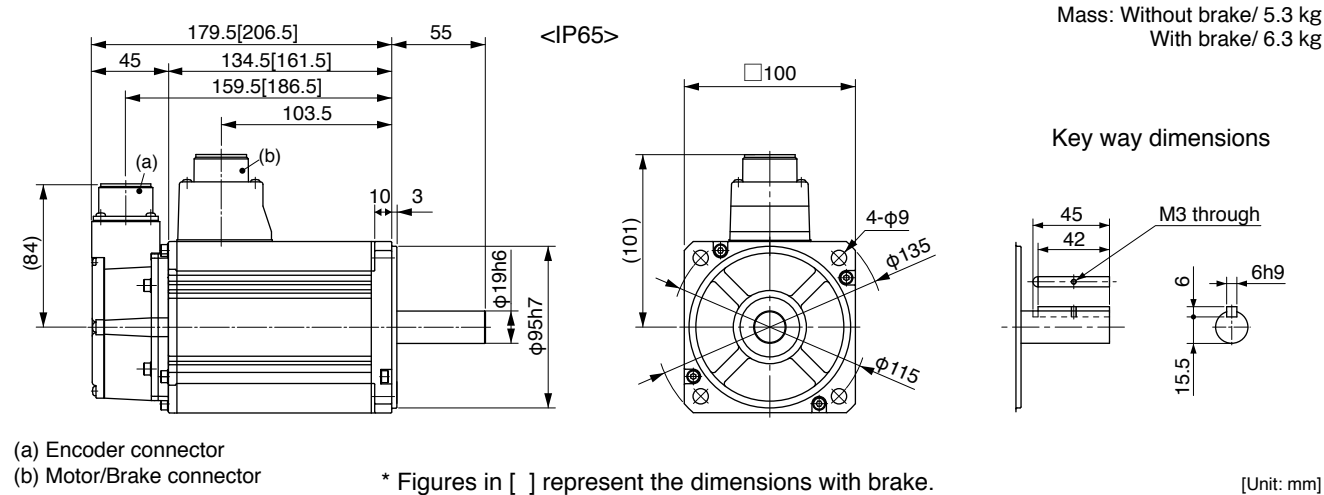
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.137.)



(a) Encoder connector
(b) Motor/Brake connector
* Figures in [] represent the dimensions with brake.
[Unit: mm]
<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	IP65	MSME302GC□	MSME302SC□
	IP67	MSME302G1□	MSME302S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA390
	A5IE, A5E series	MFD◇TA390E	—
	Frame symbol	F-frame	
Power supply capacity (kVA)		4.5	
Rated output (W)		3000	
Rated torque (N·m)		9.55	
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) Note1	Without option	No limit Note2	
	DV0P4285×2	No limit Note2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	6.50	
	With brake	6.85	
Recommended moment of inertia ratio of the load and the rotor Note3		15 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	11.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

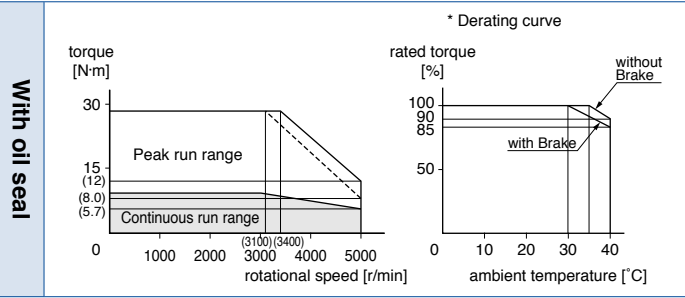
• **Permissible load** (For details, refer to P.183)

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

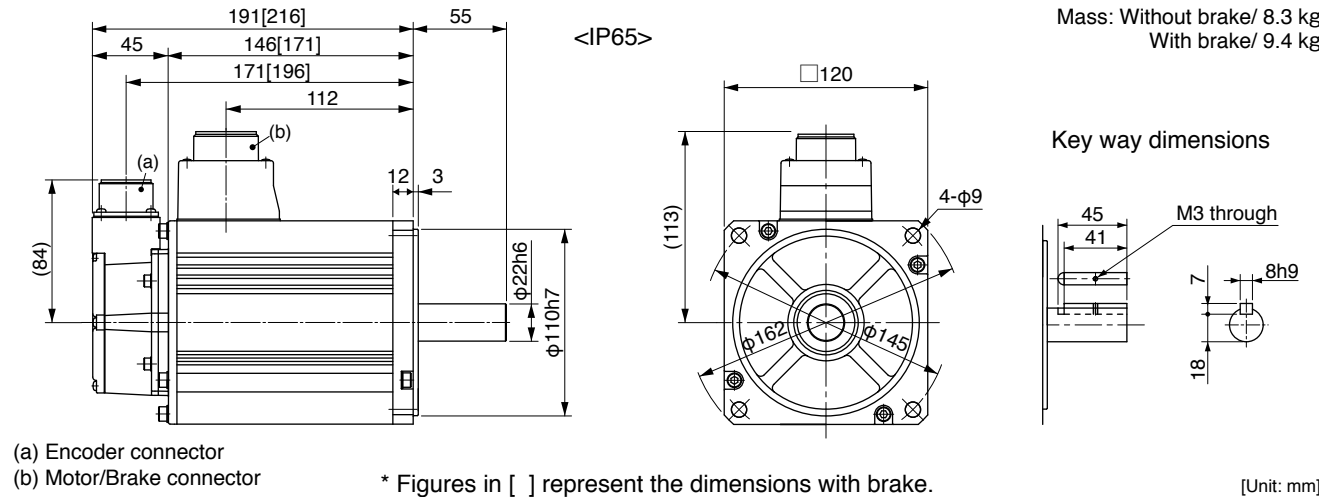
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.137.)



<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	IP65	MSME402GC□	MSME402SC□
	IP67	MSME402G1□	MSME402S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TB3A2
	A5IE, A5E series	MFD◇TB3A2E	—
	Frame symbol	F-frame	
Power supply capacity (kVA)		6.0	
Rated output (W)		4000	
Rated torque (N·m)		12.7	
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) Note1	Without option	No limit Note2	
	DV0P4285×2	No limit Note2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		4500	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	12.9	
	With brake	14.2	
Recommended moment of inertia ratio of the load and the rotor Note3		15 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

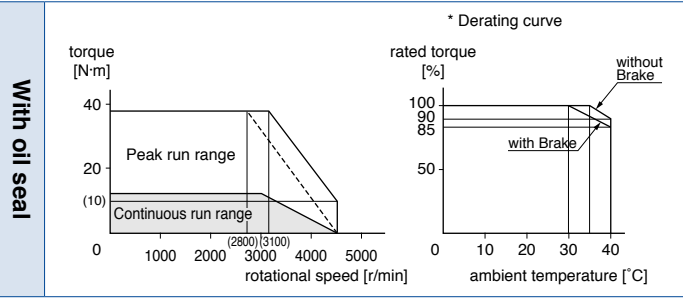
• **Permissible load** (For details, refer to P.183)

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

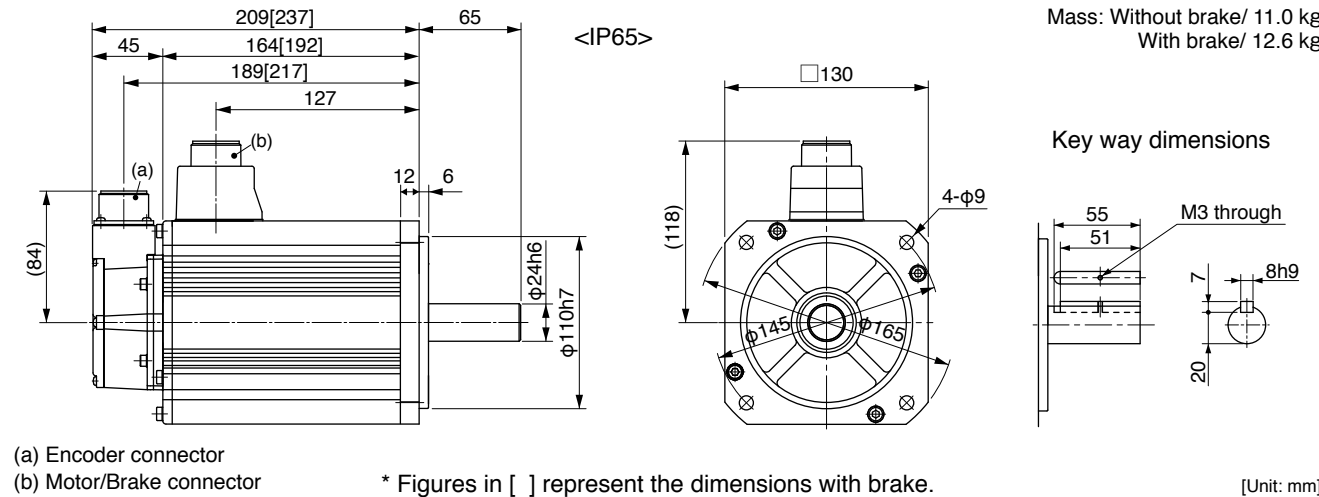
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.137.)



<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	IP65	MSME502GC□	MSME502SC□
	IP67	MSME502G1□	MSME502S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TB3A2
	A5IE, A5E series	MFD◇TB3A2E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		7.5	
Rated output (W)		5000	
Rated torque (N·m)		15.9	
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) Note1	Without option	357	
	DV0P4285×2	No limit Note2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		4500	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	17.4	
	With brake	18.6	
Recommended moment of inertia ratio of the load and the rotor Note3		15 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

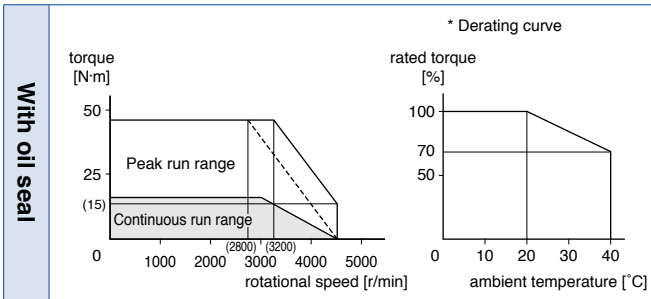
• **Permissible load** (For details, refer to P.183)

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

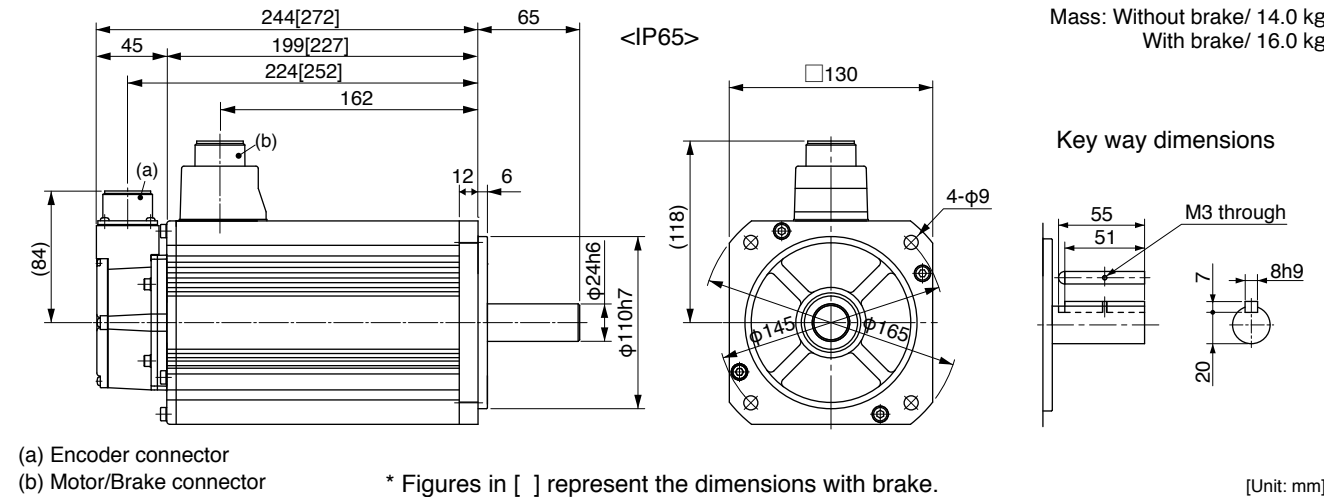
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to 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 *1	IP65	MDME102GC□	MDME102SC□
	IP67	MDME102G1□	MDME102S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T3530
	A5IE, A5E series	MDD◇T3530E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		1.8	
Rated output (W)		1000	
Rated torque (N·m)		4.77	
Momentary Max. peak torque (N·m)		14.3	
Rated current (A(rms))		5.7	
Max. current (A(o-p))		24	
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 ⁻⁴ kg·m ²)	Without brake	4.60	
	With brake	5.90	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

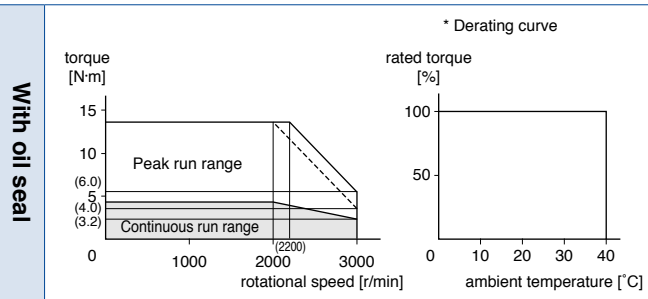
• **Permissible load** (For details, refer to P.183)

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

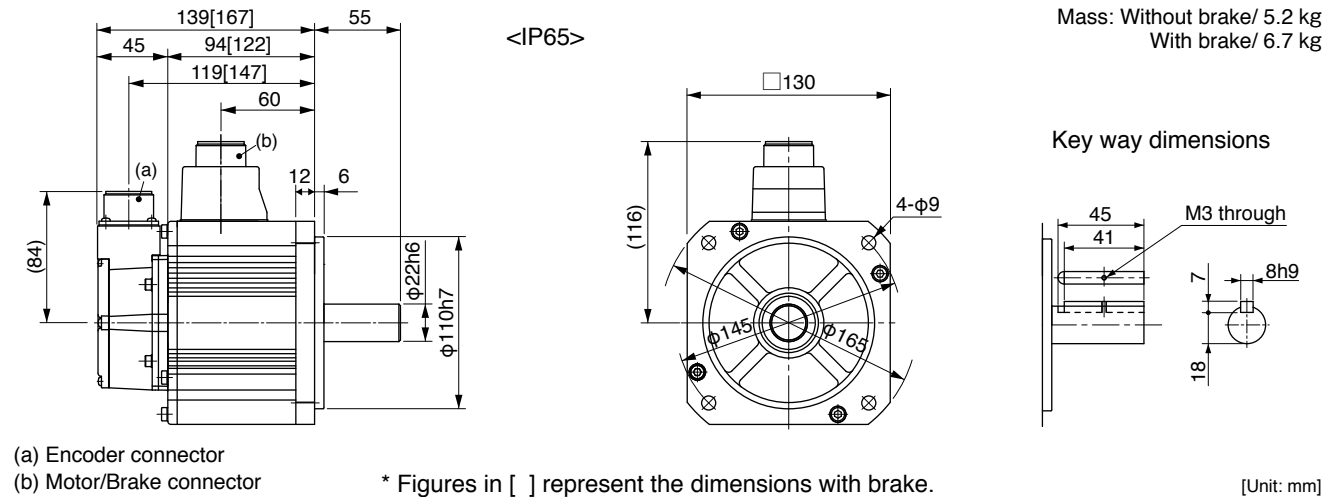
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to 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 *1	IP65	MDME302GC□	MDME302SC□
	IP67	MDME302G1□	MDME302S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA390
	A5IE, A5E series	MFD◇TA390E	—
	Frame symbol	F-frame	
Power supply capacity (kVA)		4.5	
Rated output (W)		3000	
Rated torque (N·m)		14.3	
Momentary Max. peak torque (N·m)		43.0	
Rated current (A(rms))		17.4	
Max. current (A(o-p))		74	
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2	
	DV0P4285×2	No limit Note2	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	12.9	
	With brake	14.2	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

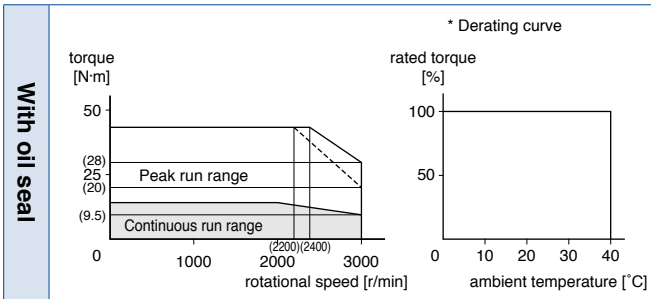
• **Permissible load** (For details, refer to P.183)

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

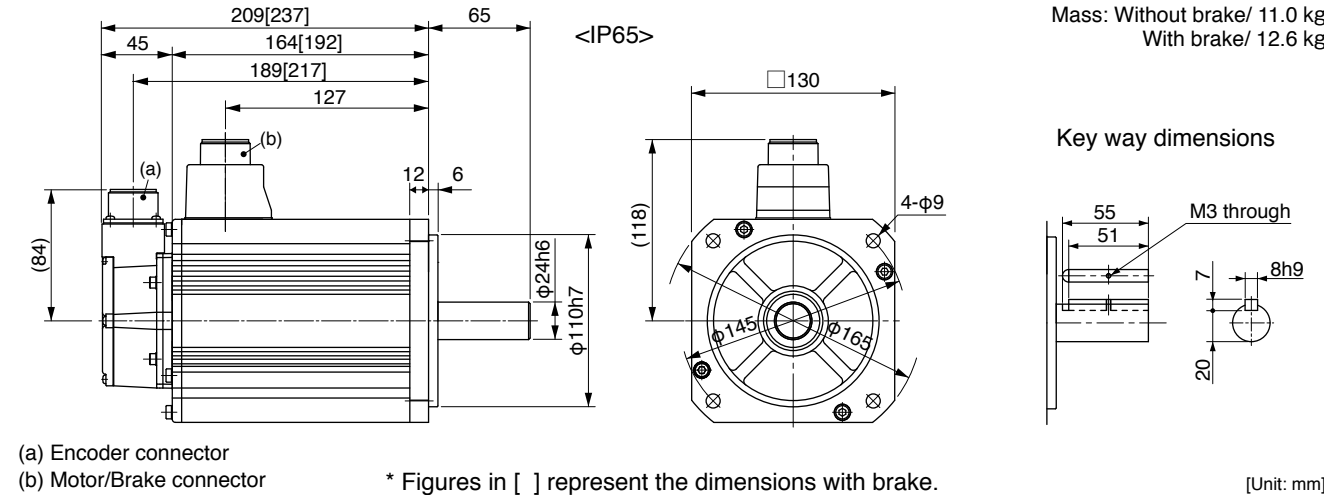
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.139.)



<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	IP65	MDME402GC□	MDME402SC□
	IP67	MDME402G1□	MDME402S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TB3A2
	A5IE, A5E series	MFD◇TB3A2E	—
	Frame symbol	F-frame	
Power supply capacity (kVA)		6.0	
Rated output (W)		4000	
Rated torque (N·m)		19.1	
Momentary Max. peak torque (N·m)		57.3	
Rated current (A(rms))		21.0	
Max. current (A(o-p))		89	
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2	
	DV0P4285×2	No limit Note2	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	37.6	
	With brake	42.9	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

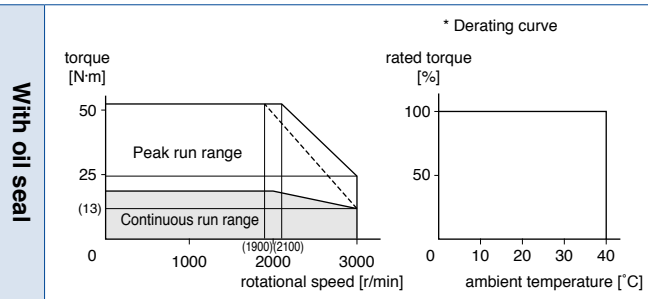
• **Permissible load** (For details, refer to P.183)

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

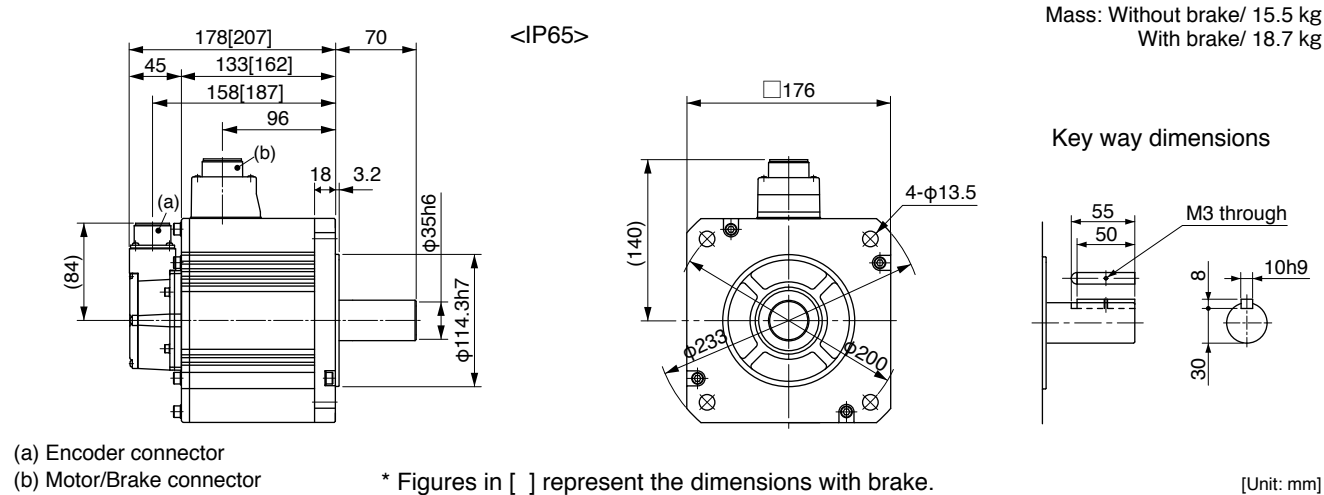
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.139.)



<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	IP65	MDME502GC□	MDME502SC□
	IP67	MDME502G1□	MDME502S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TB3A2
	A5IE, A5E series	MFD◇TB3A2E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		7.5	
Rated output (W)		5000	
Rated torque (N·m)		23.9	
Momentary Max. peak torque (N·m)		71.6	
Rated current (A(rms))		25.9	
Max. current (A(o-p))		110	
Regenerative brake frequency (times/min) Note1	Without option	120	
	DV0P4285×2	No limit Note2	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	48.0	
	With brake	53.3	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

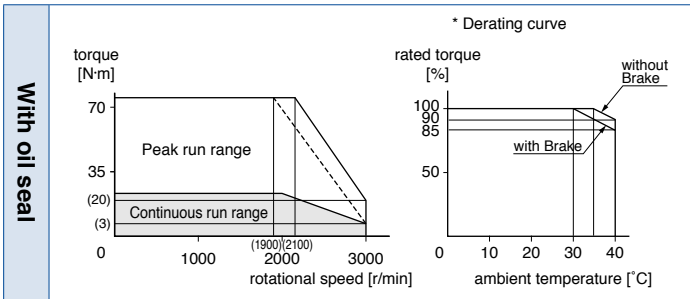
• **Permissible load** (For details, refer to P.183)

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

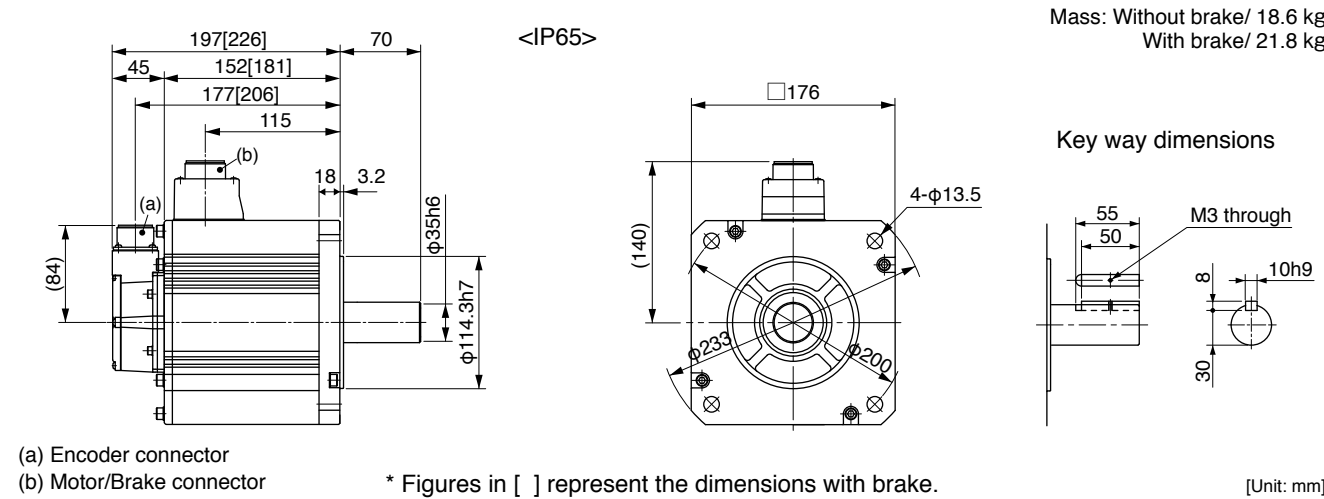
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.139.)



<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	IP65	—	—
	IP67	MDME752G1□	MDME752S1□
Applicable driver *2	Model No.	A5II, A5 series	MGD◇TC3B4
	A5IE, A5E series	—	—
Frame symbol		G-frame	
Power supply capacity (kVA)		11	
Rated output (W)		7500	
Rated torque (N·m)		47.8	
Momentary Max. peak torque (N·m)		119	
Rated current (A(rms))		44.0	
Max. current (A(o-p))		165	
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2	
	DV0P4285×3	No limit Note2	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	101	
	With brake	107	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

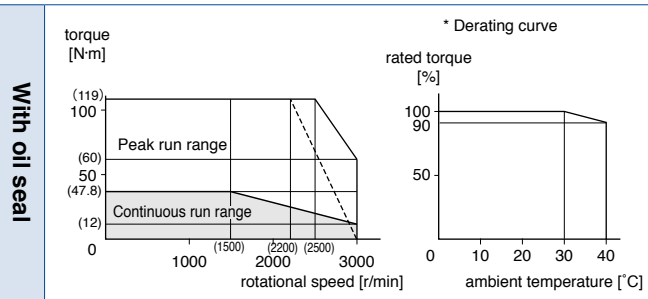
• **Permissible load** (For details, refer to P.183)

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

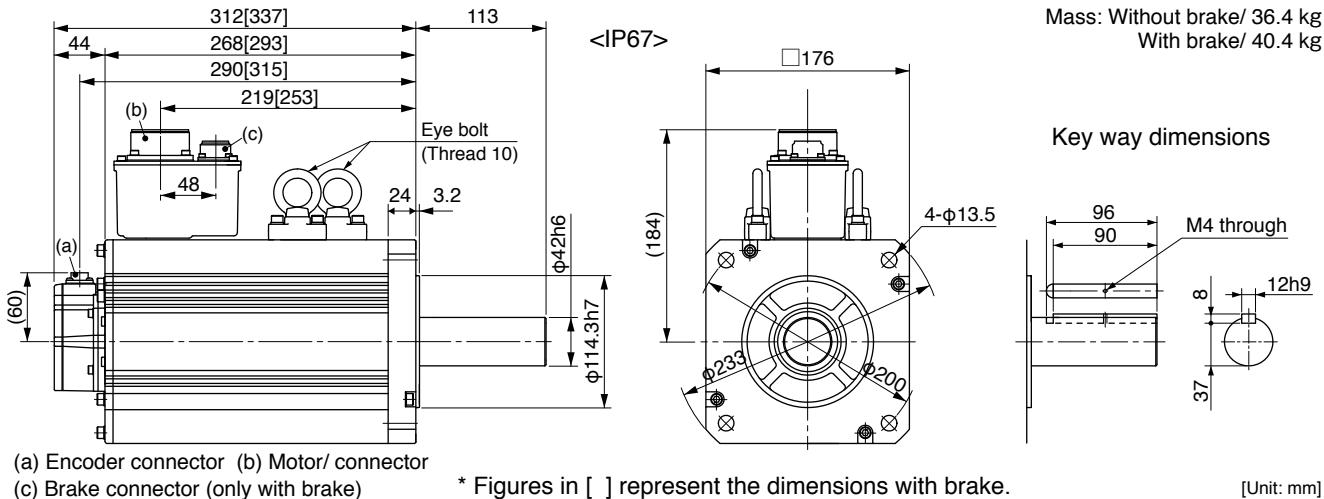
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.46.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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	IP65	—	—
	IP67	MDMEC12G1□	MDMEC12S1□
Applicable driver *2	Model No.	MHD◇TC3B4	
	A5IE, A5E series	—	—
	Frame symbol	H-frame	
Power supply capacity (kVA)		17	
Rated output (W)		11000	
Rated torque (N·m)		70.0	
Momentary Max. peak torque (N·m)		175	
Rated current (A(rms))		54.2	
Max. current (A(o-p))		203	
Regenerative brake frequency (times/min) Note)1	Without option	No limit	Note)2
	DV0PM20058	No limit	Note)2
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	212	
	With brake	220	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	140 or less
Exciting current (DC) (A)	1.08±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

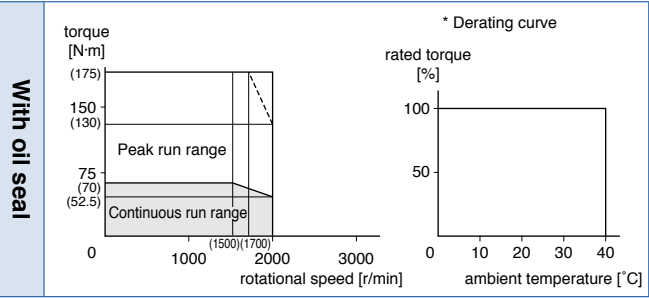
• **Permissible load** (For details, refer to P.183)

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	1764
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

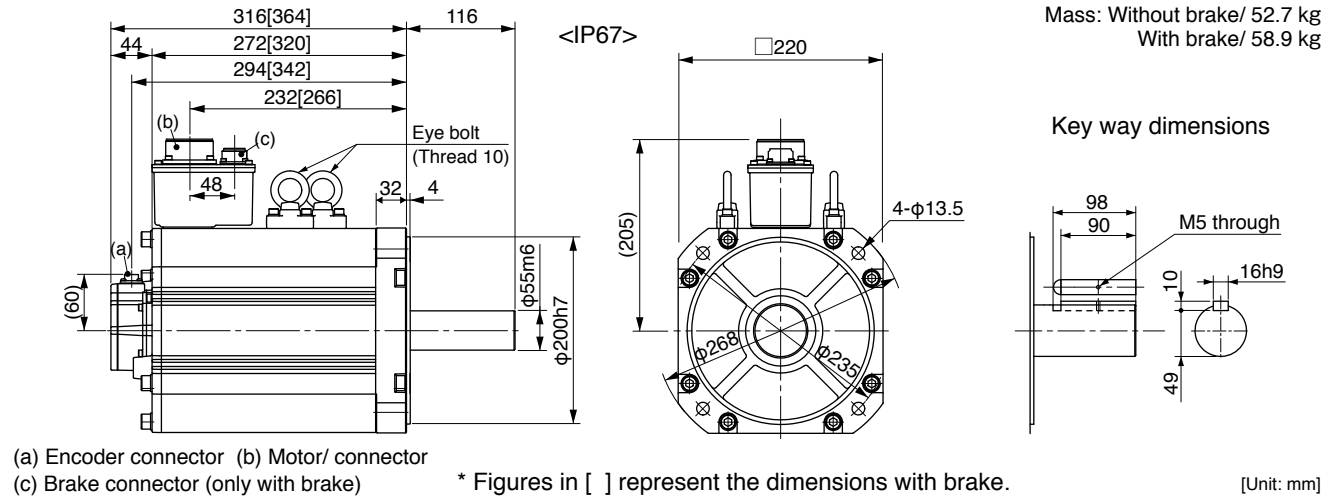
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.47.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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	IP65	—	—
	IP67	MDMEC52G1□	MDMEC52S1□
Applicable driver *2	Model No.	MHD◇TC3B4	
	A5IE, A5E series	—	—
	Frame symbol	H-frame	
Power supply capacity (kVA)		22	
Rated output (W)		15000	
Rated torque (N·m)		95.5	
Momentary Max. peak torque (N·m)		224	
Rated current (A(rms))		66.1	
Max. current (A(o-p))		236	
Regenerative brake frequency (times/min) Note)1	Without option	No limit	Note)2
	DV0PM20058	No limit	Note)2
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	302	
	With brake	311	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	140 or less
Exciting current (DC) (A)	1.08±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

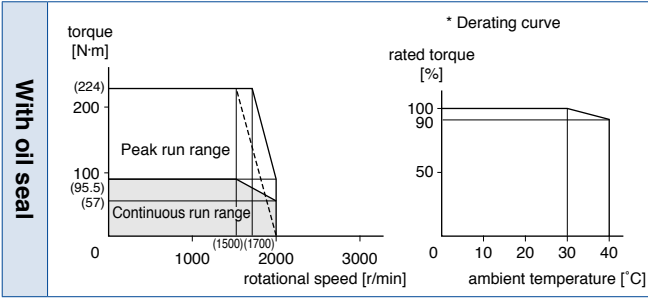
• **Permissible load** (For details, refer to P.183)

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	1764
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

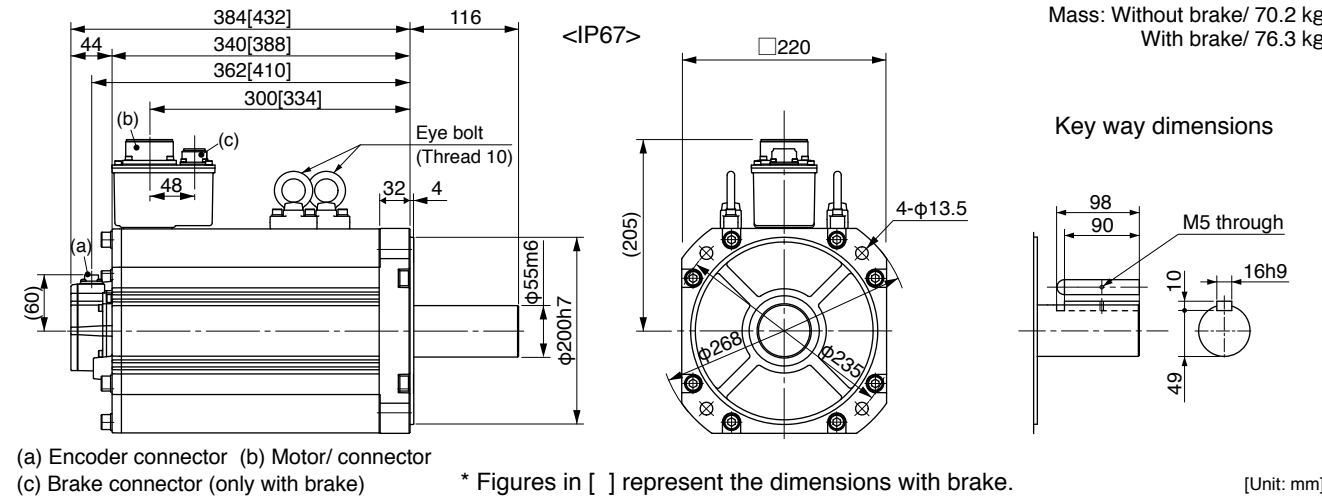
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.47.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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	IP65	—	—
	IP67	MFME152G1□	MFME152S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T5540
	A5IE, A5E series	MDD◇T5540E	—
	Frame symbol	D-frame	
Power supply capacity (kVA)		2.3	
Rated output (W)		1500	
Rated torque (N·m)		7.16	
Momentary Max. peak torque (N·m)		21.5	
Rated current (A(rms))		7.5	
Max. current (A(o-p))		32	
Regenerative brake frequency (times/min) Note)1	Without option	100	
	DV0P4284	No limit Note)2	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	18.2	
	With brake	23.5	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	7.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	35 or less
Exciting current (DC) (A)	0.83±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

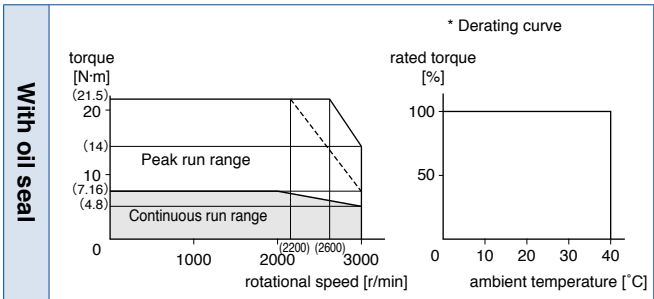
• **Permissible load** (For details, refer to P.183)

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

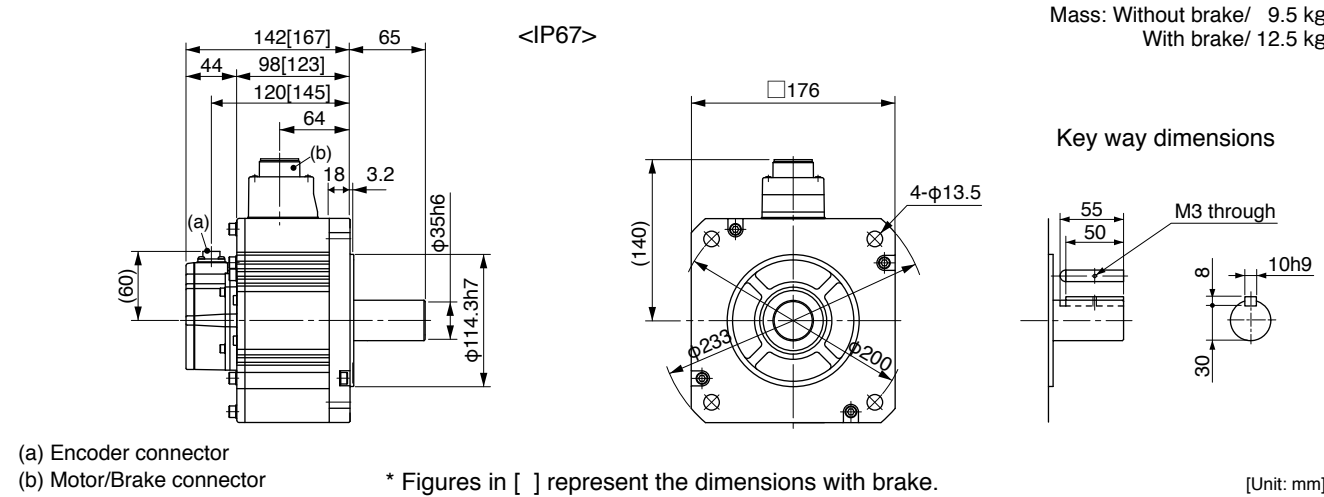
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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	IP65	—	—
	IP67	MFME252G1□	MFME252S1□
Applicable driver *2	Model No.	A5II, A5 series	MED◇T7364
	A5IE, A5E series	MED◇T7364E	—
	Frame symbol	E-frame	
Power supply capacity (kVA)		3.8	
Rated output (W)		2500	
Rated torque (N·m)		11.9	
Momentary Max. peak torque (N·m)		30.4	
Rated current (A(rms))		13.4	
Max. current (A(o-p))		57	
Regenerative brake frequency (times/min) Note)1	Without option	75	
	DV0P4285	No limit Note)2	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	35.8	
	With brake	45.2	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	21.6 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	100 or less
Exciting current (DC) (A)	0.75±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

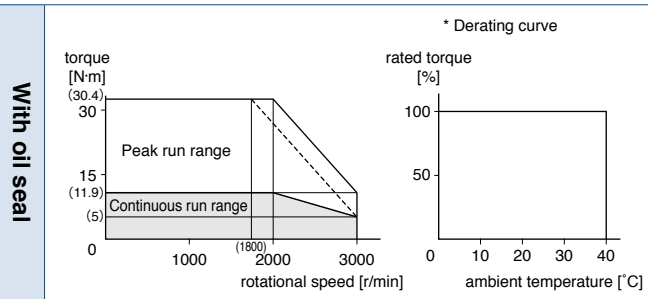
• **Permissible load** (For details, refer to P.183)

During assembly	Radial load P-direction (N)	1862
	Thrust load A-direction (N)	686
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	294

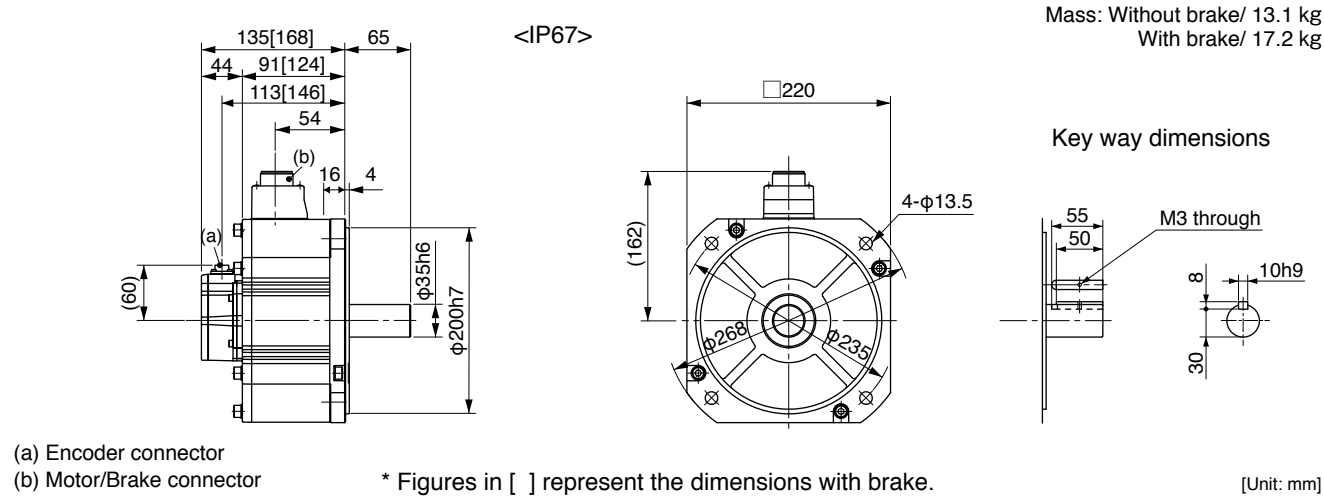
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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	IP65	—	—
	IP67	MFME452G1□	MFME452S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TB3A2
		A5IE, A5E series	MFD◇TB3A2E
	Frame symbol	F-frame	
Power supply capacity (kVA)		6.8	
Rated output (W)		4500	
Rated torque (N·m)		21.5	
Momentary Max. peak torque (N·m)		54.9	
Rated current (A(rms))		24.7	
Max. current (A(o-p))		105	
Regenerative brake frequency (times/min) Note1	Without option	67	
	DV0P4285×2	375	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	63.1	
	With brake	70.9	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications Note5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• Brake specifications

(For details, refer to P.183)

(This brake will be released when it is energized.)

(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	31.4 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note4	100 or less
Exciting current (DC) (A)	0.75±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load

(For details, refer to P.183)

During assembly	Radial load P-direction (N)	1862
	Thrust load A-direction (N)	686
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	294

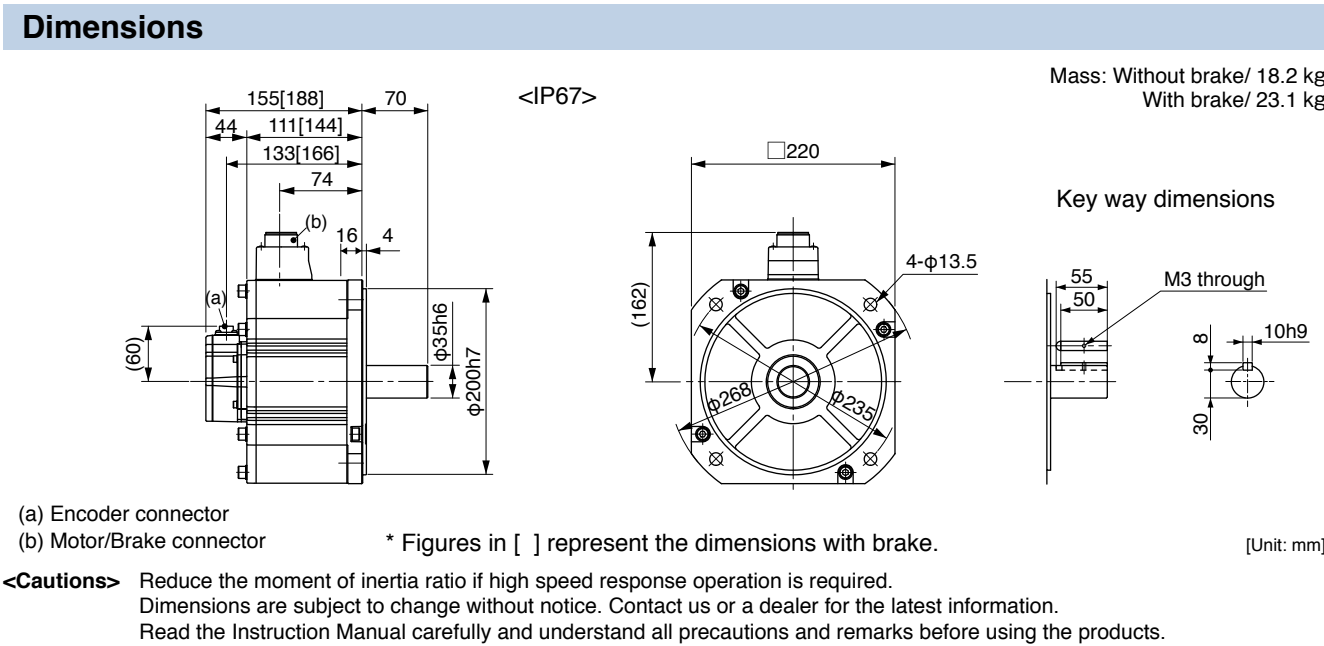
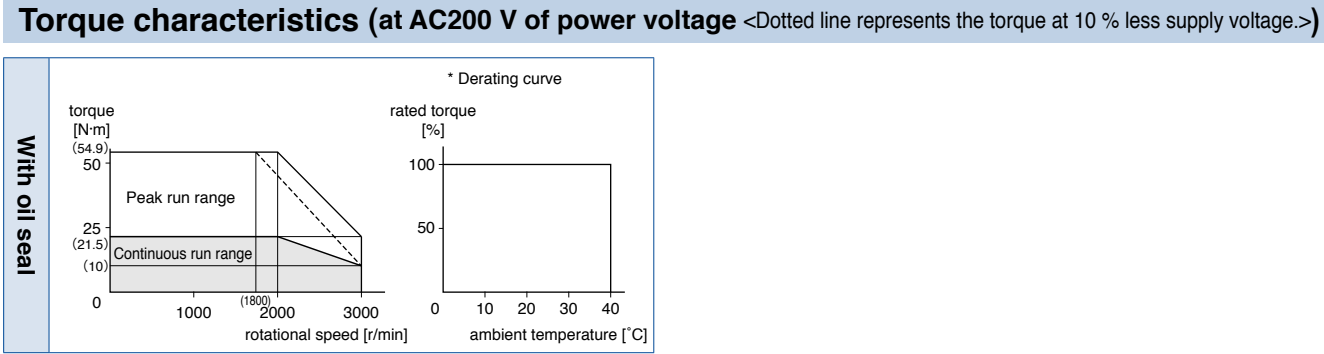
• For details of Note 1 to Note 5, refer to P.182, P.183.

• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.



			AC200 V	
Motor model *1	IP65		MGME202GC□	MGME202SC□
	IP67		MGME202G1□	MGME202S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA390	
		A5IE, A5E series	MFD◇TA390E	—
	Frame symbol		F-frame	
Power supply capacity (kVA)			3.8	
Rated output (W)			2000	
Rated torque (N·m)			19.1	
Momentary Max. peak torque (N·m)			47.7	
Rated current (A(rms))			17.0	
Max. current (A(o-p))			60	
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2	
		DV0P4285×2	No limit Note)2	
Rated rotational speed (r/min)			1000	
Max. rotational speed (r/min)			2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	30.3	
		With brake	35.6	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	131072

- | | |
|---|--------------|
| Static friction torque (N·m) | 24.5 or more |
| Engaging time (ms) | 80 or less |
| Releasing time (ms) <small>Note)4</small> | 25 or less |
| Exciting current (DC) (A) | 1.3±10 % |
| Releasing voltage (DC) (V) | 2 or more |
| Exciting voltage (DC) (V) | 24±2.4 |

- | | | |
|------------------|--------------------------------|------|
| 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 |

- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Figure 1 consists of two graphs. The left graph plots torque [N·m] on the y-axis (0 to 50) against rotational speed [r/min] on the x-axis (0 to 3000). It shows a 'Peak run range' (dashed line) and a 'Continuous run range' (solid line). The right graph plots 'rated torque [%]' on the y-axis (0 to 100) against 'ambient temperature [°C]' on the x-axis (0 to 40). It shows a 'Derating curve' that is 100% up to 40°C and then drops.

[Unit: mm]

<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.

			AC200 V	
Motor model *1	IP65		MGME302GC□	MGME302SC□
	IP67		MGME302G1□	MGME302S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TB3A2	
		A5IIE, A5E series	MFD◇TB3A2E	—
	Frame symbol		F-frame	
Power supply capacity (kVA)			4.5	
Rated output (W)			3000	
Rated torque (N·m)			28.7	
Momentary Max. peak torque (N·m)			71.7	
Rated current (A(rms))			22.6	
Max. current (A(o-p))			80	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2	
	DV0P4285×2		No limit Note)2	
Rated rotational speed (r/min)			1000	
Max. rotational speed (r/min)			2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		48.4	
	With brake		53.7	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
Resolution per single turn			1048576	131072

- | | |
|---|--------------|
| Static friction torque (N·m) | 58.8 or more |
| Engaging time (ms) | 150 or less |
| Releasing time (ms) <small>Note)4</small> | 50 or less |
| Exciting current (DC) (A) | 1.4±10 % |
| Releasing voltage (DC) (V) | 2 or more |
| Exciting voltage (DC) (V) | 24±2.4 |

- | | | |
|------------------|--------------------------------|------|
| 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) | 1470 |
| | Thrust load A, B-direction (N) | 490 |

- *3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

With oil seal

The figure contains two graphs for the motor with an oil seal.

Left Graph: Torque vs. Rotational Speed

- Y-axis:** torque [N·m] with values 0, 14, 20, 35, 40, 70.
- X-axis:** rotational speed [r/min] with values 0, 1000, 1400, 1600, 2000, 3000.
- Peak run range:** A shaded region bounded by a solid line from (0, 35) to (1400, 35) and a dashed line from (1400, 35) to (1600, 70).
- Continuous run range:** A shaded region bounded by a solid line from (0, 20) to (1400, 20) and a dashed line from (1400, 20) to (1600, 35).

Right Graph: Rated Torque vs. Ambient Temperature

- Y-axis:** rated torque [%] with values 0, 50, 100.
- X-axis:** ambient temperature [°C] with values 0, 10, 20, 30, 40.
- Derating curve:** A solid line that is at 100% torque from 0°C to 40°C and then drops to 0% torque.
- Annotation:** * Derating curve

Technical drawing of a mechanical part with dimensions and labels:

- Overall width: 210.5[239.5]
- Distance from left edge to center of feature (a): 45
- Distance from left edge to center of feature (b): 165.5[194.5]
- Distance from left edge to right edge: 190.5[219.5]
- Distance from center of feature (b) to right edge: 128.5
- Distance from center of feature (a) to center of feature (b): 128.5
- Distance from center of feature (a) to right edge: 18
- Distance from center of feature (b) to right edge: 3.2
- Overall height: (84)

[Unit: mm]

<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	IP65	—	—
	IP67	MGME452G1□	MGME452S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TB3A2
	A5IE, A5E series	MFD◇TB3A2E	—
	Frame symbol	F-frame	
Power supply capacity (kVA)		7.5	
Rated output (W)		4500	
Rated torque (N·m)		43.0	
Momentary Max. peak torque (N·m)		107	
Rated current (A(rms))		29.7	
Max. current (A(o-p))		110	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0P4285×2	No limit Note)2	
Rated rotational speed (r/min)		1000	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	79.1	
	With brake	84.4	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

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)	1470
	Thrust load A, B-direction (N)	490

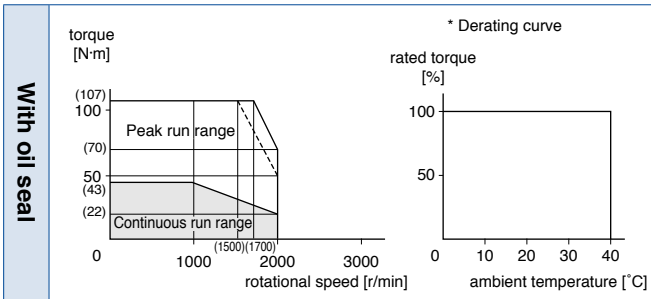
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □

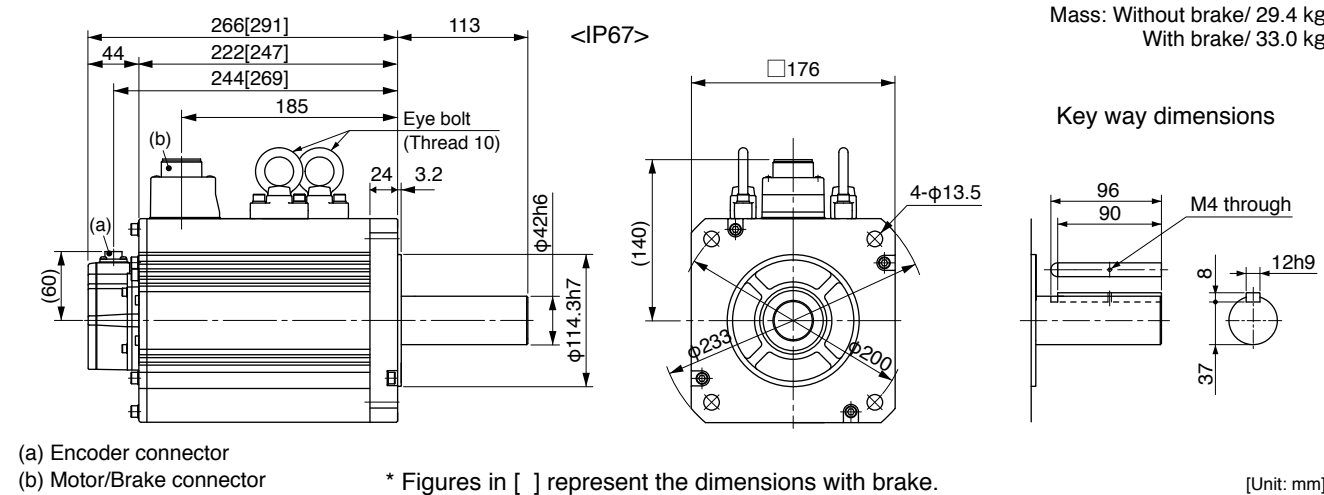
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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	IP65	—	—
	IP67	MGME602G1□	MGME602S1□
Applicable driver *2	Model No.	A5II, A5 series	MGD◇TC3B4
	A5IE, A5E series	—	—
	Frame symbol	G-frame	
Power supply capacity (kVA)		9.0	
Rated output (W)		6000	
Rated torque (N·m)		57.3	
Momentary Max. peak torque (N·m)		143	
Rated current (A(rms))		38.8	
Max. current (A(o-p))		149	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0P4285×4	No limit Note)2	
Rated rotational speed (r/min)		1000	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	101	
	With brake	107	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

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)	1764
	Thrust load A, B-direction (N)	588

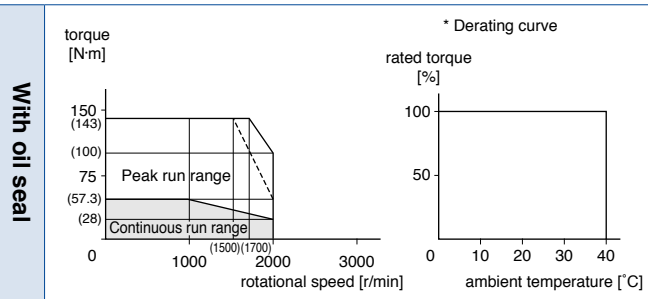
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.46.

*1 Motor specifications: □

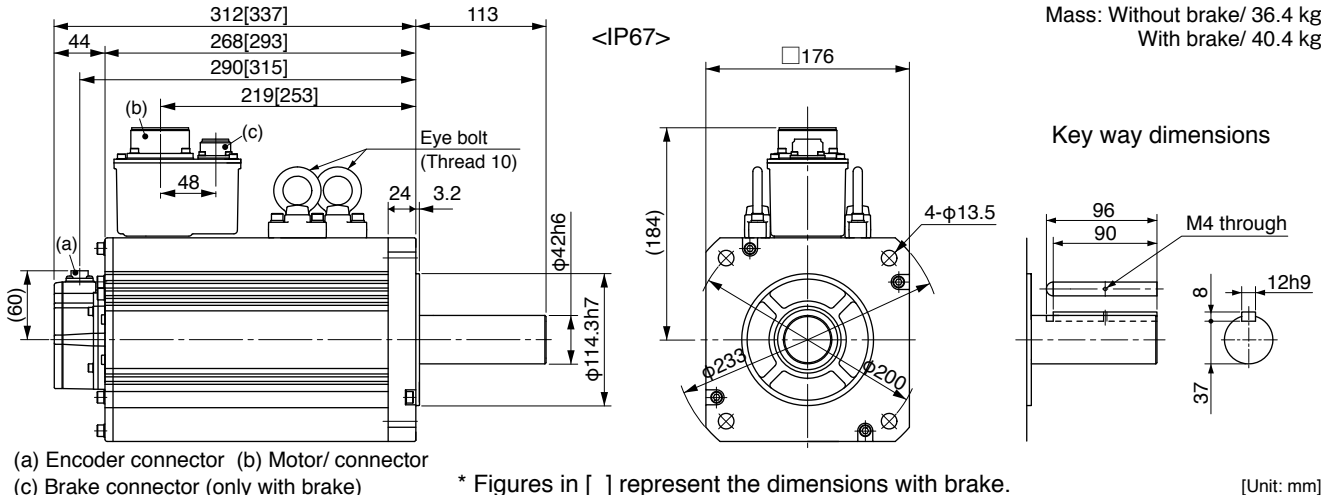
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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	IP65	MHME102GC□	MHME102SC□
	IP67	MHME102G1□	MHME102S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T3530
	A5IE, A5E series	MDD◇T3530E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		1.8	
Rated output (W)		1000	
Rated torque (N·m)		4.77	
Momentary Max. peak torque (N·m)		14.3	
Rated current (A(rms))		5.7	
Max. current (A(o-p))		24	
Regenerative brake frequency (times/min) Note)1	Without option	83	
	DV0P4284	No limit Note)2	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	24.7	
	With brake	26.0	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

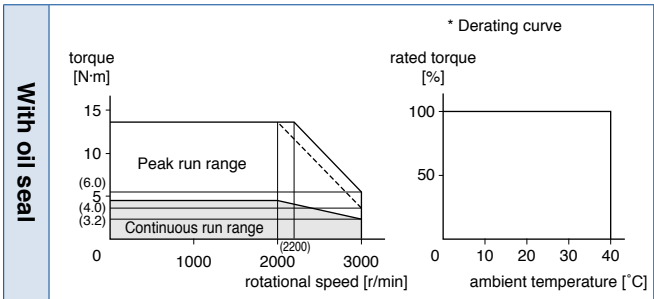
• **Permissible load** (For details, refer to P.183)

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

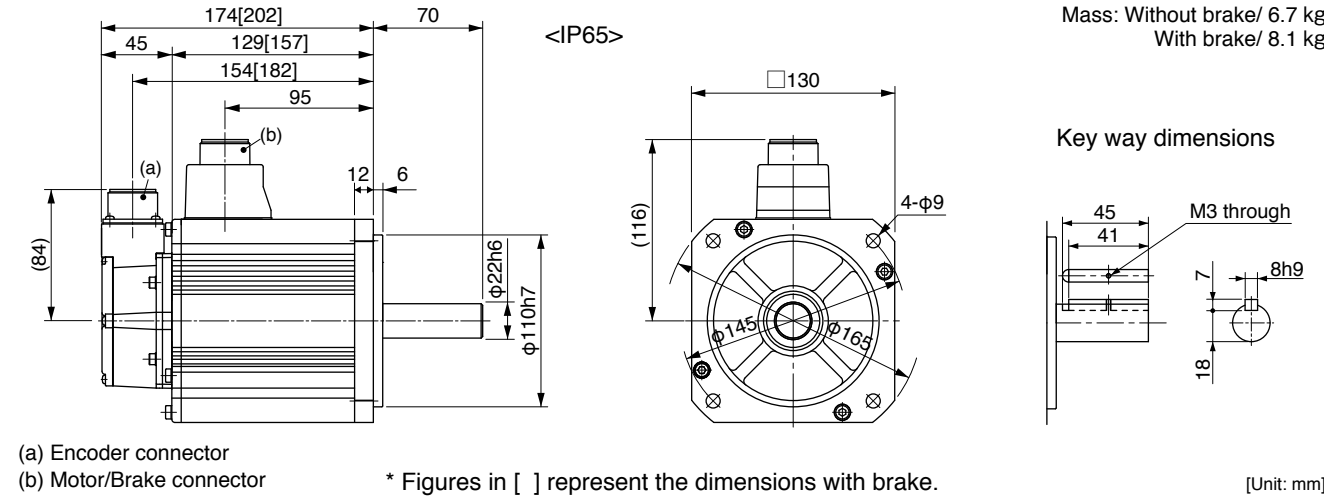
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.140.)



<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	IP65	MHME152GC□	MHME152SC□
	IP67	MHME152G1□	MHME152S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T5540
	A5IE, A5E series	MDD◇T5540E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		2.3	
Rated output (W)		1500	
Rated torque (N·m)		7.16	
Momentary Max. peak torque (N·m)		21.5	
Rated current (A(rms))		9.4	
Max. current (A(o-p))		40	
Regenerative brake frequency (times/min) Note)1	Without option	22	
	DV0P4284	130	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	37.1	
	With brake	38.4	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

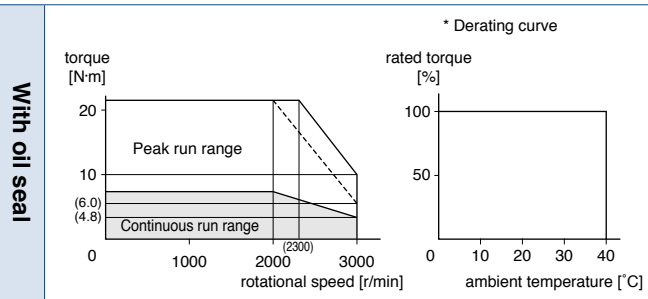
• **Permissible load** (For details, refer to P.183)

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

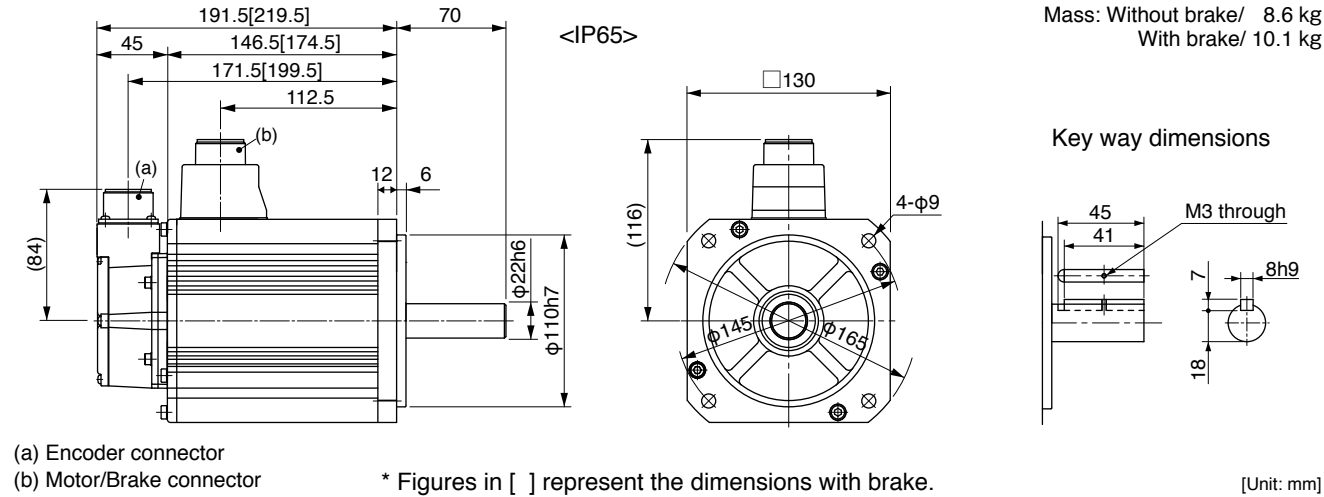
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.140.)



<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	IP65	MHME202GC□	MHME202SC□
	IP67	MHME202G1□	MHME202S1□
Applicable driver *2	Model No.	A5II, A5 series	MED◇T7364
	A5IE, A5E series	MED◇T7364E	—
Frame symbol		E-frame	
Power supply capacity (kVA)		3.3	
Rated output (W)		2000	
Rated torque (N·m)		9.55	
Momentary Max. peak torque (N·m)		28.6	
Rated current (A(rms))		11.1	
Max. current (A(o-p))		47	
Regenerative brake frequency (times/min) Note)1	Without option	45	
	DV0P4285	142	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	57.8	
	With brake	59.6	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

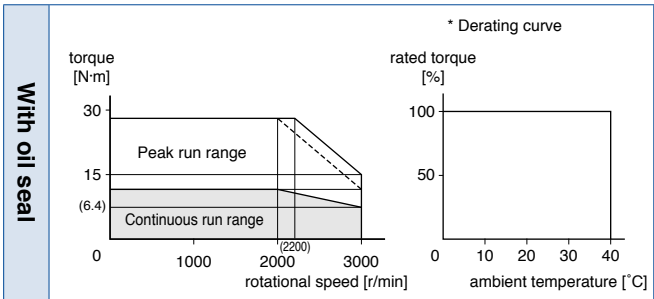
• **Permissible load** (For details, refer to P.183)

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

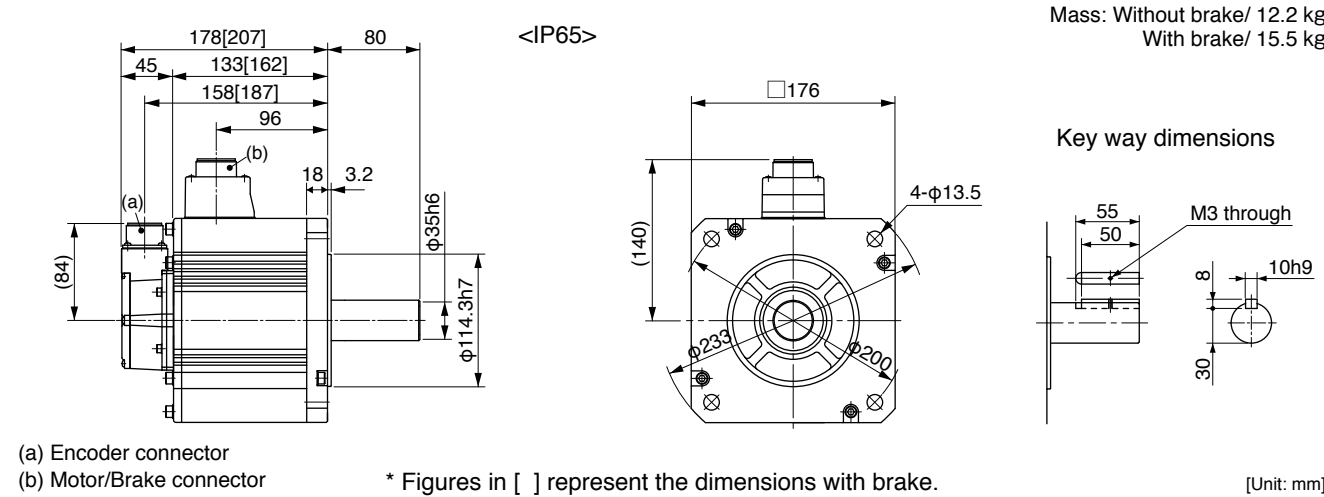
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.140.)



(a) Encoder connector
(b) Motor/Brake connector
* Figures in [] represent the dimensions with brake.
[Unit: mm]
<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	IP65	MHME302GC□	MHME302SC□
	IP67	MHME302G1□	MHME302S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA390
	A5IE, A5E series	MFD◇TA390E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		4.5	
Rated output (W)		3000	
Rated torque (N·m)		14.3	
Momentary Max. peak torque (N·m)		43.0	
Rated current (A(rms))		16.0	
Max. current (A(o-p))		68	
Regenerative brake frequency (times/min) Note)1	Without option	19	
	DV0P4285×2	142	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	90.5	
	With brake	92.1	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

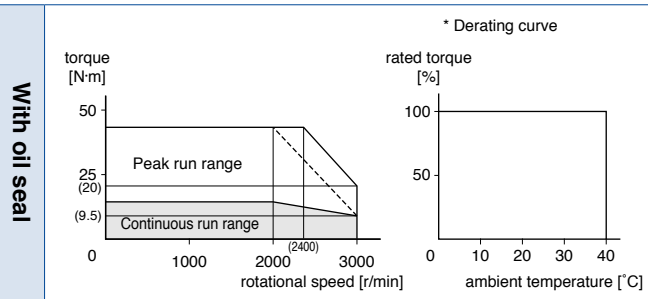
• **Permissible load** (For details, refer to P.183)

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

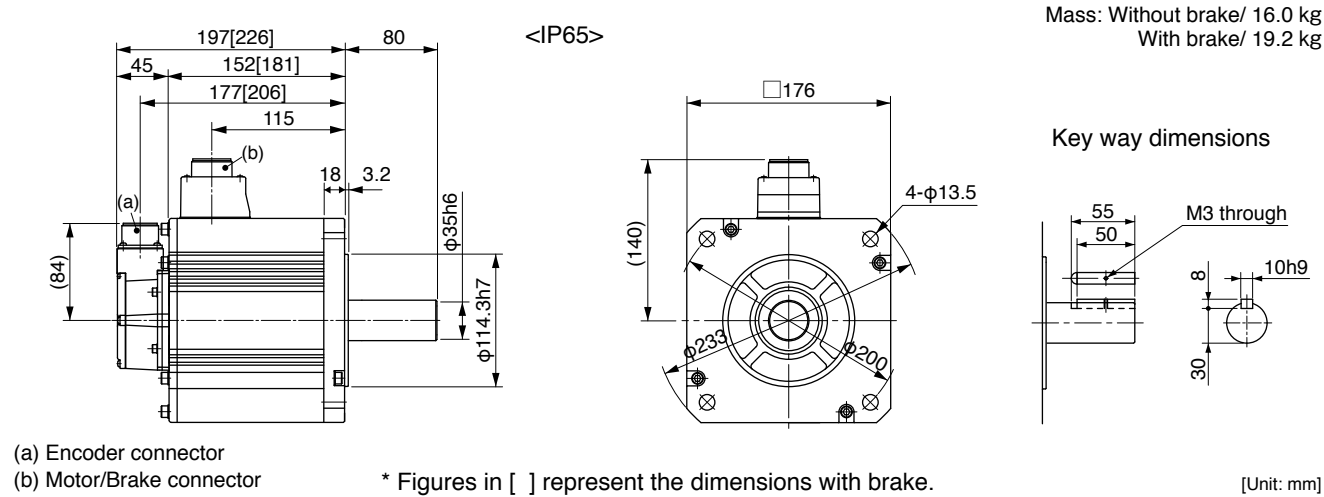
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.140.)



(a) Encoder connector
(b) Motor/Brake connector
* Figures in [] represent the dimensions with brake.
[Unit: mm]
<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	IP65	MHME402GC□	MHME402SC□
	IP67	MHME402G1□	MHME402S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TB3A2
	A5IE, A5E series	MFD◇TB3A2E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		6.0	
Rated output (W)		4000	
Rated torque (N·m)		19.1	
Momentary Max. peak torque (N·m)		57.3	
Rated current (A(rms))		21.0	
Max. current (A(o-p))		89	
Regenerative brake frequency (times/min) Note)1	Without option	17	
	DV0P4285×2	125	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	112	
	With brake	114	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

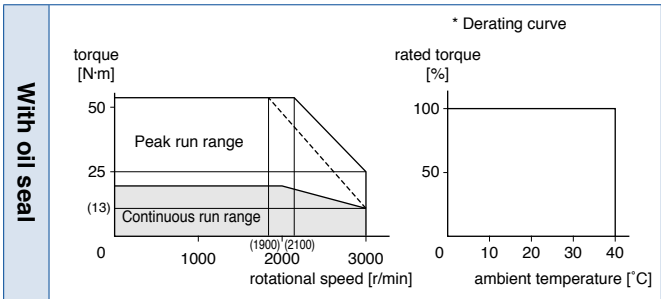
• **Permissible load** (For details, refer to P.183)

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

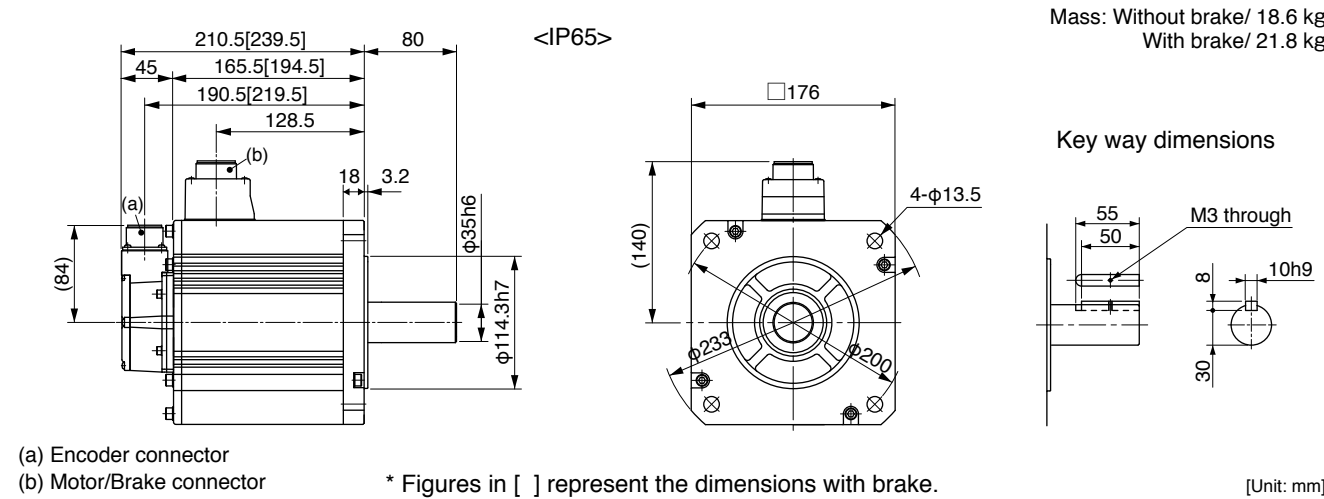
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.140.)



<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	IP65	MHME502GC□	MHME502SC□
	IP67	MHME502G1□	MHME502S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TB3A2
	A5IE, A5E series	MFD◇TB3A2E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		7.5	
Rated output (W)		5000	
Rated torque (N·m)		23.9	
Momentary Max. peak torque (N·m)		71.6	
Rated current (A(rms))		25.9	
Max. current (A(o-p))		110	
Regenerative brake frequency (times/min) Note)1	Without option	10	
	DV0P4285×2	76	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	162	
	With brake	164	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

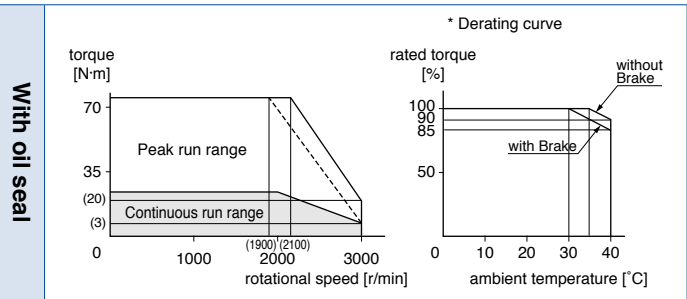
• **Permissible load** (For details, refer to P.183)

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

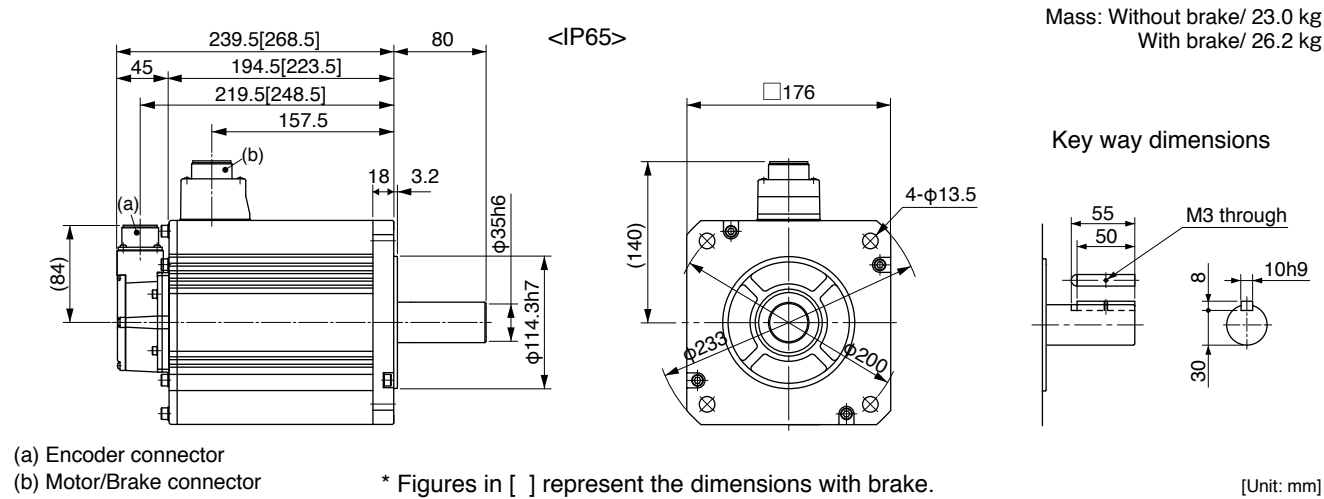
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions (For IP67 motor, refer to P.140.)



<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	IP65	—	—
	IP67	MHME752G1□	MHME752S1□
Applicable driver *2	Model No.	A5II, A5 series	
		MGD◇TC3B4	
	A5IE, A5E series	—	—
Frame symbol		G-frame	
Power supply capacity (kVA)		11	
Rated output (W)		7500	
Rated torque (N·m)		47.8	
Momentary Max. peak torque (N·m)		119	
Rated current (A(rms))		44.0	
Max. current (A(o-p))		165	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0P4285×4	No limit Note)2	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	273	
	With brake	279	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• Brake specifications

(For details, refer to P.183)

(This brake will be released when it is energized.)

(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.41±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load

(For details, refer to P.183)

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

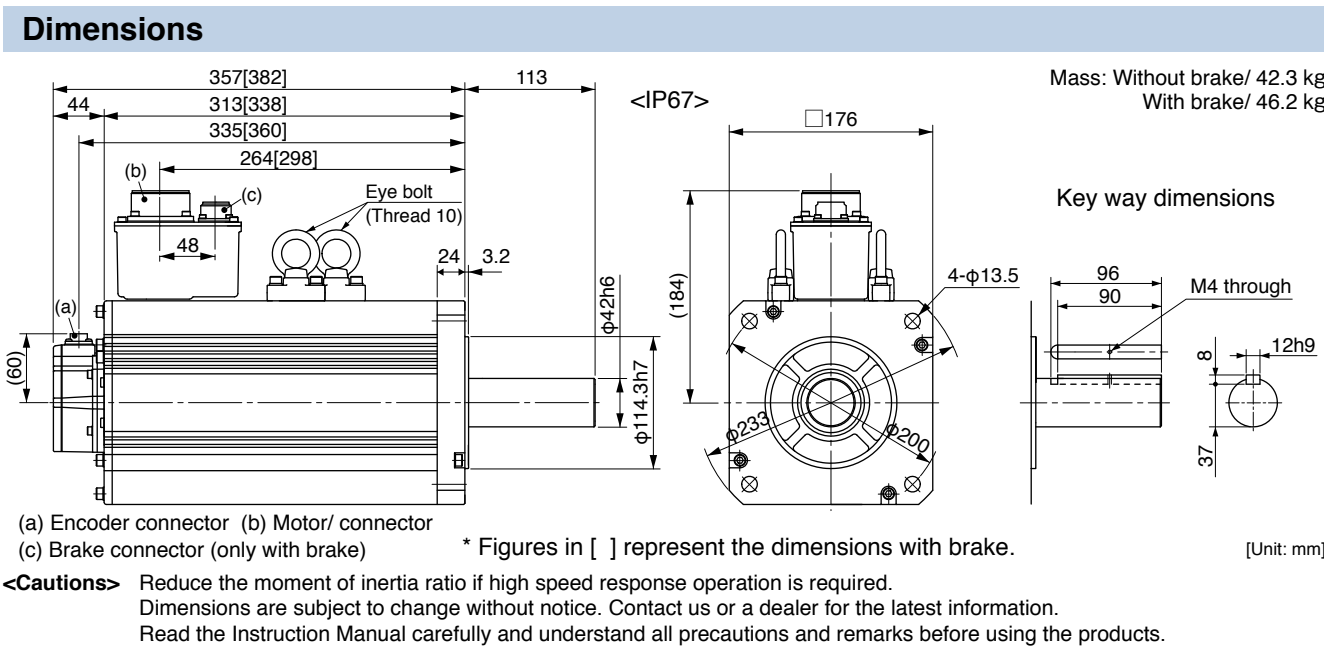
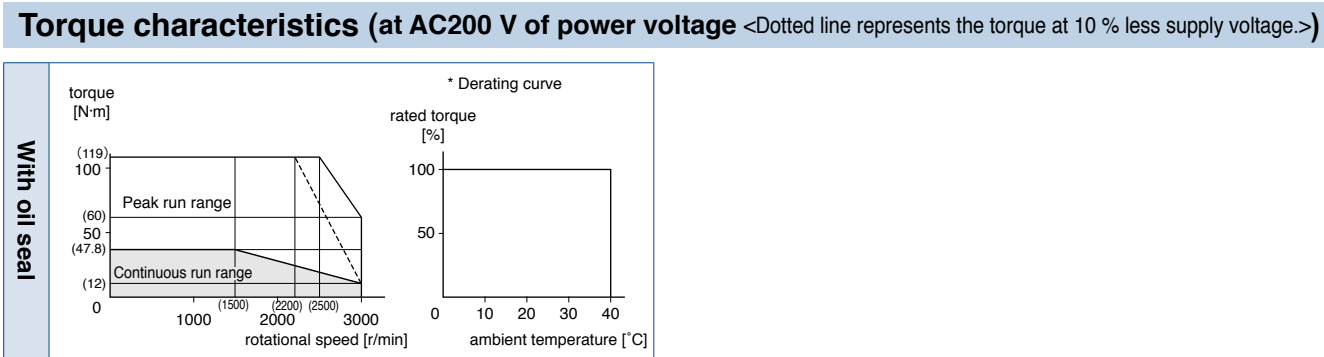
• For details of Note 1 to Note 5, refer to P.182, P.183.

• Dimensions of Driver, refer to P.46.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.



Specifications

		AC400 V	
Motor model *1	IP65	MSME084GC□	MSME084SC□
	IP67	MSME084G1□	MSME084S1□
Applicable driver *2	Model No.	A5II, A5 series	
		MDD◇T2412	
	A5IE, A5E series	MDD◇T2412E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		1.6	
Rated output (W)		750	
Rated torque (N·m)		2.39	
Momentary Max. peak torque (N·m)		7.16	
Rated current (A(rms))		2.4	
Max. current (A(o-p))		10	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0PM20048	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	1.61	
	With brake	1.93	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• Brake specifications

(For details, refer to P.183)

(This brake will be released when it is energized.)

(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	2.5 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.70±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load

(For details, refer to P.183)

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

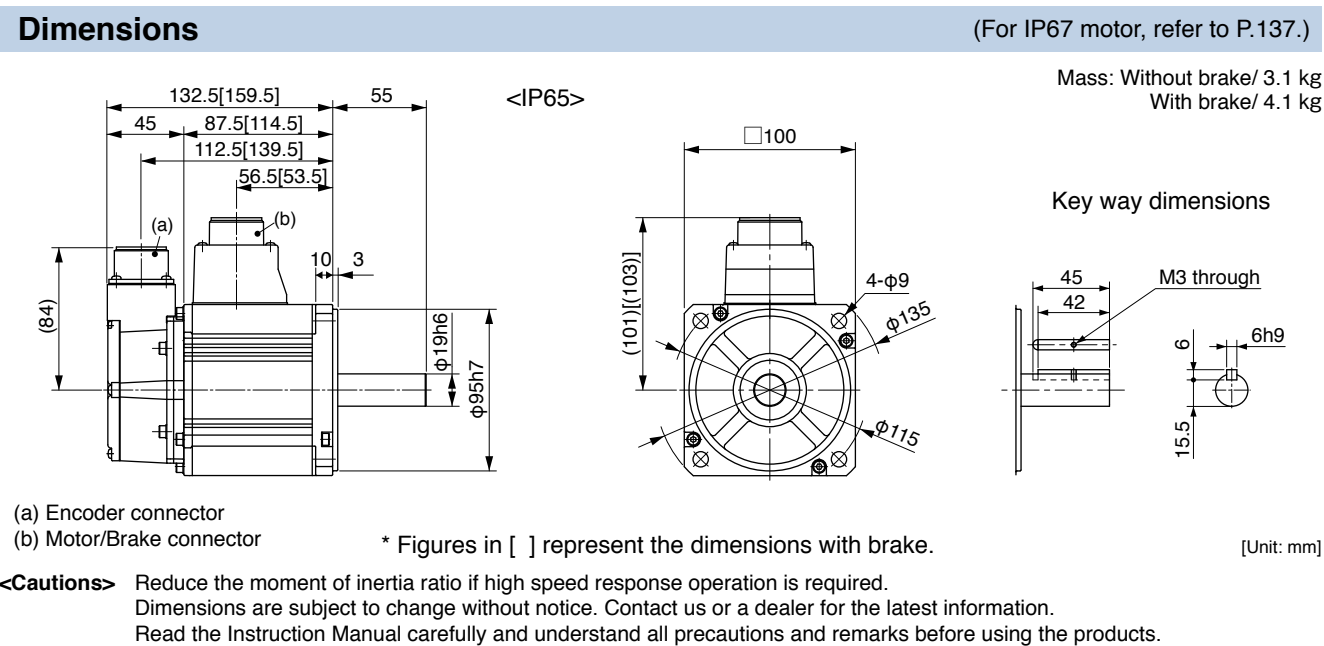
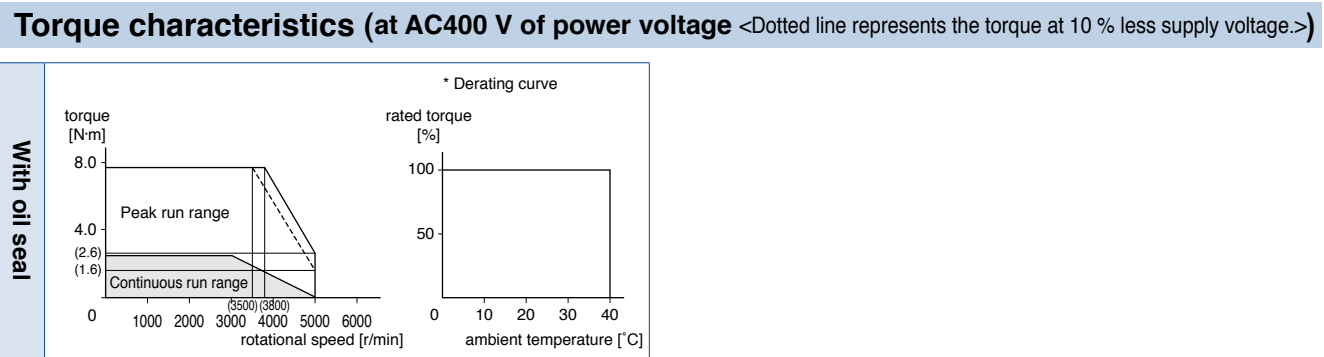
• For details of Note 1 to Note 5, refer to P.182, P.183.

• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.



Specifications

		AC400 V	
Motor model *1	IP65	MSME104GC□	MSME104SC□
	IP67	MSME104G1□	MSME104S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T3420
	A5IE, A5E series	MDD◇T3420E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		1.8	
Rated output (W)		1000	
Rated torque (N·m)		3.18	
Momentary Max. peak torque (N·m)		9.55	
Rated current (A(rms))		3.3	
Max. current (A(o-p))		14	
Regenerative brake frequency (times/min) Note)1	Without option	No limit	Note)2
	DV0PM20048	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	2.03	
	With brake	2.35	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

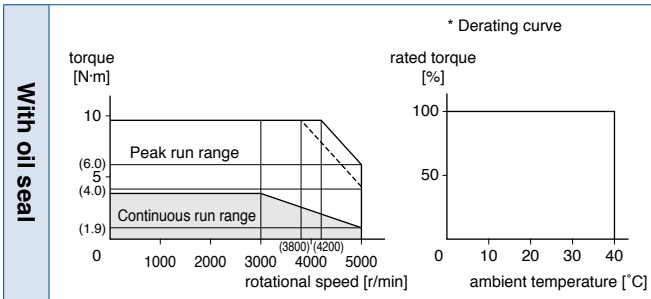
• **Permissible load** (For details, refer to P.183)

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

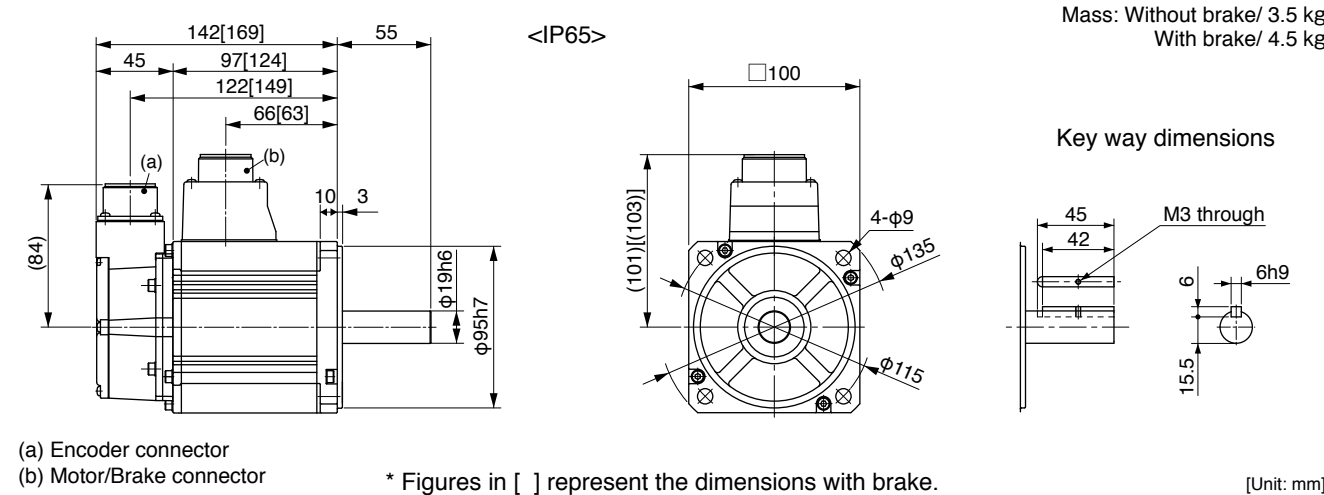
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions (For IP67 motor, refer to P.137.)



<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

		AC400 V	
Motor model *1	IP65	MSME154GC□	MSME154SC□
	IP67	MSME154G1□	MSME154S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T3420
	A5IE, A5E series	MDD◇T3420E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		2.3	
Rated output (W)		1500	
Rated torque (N·m)		4.77	
Momentary Max. peak torque (N·m)		14.3	
Rated current (A(rms))		4.2	
Max. current (A(o-p))		18	
Regenerative brake frequency (times/min) Note)1	Without option	No limit	Note)2
	DV0PM20048	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	2.84	
	With brake	3.17	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

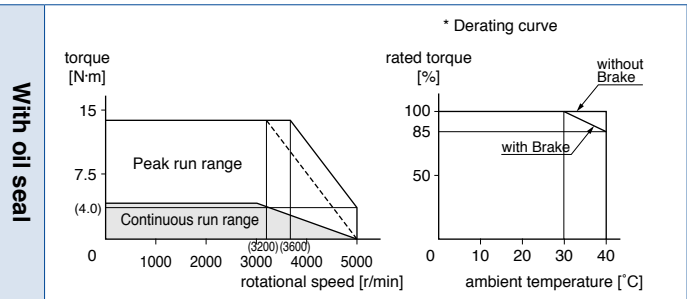
• **Permissible load** (For details, refer to P.183)

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

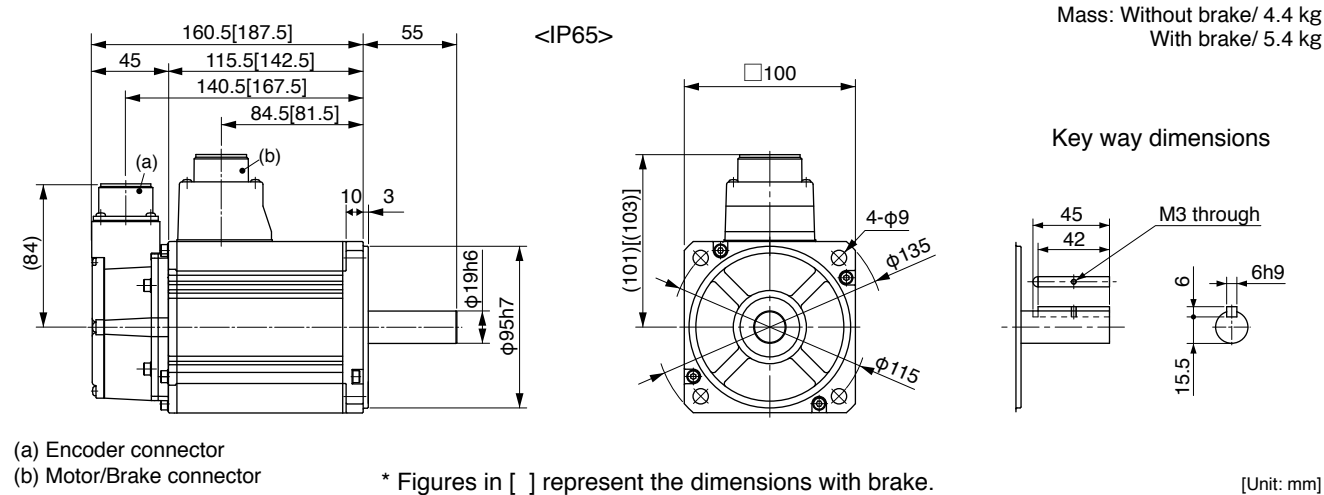
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions (For IP67 motor, refer to P.137.)



<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

		AC400 V	
Motor model *1	IP65	MSME204GC□	MSME204SC□
	IP67	MSME204G1□	MSME204S1□
Applicable driver *2	Model No.	A5II, A5 series	MED◇T4430
	A5IE, A5E series	MED◇T4430E	—
Frame symbol		E-frame	
Power supply capacity (kVA)		3.3	
Rated output (W)		2000	
Rated torque (N·m)		6.37	
Momentary Max. peak torque (N·m)		19.1	
Rated current (A(rms))		5.7	
Max. current (A(o-p))		24	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0PM20049	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	3.68	
	With brake	4.01	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

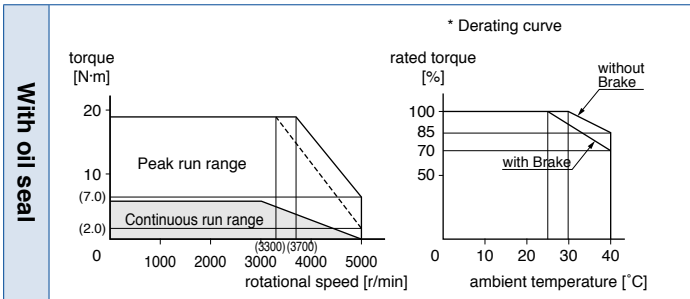
• **Permissible load** (For details, refer to P.183)

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

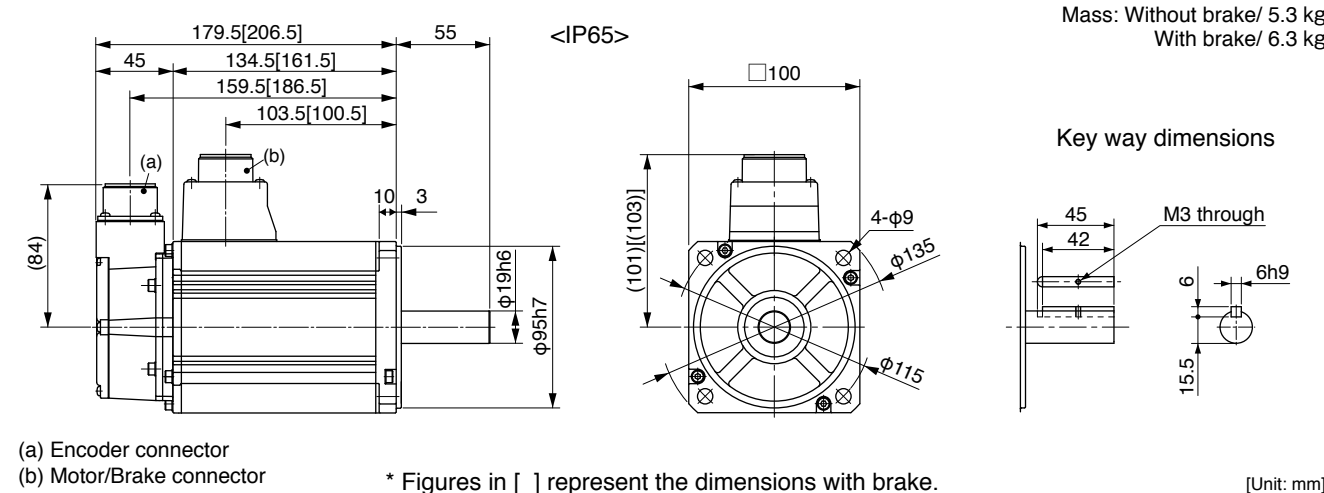
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions (For IP67 motor, refer to P.137.)



<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

		AC400 V	
Motor model *1	IP65	MSME304GC□	MSME304SC□
	IP67	MSME304G1□	MSME304S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇T5440
	A5IE, A5E series	MFD◇T5440E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		4.5	
Rated output (W)		3000	
Rated torque (N·m)		9.55	
Momentary Max. peak torque (N·m)		28.6	
Rated current (A(rms))		9.2	
Max. current (A(o-p))		39	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0PM20049×2	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	6.50	
	With brake	6.85	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	11.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

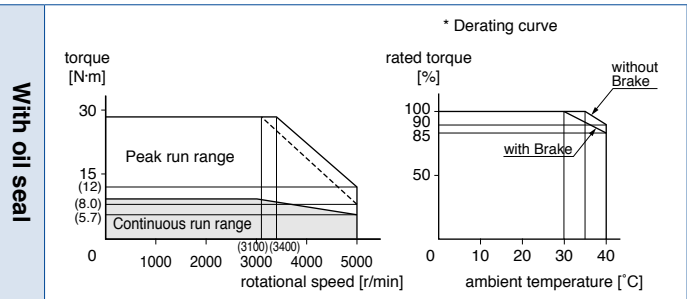
• **Permissible load** (For details, refer to P.183)

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

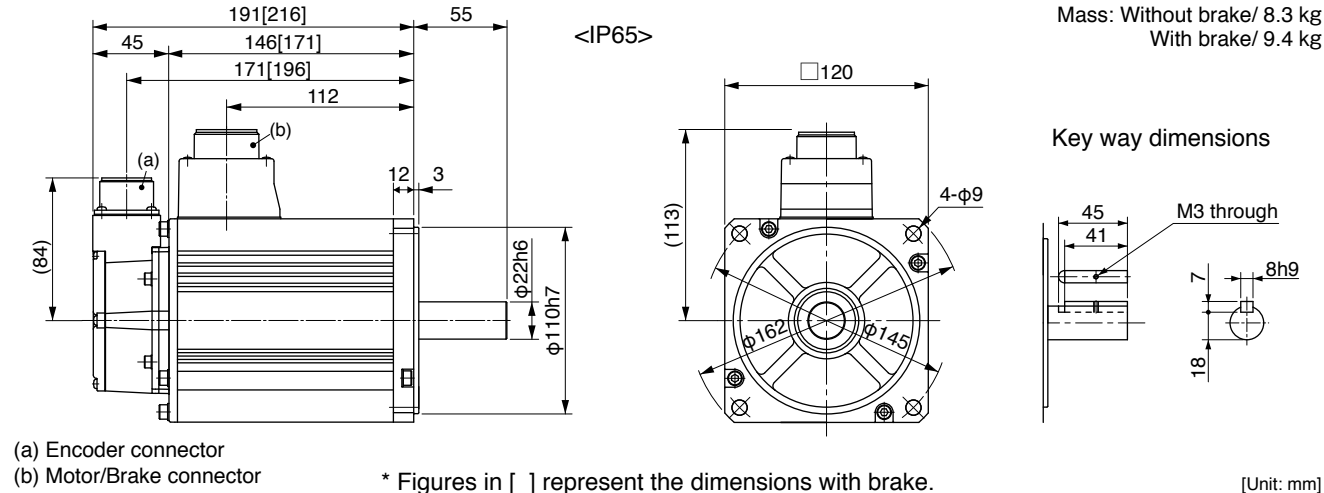
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions (For IP67 motor, refer to P.137.)



<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

		AC400 V	
Motor model *1	IP65	MSME404GC□	MSME404SC□
	IP67	MSME404G1□	MSME404S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA464
	A5IE, A5E series	MFD◇TA464E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		6.8	
Rated output (W)		4000	
Rated torque (N·m)		12.7	
Momentary Max. peak torque (N·m)		38.2	
Rated current (A(rms))		9.9	
Max. current (A(o-p))		42	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0PM20049x2	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		4500	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	12.9	
	With brake	14.2	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• Brake specifications (For details, refer to P.183)

(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) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

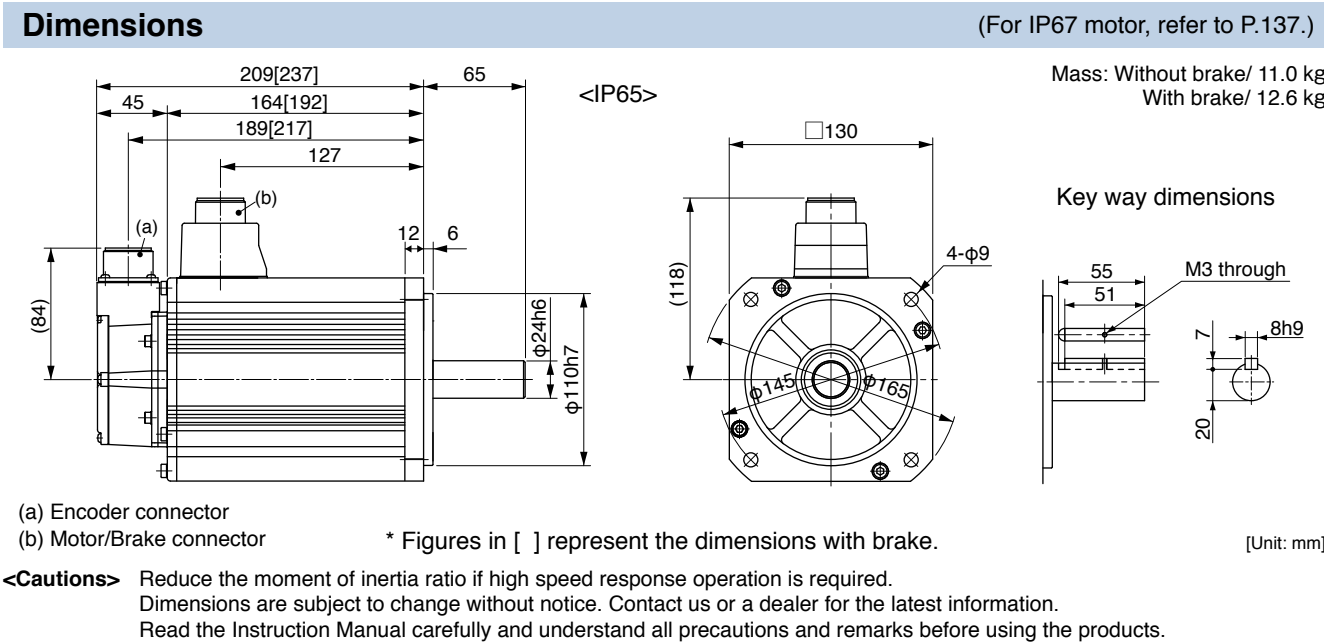
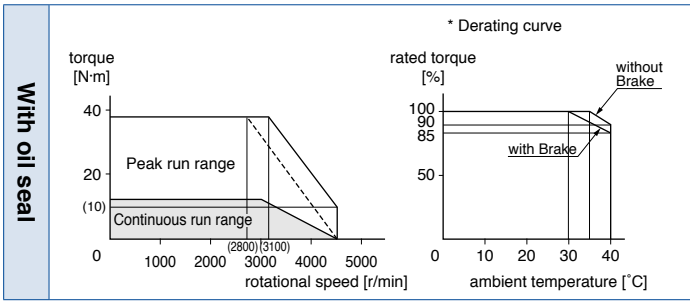
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Specifications

		AC400 V	
Motor model *1	IP65	MSME504GC□	MSME504SC□
	IP67	MSME504G1□	MSME504S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA464
	A5IE, A5E series	MFD◇TA464E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		7.5	
Rated output (W)		5000	
Rated torque (N·m)		15.9	
Momentary Max. peak torque (N·m)		47.7	
Rated current (A(rms))		12.0	
Max. current (A(o-p))		51	
Regenerative brake frequency (times/min) Note)1	Without option	357	
	DV0PM20049x2	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		4500	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	17.4	
	With brake	18.6	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• Brake specifications (For details, refer to P.183)

(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) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

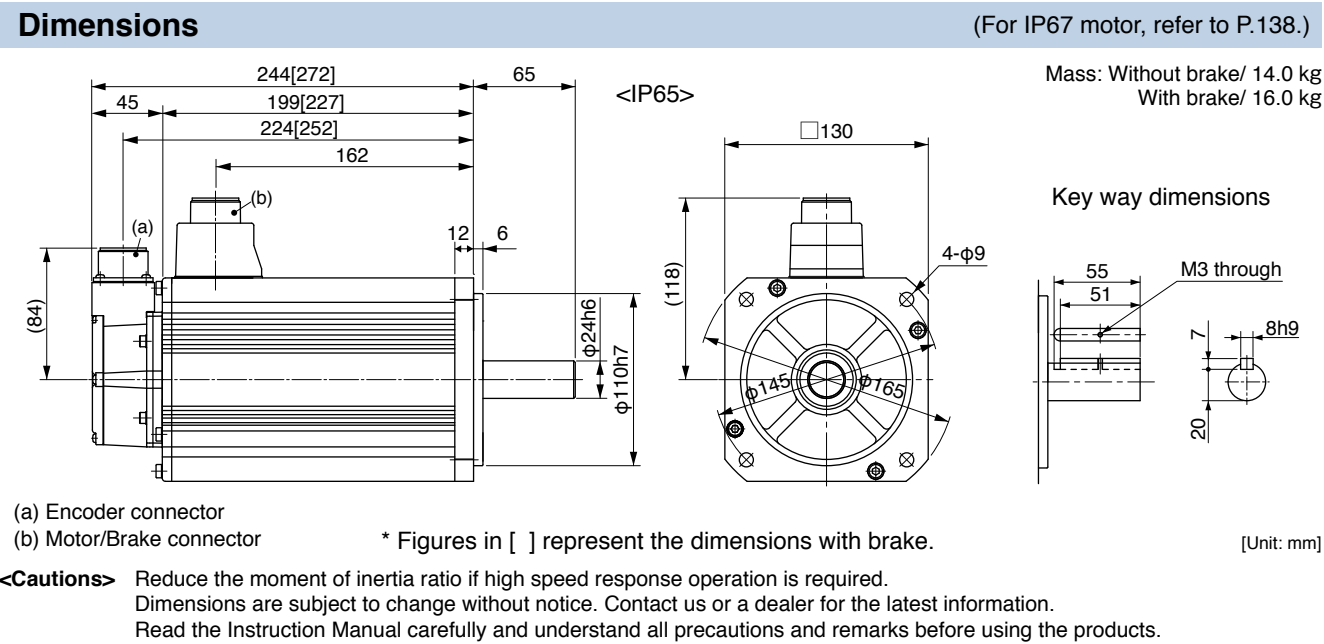
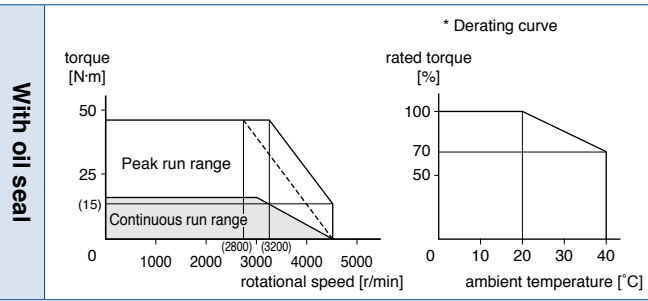
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Specifications

		AC400 V	
Motor model *1	IP65	MDME044GC□	MDME044SC□
	IP67	MDME044G1□	MDME044S1□
Applicable driver *2	Model No.	MDD◇T2407	
	A5IE, A5E series	MDD◇T2407E	—
	Frame symbol	D-frame	
Power supply capacity (kVA)		0.9	
Rated output (W)		400	
Rated torque (N·m)		1.91	
Momentary Max. peak torque (N·m)		5.73	
Rated current (A(rms))		1.2	
Max. current (A(o-p))		4.9	
Regenerative brake frequency (times/min) Note)1	Without option	No limit	Note)2
	DV0PM20048	No limit	Note)2
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	1.61	
	With brake	1.93	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	2.5 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.70±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

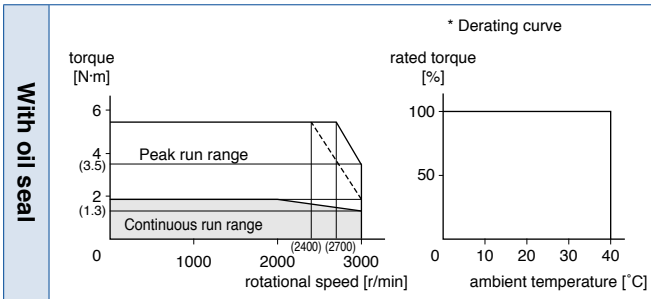
• **Permissible load** (For details, refer to P.183)

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

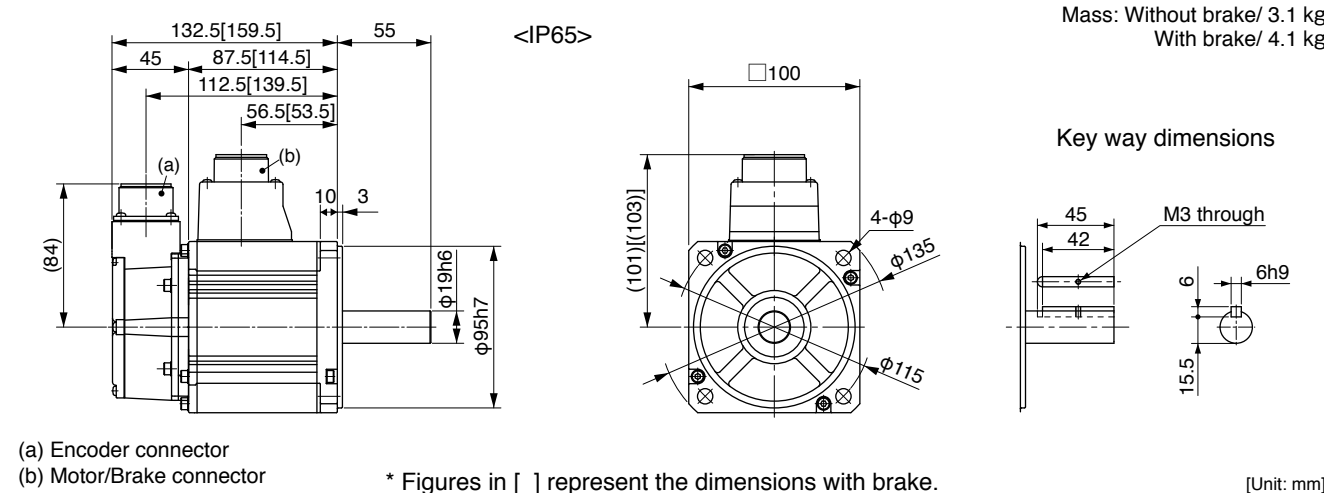
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions (For IP67 motor, refer to 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

		AC400 V	
Motor model *1	IP65	MDME064GC□	MDME064SC□
	IP67	MDME064G1□	MDME064S1□
Applicable driver *2	Model No.	MDD◇T2407	
	A5IE, A5E series	MDD◇T2407E	—
	Frame symbol	D-frame	
Power supply capacity (kVA)		1.2	
Rated output (W)		600	
Rated torque (N·m)		2.86	
Momentary Max. peak torque (N·m)		8.59	
Rated current (A(rms))		1.5	
Max. current (A(o-p))		6.5	
Regenerative brake frequency (times/min) Note)1	Without option	No limit	Note)2
	DV0PM20048	No limit	Note)2
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	2.03	
	With brake	2.35	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	2.5 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.70±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

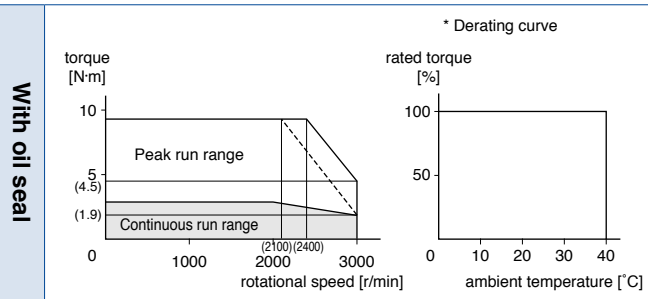
• **Permissible load** (For details, refer to P.183)

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

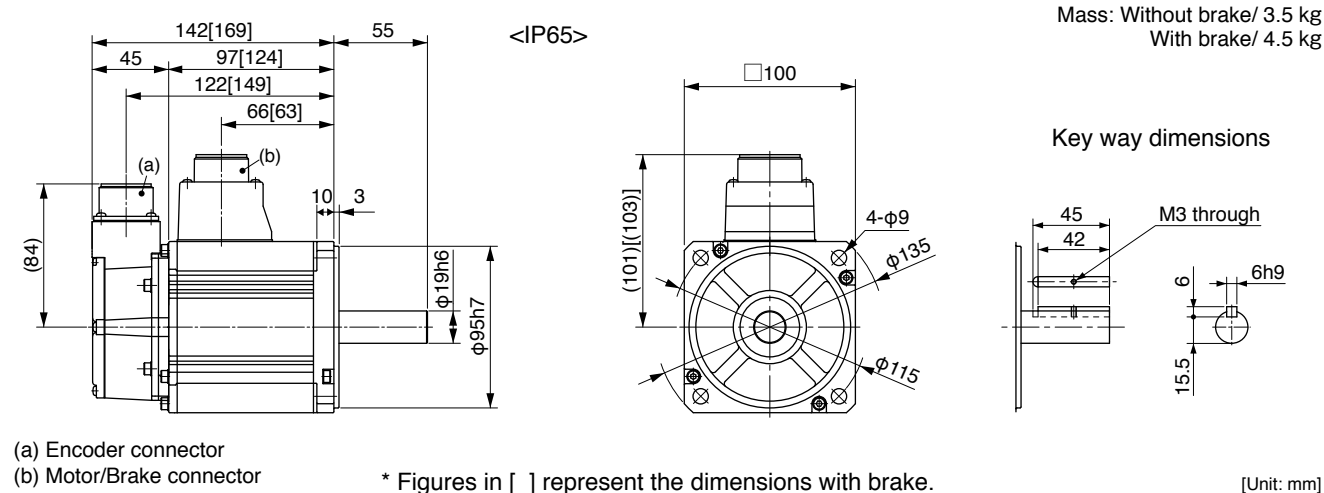
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions (For IP67 motor, refer to 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

			AC400 V	
Motor model ※1	IP65		MDME104GC□	MDME104SC□
	IP67		MDME104G1□	MDME104S1□
Applicable driver ※2	Model No.	A5II, A5 series	MDD◇T2412	
		A5IE, A5E series	MDD◇T2412E	—
	Frame symbol		D-frame	
Power supply capacity (kVA)			1.8	
Rated output (W)			1000	
Rated torque (N·m)			4.77	
Momentary Max. peak torque (N·m)			14.3	
Rated current (A(rms))			2.8	
Max. current (A(o-p))			12	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2	
	DV0PM20048		No limit Note)2	
Rated rotational speed (r/min)			2000	
Max. rotational speed (r/min)			3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		4.60	
	With brake		5.90	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	
			1048576	131072

• Brake specifications (For details, refer to P.183)

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

Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

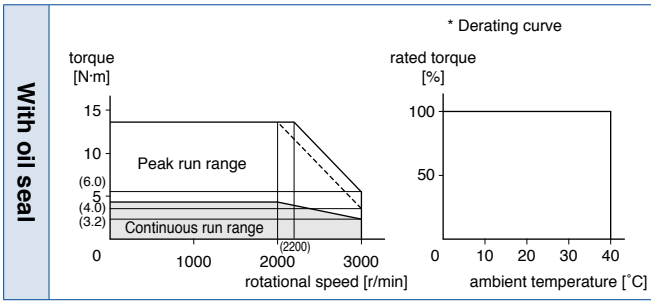
• Dimensions of Driver, refer to P.44.

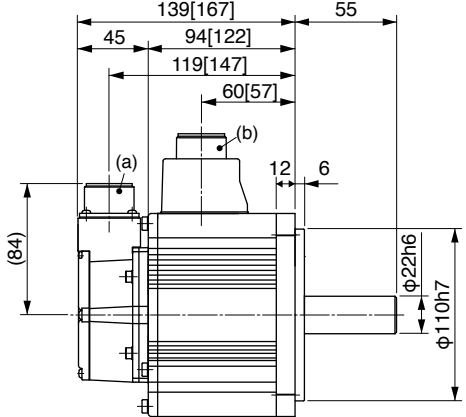
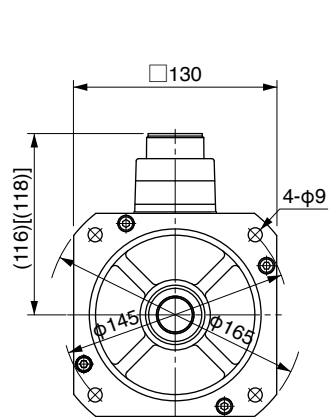
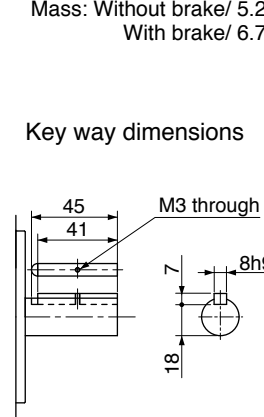
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions		(For IP67 motor, refer to P.138.)	
	<IP65>	Mass: Without brake/ 5.2 kg With brake/ 6.7 kg	
		Key way dimensions	
			
(a) Encoder connector (b) Motor/Brake connector		* Figures in [] represent the dimensions with brake.	
<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

			AC400 V	
Motor model *1	IP65		MDME154GC□	MDME154SC□
	IP67		MDME154G1□	MDME154S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T3420	
		A5IE, A5E series	MDD◇T3420E	—
	Frame symbol		D-frame	
Power supply capacity (kVA)			2.3	
Rated output (W)			1500	
Rated torque (N·m)			7.16	
Momentary Max. peak torque (N·m)			21.5	
Rated current (A(rms))			4.7	
Max. current (A(o-p))			20	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2	
	DV0PM20048		No limit Note)2	
Rated rotational speed (r/min)			2000	
Max. rotational speed (r/min)			3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		6.70	
	With brake		7.99	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	1048576 131072

• Brake specifications

(For details, refer to P.183)

(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) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load

(For details, refer to P.183)

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 5, refer to P.182, P.183.

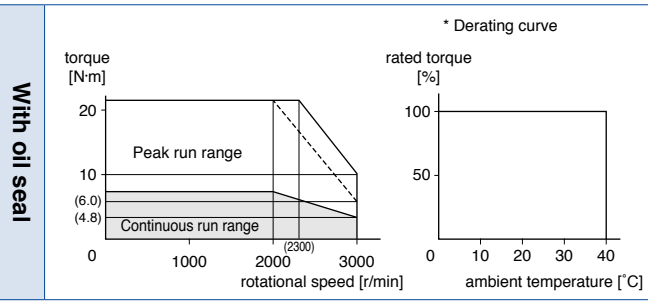
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

(For IP67 motor, refer to P.138.)

Front view of the motor showing dimensions in mm. The total width is 156.5 [184.5] mm. The distance from the left edge to the center of the encoder connector (a) is 45 mm. The distance from the left edge to the center of the motor/brake connector (b) is 111.5 [139.5] mm. The distance from the center of (a) to the center of (b) is 136.5 [164.5] mm. The distance from the center of (b) to the right edge is 77.5 [74.5] mm. The total height is 84 mm. The distance from the top of the motor to the center of the encoder connector is 12 mm. The distance from the top of the motor to the center of the motor/brake connector is 6 mm. The diameter of the encoder connector is $\phi 22h6$. The diameter of the motor/brake connector is $\phi 110h7$.

<IP65>

Top view of the motor showing dimensions in mm. The total width is 130 mm. The distance from the top edge to the center of the encoder connector is 116 [(118)] mm. The diameter of the encoder connector is $\phi 145$. The diameter of the motor/brake connector is $\phi 165$. There are 4 mounting holes with a diameter of $\phi 9$.

Mass: Without brake/ 6.7 kg
With brake/ 8.2 kg

Key way dimensions

Key way dimensions diagram showing dimensions in mm. The total width is 45 mm. The distance from the left edge to the center of the key way is 41 mm. The key way is M3 through. The distance from the top edge to the center of the key way is 7 mm. The distance from the bottom edge to the center of the key way is 18 mm. The key way is 8h9.

(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

[Unit: mm]

<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

			AC400 V	
Motor model ※1	IP65		MDME204GC□	MDME204SC□
	IP67		MDME204G1□	MDME204S1□
Applicable driver ※2	Model No.	A5II, A5 series	MED◇T4430	
		A5IIE, A5E series	MED◇T4430E	—
	Frame symbol		E-frame	
Power supply capacity (kVA)			3.3	
Rated output (W)			2000	
Rated torque (N·m)			9.55	
Momentary Max. peak torque (N·m)			28.6	
Rated current (A(rms))			5.9	
Max. current (A(o-p))			25	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2	
	DV0PM20049		No limit Note)2	
Rated rotational speed (r/min)			2000	
Max. rotational speed (r/min)			3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		8.72	
	With brake		10.0	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	1048576 131072

• Brake specifications (For details, refer to P.183)

(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) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

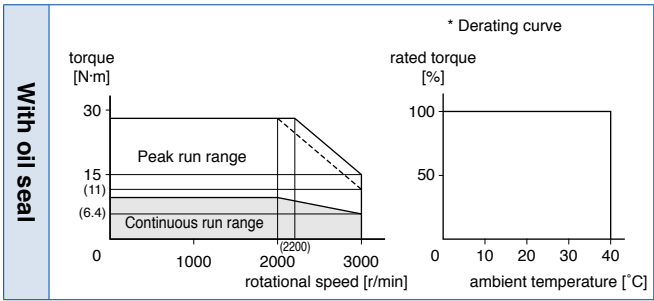
• Dimensions of Driver, refer to P.45.

※1 Motor specifications: □

※2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.

※3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

(For IP67 motor, refer to P.138.)

Mass: Without brake/ 8.0 kg
With brake/ 9.5 kg

Key way dimensions

(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

[Unit: mm]

<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

			AC400 V	
Motor model *1	IP65		MDME304GC□	MDME304SC□
	IP67		MDME304G1□	MDME304S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇T5440	
		A5IIE, A5E series	MFD◇T5440E	—
	Frame symbol		F-frame	
Power supply capacity (kVA)			4.5	
Rated output (W)			3000	
Rated torque (N·m)			14.3	
Momentary Max. peak torque (N·m)			43.0	
Rated current (A(rms))			8.7	
Max. current (A(o-p))			37	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2	
	DV0PM20049×2		No limit Note)2	
Rated rotational speed (r/min)			2000	
Max. rotational speed (r/min)			3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		12.9	
	With brake		14.2	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute	
	Resolution per single turn		1048576	131072

• Brake specifications (For details, refer to P.183)

(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) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

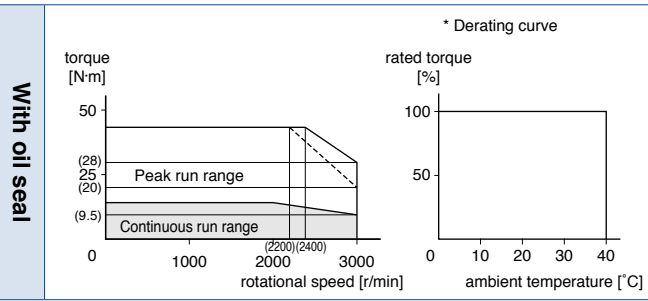
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

(For IP67 motor, refer to P.139.)

Mass: Without brake/ 11.0 kg
With brake/ 12.6 kg

Key way dimensions

(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

[Unit: mm]

<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				
AC400 V				
Motor model *1	IP65		MDME404GC□	MDME404SC□
	IP67		MDME404G1□	MDME404S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA464	
	Model No.	A5IE, A5E series	MFD◇TA464E	—
	Frame symbol		F-frame	
Power supply capacity		(kVA)	6.8	
Rated output		(W)	4000	
Rated torque		(N·m)	19.1	
Momentary Max. peak torque		(N·m)	57.3	
Rated current		(A(rms))	10.6	
Max. current		(A(o-p))	45	
Regenerative brake frequency (times/min) Note)1	Without option		No limit	Note)2
	DV0PM20049x2		No limit	Note)2
Rated rotational speed		(r/min)	2000	
Max. rotational speed		(r/min)	3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		37.6	
	With brake		42.9	
Recommended moment of inertia ratio of the load and the rotor		Note)3	10 times or less	
Rotary encoder specifications	Note)5		20-bit Incremental	17-bit Absolute
	Resolution per single turn		1048576	131072

• Brake specifications (For details, refer to P.183)

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

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

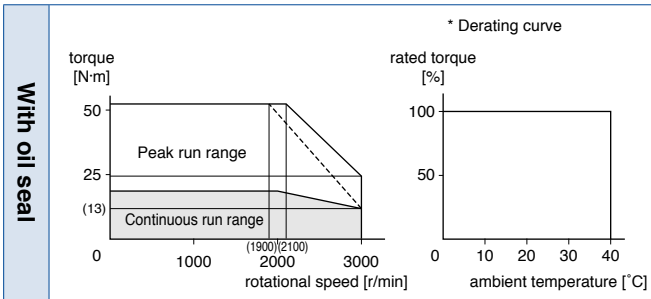
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

(For IP67 motor, refer to P.139.)

178[207]

45

133[162]

158[187]

96

70

18

3.2

φ35h6

φ114.3h7

(84)

(a)

(b)

<IP65>

Mass: Without brake/ 15.5 kg
With brake/ 18.7 kg

□176

(140)

4-φ13.5

φ233

φ200

Key way dimensions

55

50

M3 through

8

10h9

30

(a) Encoder connector

(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

[Unit: mm]

<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.

A5 Family

Motor Specifications

400 VMDME 5.0 kW [Middle inertia, Middle capacity]

Specifications				
AC400 V				
Motor model *1	IP65		MDME504GC□	MDME504SC□
	IP67		MDME504G1□	MDME504S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA464	
	Model No.	A5IE, A5E series	MFD◇TA464E	—
	Frame symbol		F-frame	
Power supply capacity		(kVA)	7.5	
Rated output		(W)	5000	
Rated torque		(N·m)	23.9	
Momentary Max. peak torque		(N·m)	71.6	
Rated current		(A(rms))	13.0	
Max. current		(A(o-p))	55	
Regenerative brake frequency (times/min) Note)1	Without option		120	
	DV0PM20049x2		No limit	Note)2
Rated rotational speed		(r/min)	2000	
Max. rotational speed		(r/min)	3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		48.0	
	With brake		53.3	
Recommended moment of inertia ratio of the load and the rotor		Note)3	10 times or less	
Rotary encoder specifications	Note)5		20-bit Incremental	17-bit Absolute
	Resolution per single turn		1048576	131072

• Brake specifications (For details, refer to P.183)

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

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)

With oil seal

torque [N·m]

70

35

(20)

(3)

0

rotational speed [r/min]

0

1000

(1900)(2100)

2000

3000

Peak run range

Continuous run range

* Derating curve

rated torque [%]

100

90

85

50

0

ambient temperature [°C]

0

10

20

30

40

without Brake

with Brake

Dimensions

(For IP67 motor, refer to P.139.)

197[226]

45

152[181]

177[206]

115

70

18

3.2

φ35h6

φ114.3h7

(84)

(a)

(b)

<IP65>

Mass: Without brake/ 18.6 kg
With brake/ 21.8 kg

□176

(140)

4-φ13.5

φ233

φ200

Key way dimensions

55

50

M3 through

8

10h9

30

(a) Encoder connector

(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

[Unit: mm]

<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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118

Specifications

		AC400 V	
Motor model *1	IP65	—	—
	IP67	MDME754G1□	MDME754S1□
Applicable driver *2	Model No.	MGD◇TB4A2	
	A5II, A5 series	—	—
	A5IE, A5E series	—	—
Frame symbol		G-frame	
Power supply capacity (kVA)		11	
Rated output (W)		7500	
Rated torque (N·m)		47.8	
Momentary Max. peak torque (N·m)		119	
Rated current (A(rms))		22	
Max. current (A(o-p))		83	
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2	
	DV0PM20049x3	No limit Note2	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	101	
	With brake	107	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications Note5	20-bit Incremental	1048576	
	17-bit Absolute	131072	
Resolution per single turn		1048576	

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

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

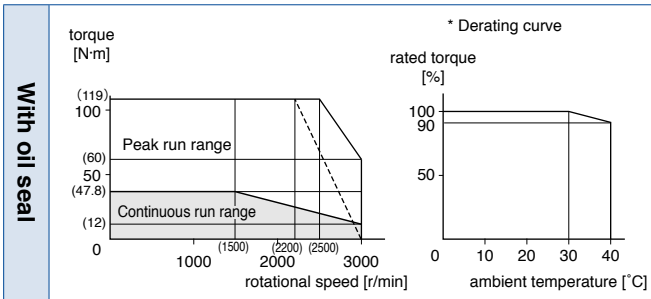
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.46.

*1 Motor specifications: □

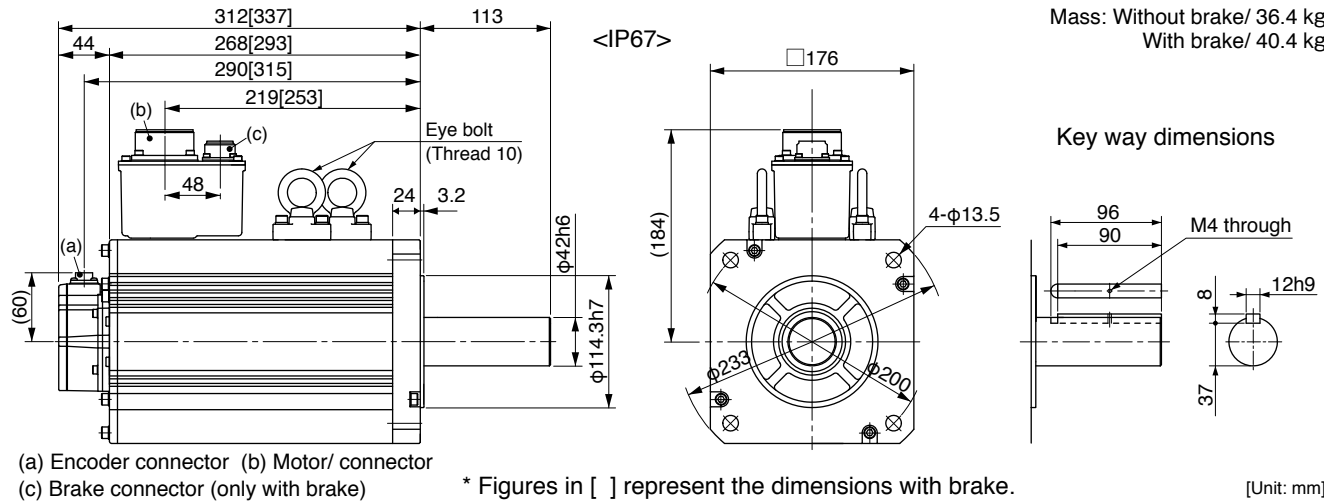
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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

		AC400 V	
Motor model *1	IP65	—	—
	IP67	MDMEC14G1□	MDMEC14S1□
Applicable driver *2	Model No.	MHD◇TB4A2	
	A5II, A5 series	—	—
	A5IE, A5E series	—	—
Frame symbol		H-frame	
Power supply capacity (kVA)		17	
Rated output (W)		11000	
Rated torque (N·m)		70	
Momentary Max. peak torque (N·m)		175	
Rated current (A(rms))		27.1	
Max. current (A(o-p))		101	
Regenerative brake frequency (times/min) Note1	Without option	No limit Note2	
	DV0PM20059	No limit Note2	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	212	
	With brake	220	
Recommended moment of inertia ratio of the load and the rotor Note3		10 times or less	
Rotary encoder specifications Note5	20-bit Incremental	1048576	
	17-bit Absolute	131072	
Resolution per single turn		1048576	

• **Brake specifications** (For details, refer to P.183)
(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) Note4	140 or less
Exciting current (DC) (A)	1.08±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	1764
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

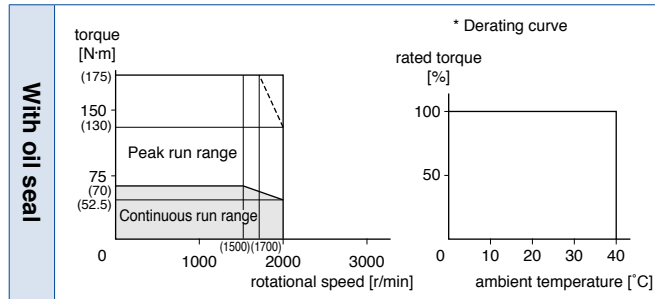
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.46.

*1 Motor specifications: □

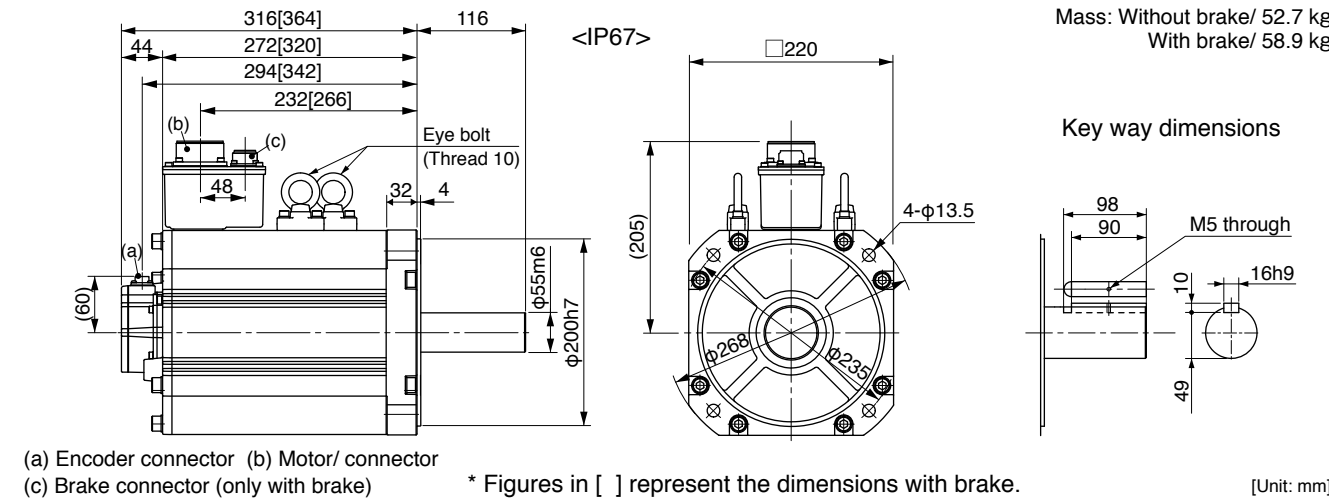
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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

AC400 V			
Motor model *1	IP65		—
	IP67		MDMEC54G1□ MDMEC54S1□
Applicable driver *2	Model No.	A5II, A5 series	MHD◇TB4A2
		A5IE, A5E series	—
	Frame symbol	H-frame	
Power supply capacity (kVA)		22	
Rated output (W)		15000	
Rated torque (N·m)		95.5	
Momentary Max. peak torque (N·m)		224	
Rated current (A(rms))		33.1	
Max. current (A(o-p))		118	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0PM20059	No limit Note)2	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	302	
	With brake	211	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	140 or less
Exciting current (DC) (A)	1.08±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

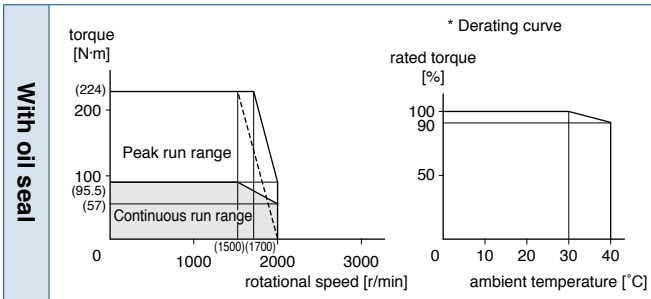
• **Permissible load** (For details, refer to P.183)

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	1764
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

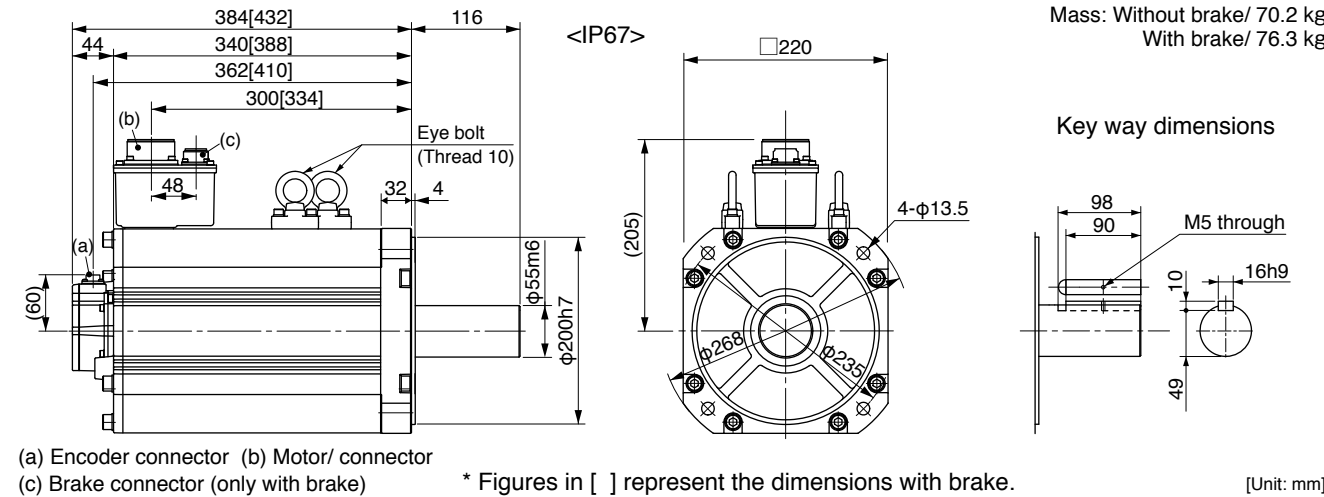
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.47.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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

AC400 V			
Motor model *1	IP65		—
	IP67		MFME154G1□ MFME154S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T3420
		A5IE, A5E series	MDD◇T3420E —
	Frame symbol	D-frame	
Power supply capacity (kVA)		2.4	
Rated output (W)		1500	
Rated torque (N·m)		7.16	
Momentary Max. peak torque (N·m)		21.5	
Rated current (A(rms))		3.8	
Max. current (A(o-p))		16	
Regenerative brake frequency (times/min) Note)1	Without option	100	
	DV0PM20048	No limit Note)2	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	18.2	
	With brake	23.5	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	7.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	35 or less
Exciting current (DC) (A)	0.83±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

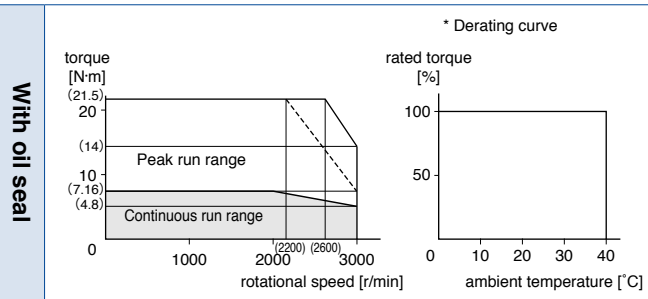
• **Permissible load** (For details, refer to P.183)

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

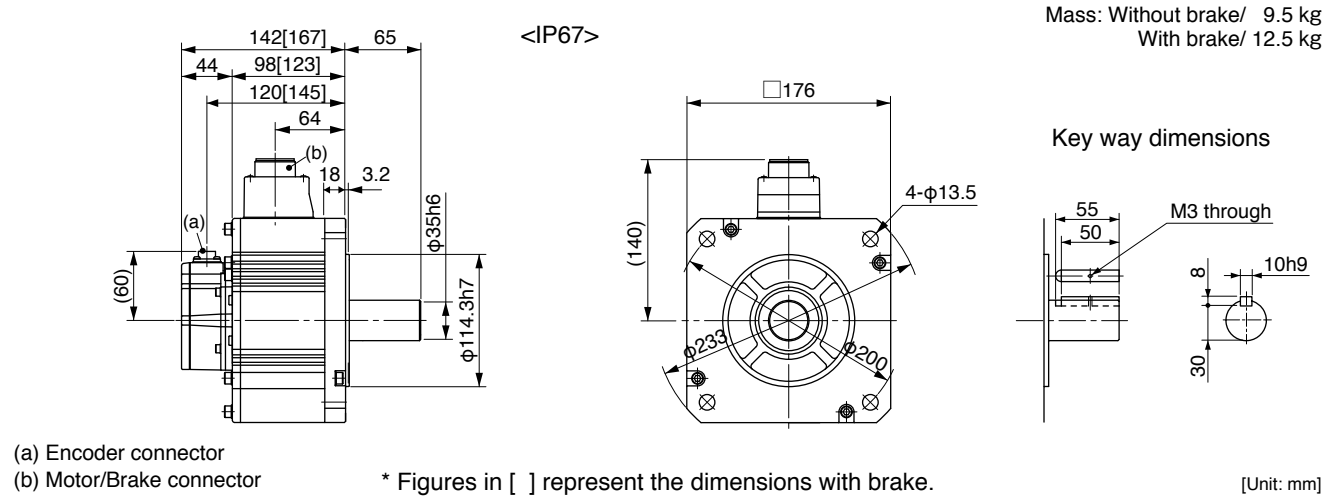
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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

		AC400 V	
Motor model *1	IP65	—	—
	IP67	MFME254G1□	MFME254S1□
Applicable driver *2	Model No.	A5II, A5 series	MED◇T4430
	A5IE, A5E series	MED◇T4430E	—
	Frame symbol	E-frame	
Power supply capacity (kVA)		3.9	
Rated output (W)		2500	
Rated torque (N·m)		11.9	
Momentary Max. peak torque (N·m)		30.4	
Rated current (A(rms))		6.7	
Max. current (A(o-p))		29	
Regenerative brake frequency (times/min) Note)1	Without option	75	
	DV0PM20049	No limit	Note)2
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	35.8	
	With brake	45.2	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	21.6 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	100 or less
Exciting current (DC) (A)	0.75±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

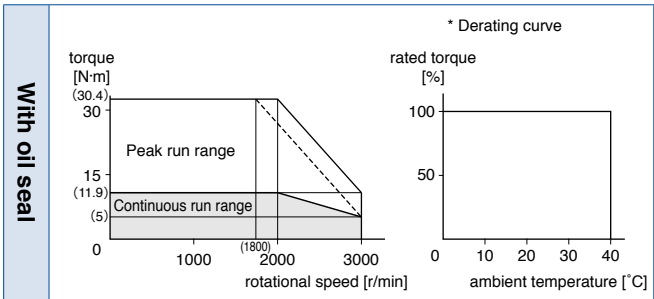
• **Permissible load** (For details, refer to P.183)

During assembly	Radial load P-direction (N)	1862
	Thrust load A-direction (N)	686
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	294

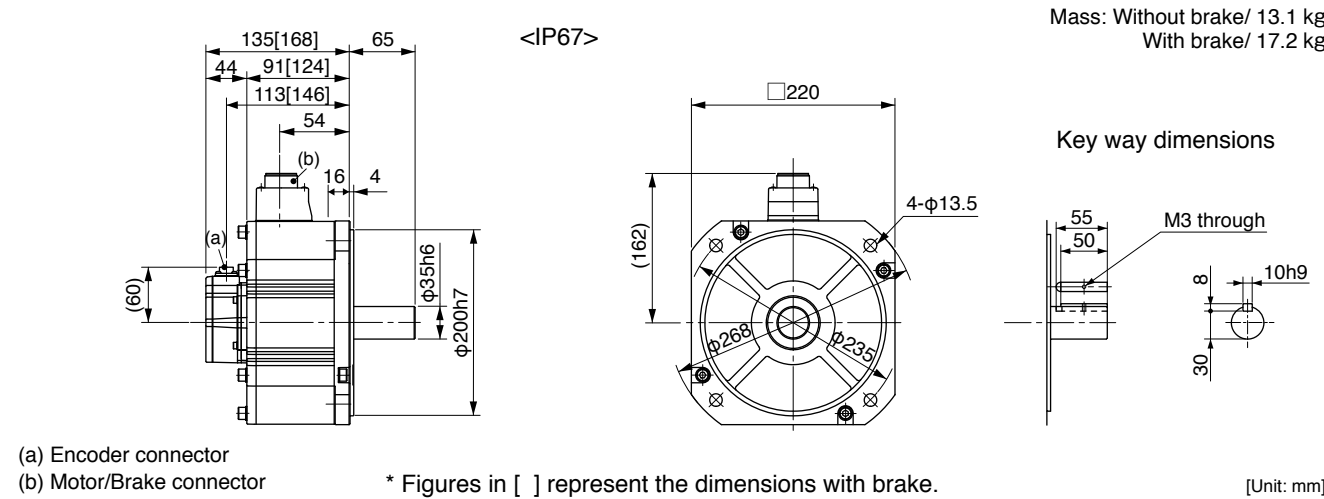
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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

		AC400 V	
Motor model *1	IP65	—	—
	IP67	MFME454G1□	MFME454S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA464
	A5IE, A5E series	MFD◇TA464E	—
	Frame symbol	F-frame	
Power supply capacity (kVA)		6.9	
Rated output (W)		4500	
Rated torque (N·m)		21.5	
Momentary Max. peak torque (N·m)		54.9	
Rated current (A(rms))		12.4	
Max. current (A(o-p))		53	
Regenerative brake frequency (times/min) Note)1	Without option	67	
	DV0PM20049×2	375	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	63.1	
	With brake	70.9	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	31.4 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	100 or less
Exciting current (DC) (A)	0.75±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

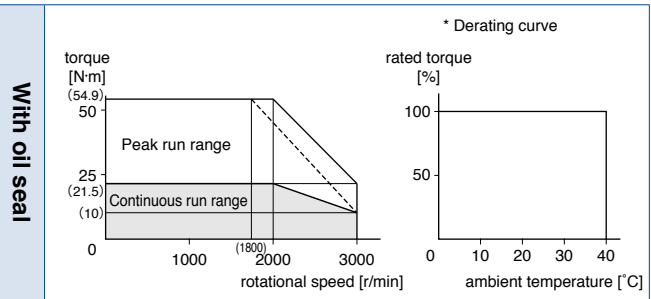
• **Permissible load** (For details, refer to P.183)

During assembly	Radial load P-direction (N)	1862
	Thrust load A-direction (N)	686
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	294

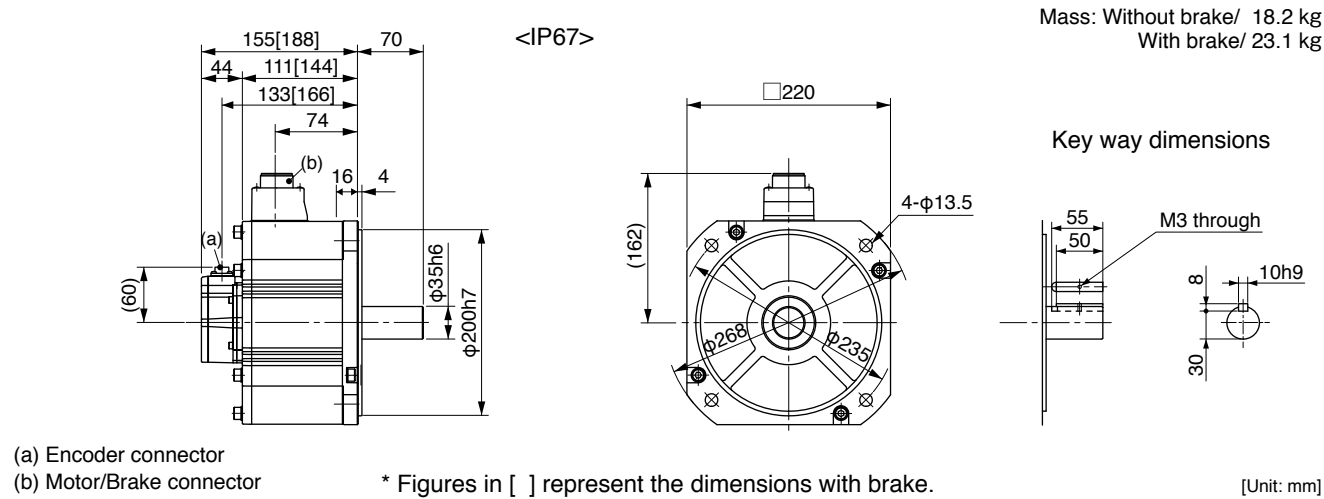
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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

		AC400 V		
Motor model *1	IP65	MGME094GC□	MGME094SC□	
	IP67	MGME094G1□	MGME094S1□	
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T3420	
		A5IIE, A5E series	MDD◇T3420E	—
	Frame symbol		D-frame	
Power supply capacity (kVA)		1.8		
Rated output (W)		900		
Rated torque (N·m)		8.59		
Momentary Max. peak torque (N·m)		19.3		
Rated current (A(rms))		3.8		
Max. current (A(o-p))		12		
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2		
	DV0PM20048	No limit Note)2		
Rated rotational speed (r/min)		1000		
Max. rotational speed (r/min)		2000		
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	6.70		
	With brake	7.99		
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072	

• Brake specifications (For details, refer to P.183)

(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) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Specifications

		AC400 V	
Motor model *1	IP65	MGME304GC□	MGME304SC□
	IP67	MGME304G1□	MGME304S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA464
	A5IE, A5E series	MFD◇TA464E	—
	Frame symbol	F-frame	
Power supply capacity (kVA)		4.5	
Rated output (W)		3000	
Rated torque (N·m)		28.7	
Momentary Max. peak torque (N·m)		71.7	
Rated current (A(rms))		11.3	
Max. current (A(o-p))		40	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0PM20049x2	No limit Note)2	
Rated rotational speed (r/min)		1000	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	48.4	
	With brake	53.7	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

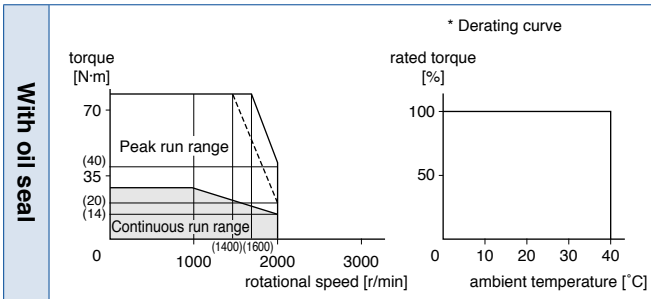
• **Permissible load** (For details, refer to P.183)

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)	1470
	Thrust load A, B-direction (N)	490

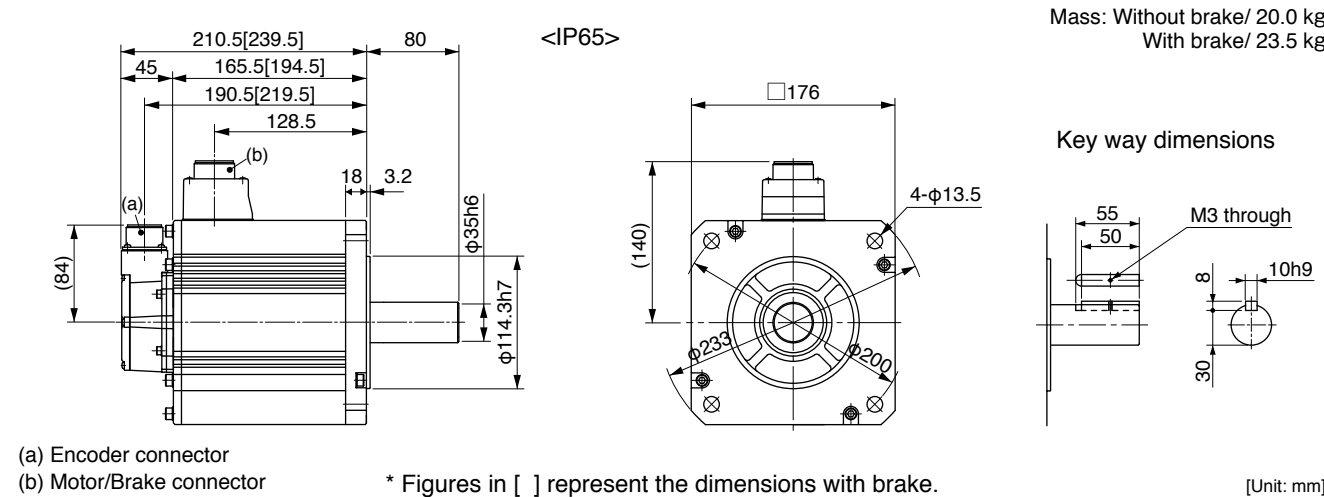
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions (For IP67 motor, refer to P.139.)



<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

		AC400 V	
Motor model *1	IP65	—	—
	IP67	MGME454G1□	MGME454S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA464
	A5IE, A5E series	MFD◇TA464E	—
	Frame symbol	F-frame	
Power supply capacity (kVA)		7.5	
Rated output (W)		4500	
Rated torque (N·m)		43.0	
Momentary Max. peak torque (N·m)		107	
Rated current (A(rms))		14.8	
Max. current (A(o-p))		55	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0PM20049x2	No limit Note)2	
Rated rotational speed (r/min)		1000	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	79.1	
	With brake	84.4	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

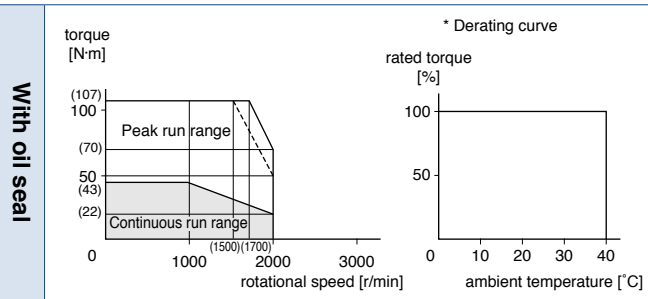
• **Permissible load** (For details, refer to P.183)

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)	1470
	Thrust load A, B-direction (N)	490

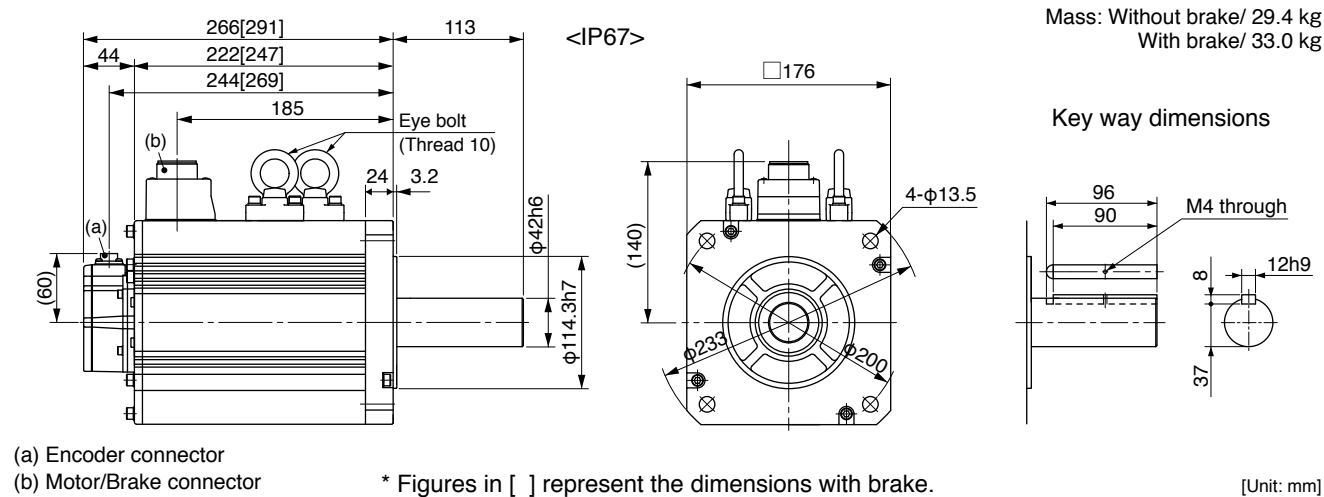
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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

AC400 V			
Motor model *1	IP65		—
	IP67		MGME604G1□ MGME604S1□
Applicable driver *2	Model No.	A5II, A5 series	MGD◇TB4A2
		A5IE, A5E series	—
	Frame symbol	G-frame	
Power supply capacity (kVA)		9.0	
Rated output (W)		6000	
Rated torque (N·m)		57.3	
Momentary Max. peak torque (N·m)		143	
Rated current (A(rms))		19.4	
Max. current (A(o-p))		74	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2
	DV0PM20049x3		No limit Note)2
Rated rotational speed (r/min)		1000	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		101
	With brake		107
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

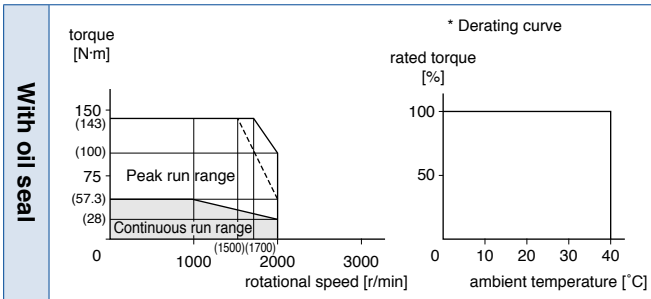
• **Permissible load** (For details, refer to P.183)

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)	1764
	Thrust load A, B-direction (N)	588

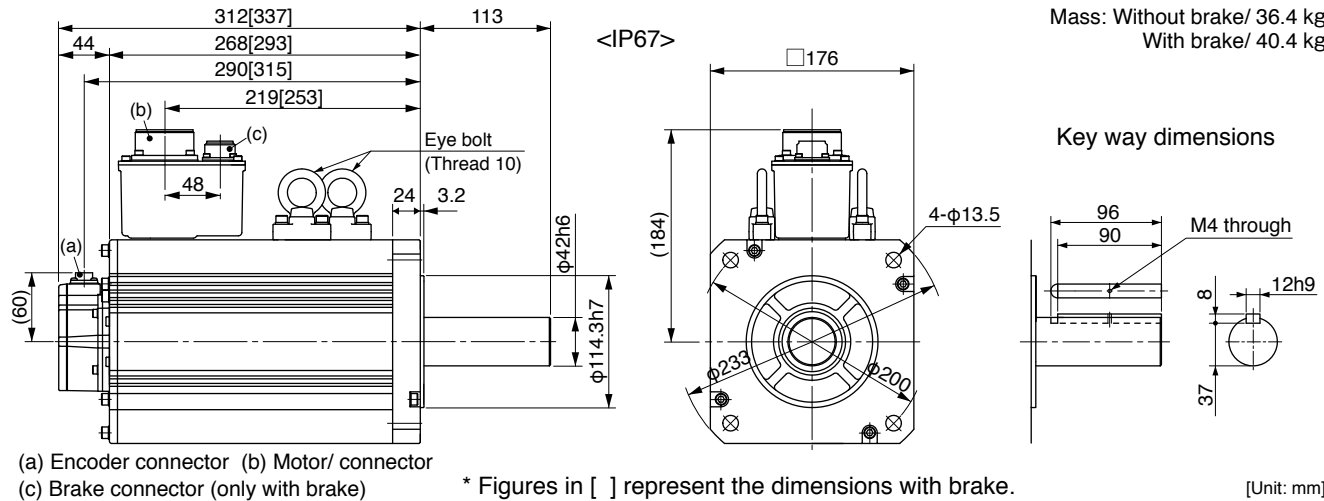
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.46.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



Dimensions



<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

AC400 V			
Motor model *1	IP65		MHME104GC□ MHME104SC□
	IP67		MHME104G1□ MHME104S1□
Applicable driver *2	Model No.	A5II, A5 series	MDD◇T2412
		A5IE, A5E series	MDD◇T2412E —
	Frame symbol	D-frame	
Power supply capacity (kVA)		1.8	
Rated output (W)		1000	
Rated torque (N·m)		4.77	
Momentary Max. peak torque (N·m)		14.3	
Rated current (A(rms))		2.9	
Max. current (A(o-p))		12	
Regenerative brake frequency (times/min) Note)1	Without option		83
	DV0PM20048		No limit Note)2
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		24.7
	With brake		26.0
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

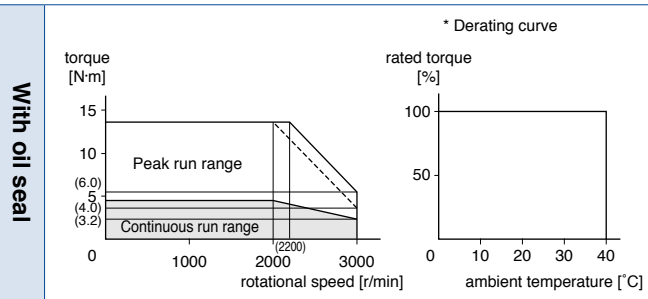
• **Permissible load** (For details, refer to P.183)

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

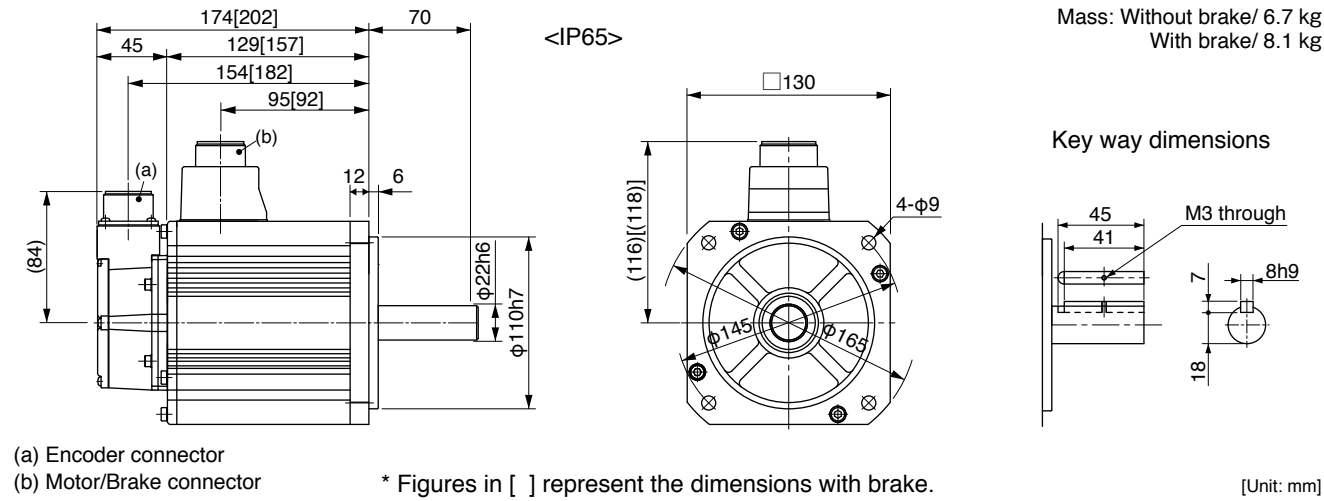
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions



<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

			AC400 V	
Motor model ※1	IP65		MHME154GC□	MHME154SC□
	IP67		MHME154G1□	MHME154S1□
Applicable driver ※2	Model No.	A5II, A5 series	MDD◇T3420	
		A5IE, A5E series	MDD◇T3420E	—
	Frame symbol		D-frame	
Power supply capacity (kVA)			2.3	
Rated output (W)			1500	
Rated torque (N·m)			7.16	
Momentary Max. peak torque (N·m)			21.5	
Rated current (A(rms))			4.7	
Max. current (A(o-p))			20	
Regenerative brake frequency (times/min) Note)1	Without option		22	
	DV0PM20048		130	
Rated rotational speed (r/min)			2000	
Max. rotational speed (r/min)			3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		37.1	
	With brake		38.4	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute	
	Resolution per single turn		1048576 131072	

• Brake specifications (For details, refer to P.183)

(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) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

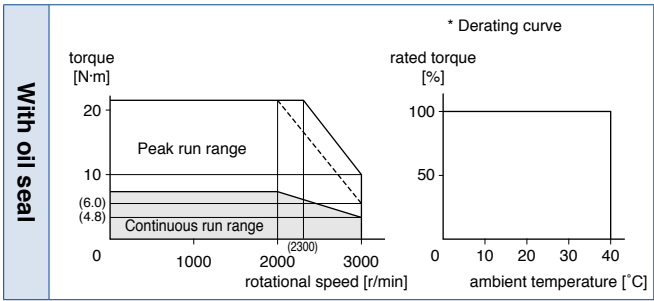
• Dimensions of Driver, refer to P.44.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

(For IP67 motor, refer to P.140.)

<IP65>

Mass: Without brake/ 8.6 kg
With brake/ 10.1 kg

Key way dimensions

(a) Encoder connector

(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

[Unit: mm]

<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

			AC400 V	
Motor model *1	IP65		MHME204GC□	MHME204SC□
	IP67		MHME204G1□	MHME204S1□
Applicable driver *2	Model No.	A5II, A5 series	MED◇T4430	
		A5IE, A5E series	MED◇T4430E	—
	Frame symbol		E-frame	
Power supply capacity (kVA)			3.3	
Rated output (W)			2000	
Rated torque (N·m)			9.55	
Momentary Max. peak torque (N·m)			28.6	
Rated current (A(rms))			5.5	
Max. current (A(o-p))			24	
Regenerative brake frequency (times/min) Note)1	Without option		45	
	DV0PM20048		142	
Rated rotational speed (r/min)			2000	
Max. rotational speed (r/min)			3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		57.8	
	With brake		59.6	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	1048576 131072

• Brake specifications (For details, refer to P.183)

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

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

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 5, refer to P.182, P.183.

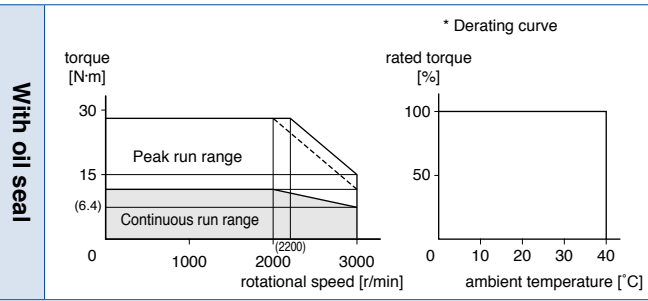
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.16.

*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

(For IP67 motor, refer to P.140.)

<IP65>

Mass: Without brake/ 12.2 kg
With brake/ 15.5 kg

Key way dimensions

- (a) Encoder connector
- (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

[Unit: mm]

<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

		AC400 V	
Motor model *1	IP65	MHME504GC□	MHME504SC□
	IP67	MHME504G1□	MHME504S1□
Applicable driver *2	Model No.	A5II, A5 series	MFD◇TA464
	A5IE, A5E series	MFD◇TA464E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		7.5	
Rated output (W)		5000	
Rated torque (N·m)		23.9	
Momentary Max. peak torque (N·m)		71.6	
Rated current (A(rms))		13.0	
Max. current (A(o-p))		55	
Regenerative brake frequency (times/min) Note)1	Without option	10	
	DV0PM20049x2	76	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	162	
	With brake	164	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

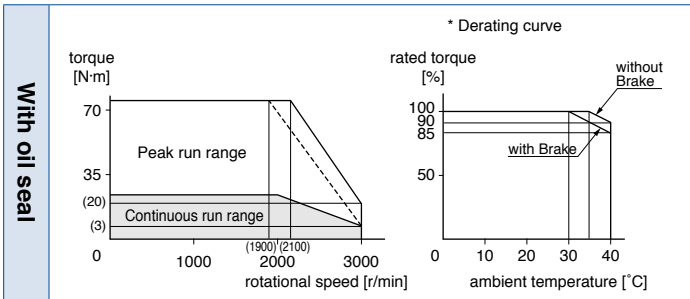
• **Permissible load** (For details, refer to P.183)

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

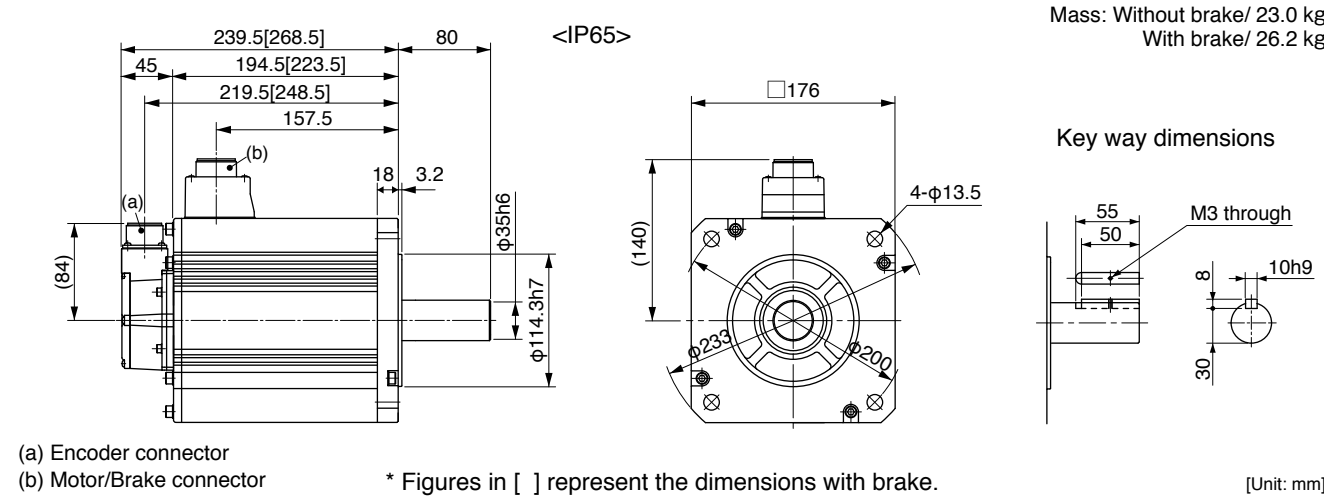
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions (For IP67 motor, refer to P.140.)



<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

		AC400 V	
Motor model *1	IP65	—	—
	IP67	MHME754G1□	MHME754S1□
Applicable driver *2	Model No.	A5II, A5 series	MGD◇TB4A2
	A5IE, A5E series	—	—
Frame symbol		G-frame	
Power supply capacity (kVA)		9.0	
Rated output (W)		7500	
Rated torque (N·m)		47.8	
Momentary Max. peak torque (N·m)		119	
Rated current (A(rms))		22.0	
Max. current (A(o-p))		83	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0PM20049x3	No limit Note)2	
Rated rotational speed (r/min)		1500	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	273	
	With brake	279	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

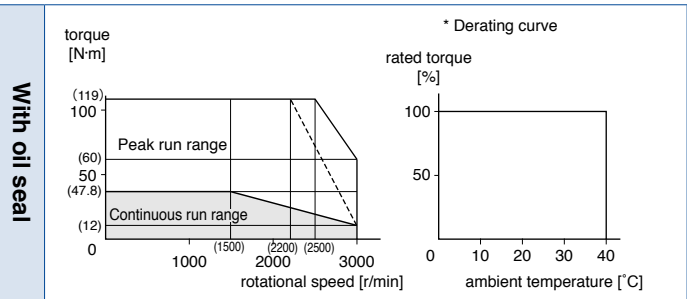
• **Permissible load** (For details, refer to P.183)

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

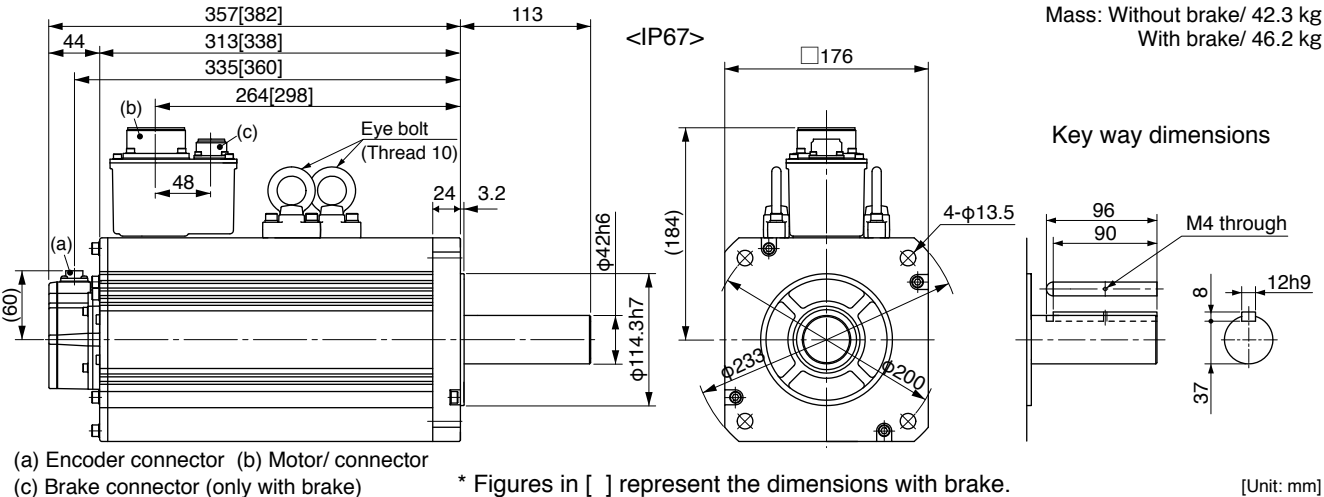
• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.46.

*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”. Detail of model designation, refer to P.16.
*3 ◇ in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

Torque characteristics (at AC400 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



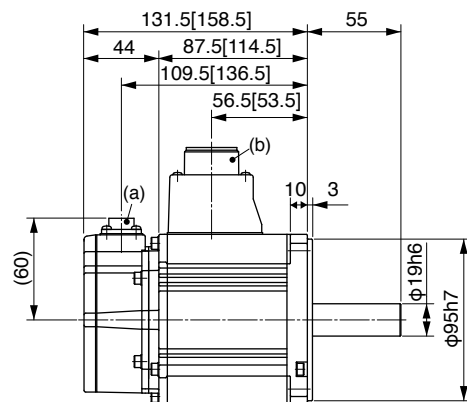
Dimensions



<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.

• MSME084□□1 *

[Unit: mm]

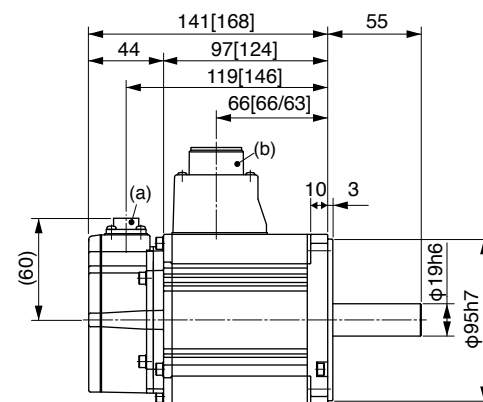


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MSME10□□1 *

[Unit: mm]

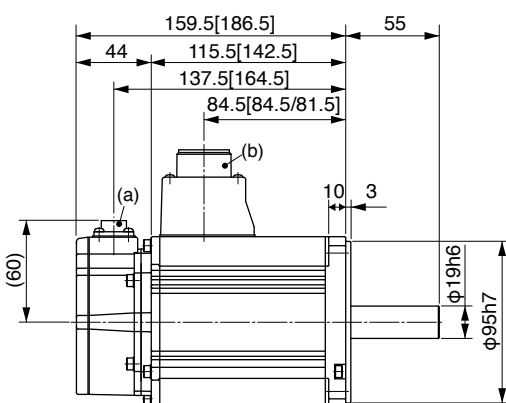


(a) Encoder connector (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.
If you find two figures in [], left figure is for 200 V and right figure is for 400 V.

• MSME15□□1 *

[Unit: mm]

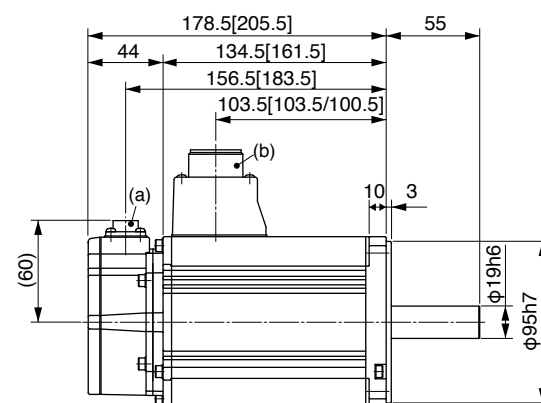


(a) Encoder connector (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.
If you find two figures in [], left figure is for 200 V and right figure is for 400 V.

• MSME20□□1 *

[Unit: mm]

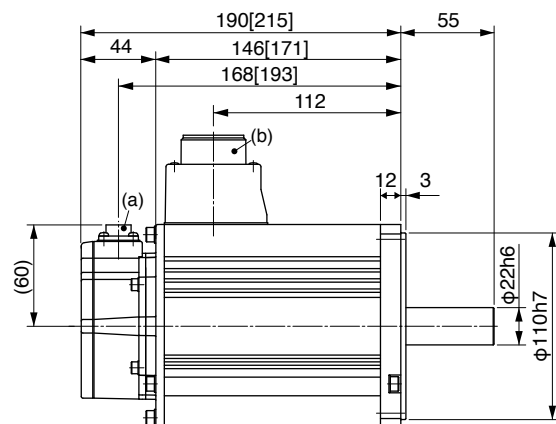


(a) Encoder connector (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.
If you find two figures in [], left figure is for 200 V and right figure is for 400 V.

• MSME30□□1 *

[Unit: mm]

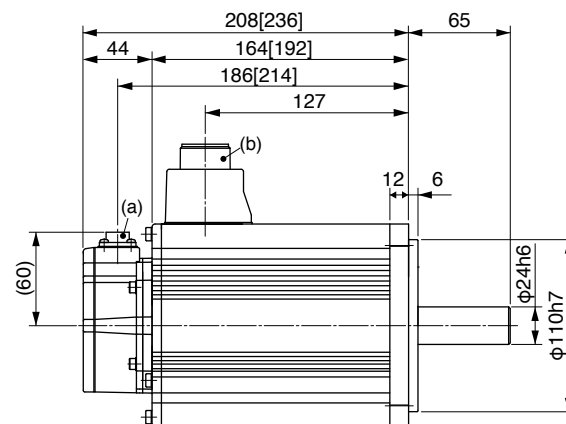


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MSME40□□1 *

[Unit: mm]



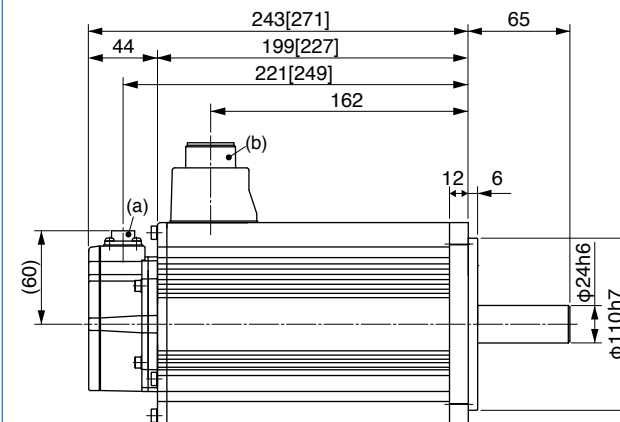
(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

* For motor specifications, refer to IP65 motor page.

• MSME50□□1 *

[Unit: mm]

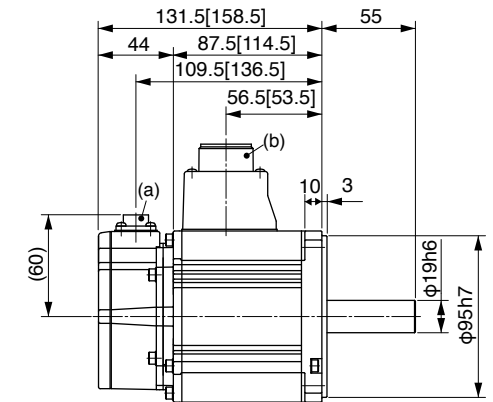


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MDME044□□1 *

[Unit: mm]

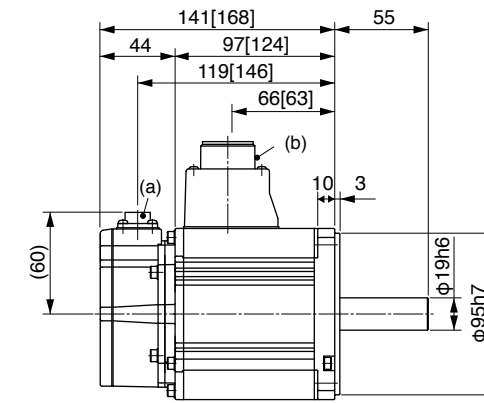


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MDME064□□1 *

[Unit: mm]

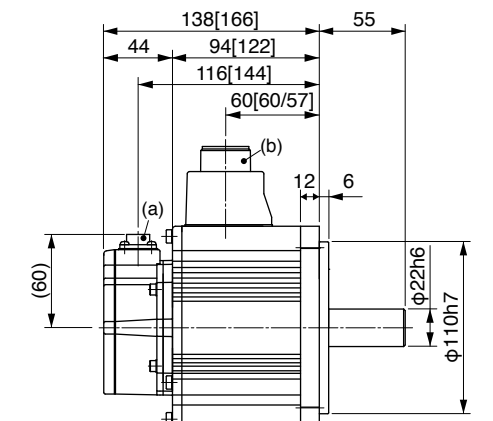


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MDME10□□1 *

[Unit: mm]

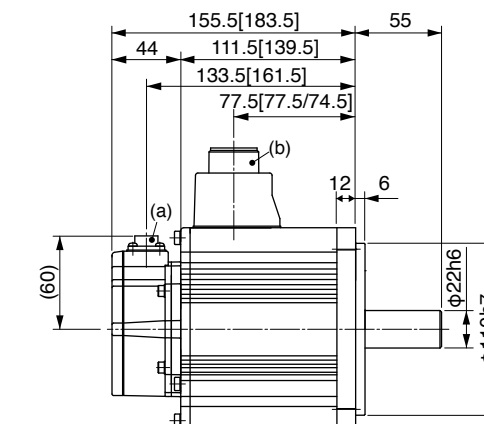


(a) Encoder connector (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.
If you find two figures in [], left figure is for 200 V and right figure is for 400 V.

• MDME15□□1 *

[Unit: mm]

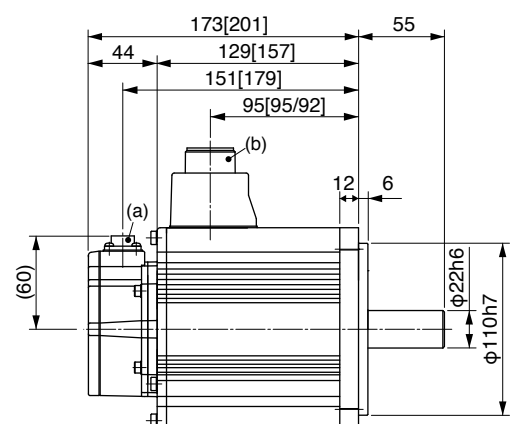


(a) Encoder connector (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.
If you find two figures in [], left figure is for 200 V and right figure is for 400 V.

• MDME20□□1 *

[Unit: mm]



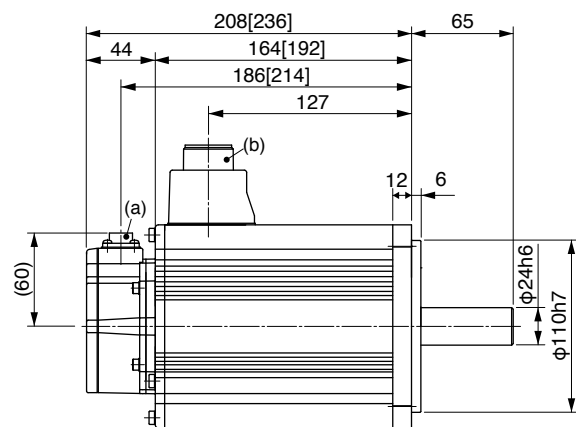
(a) Encoder connector (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.
If you find two figures in [], left figure is for 200 V and right figure is for 400 V.

* For motor specifications, refer to IP65 motor page.

• MDME30□□1 *

[Unit: mm]

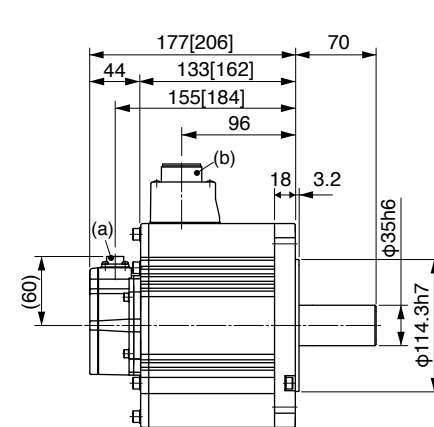


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MDME40□□1 *

[Unit: mm]

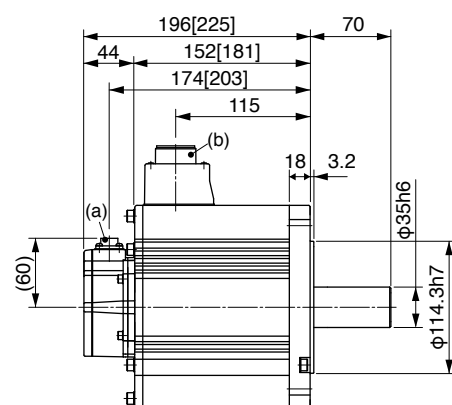


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MDME50□□1 *

[Unit: mm]

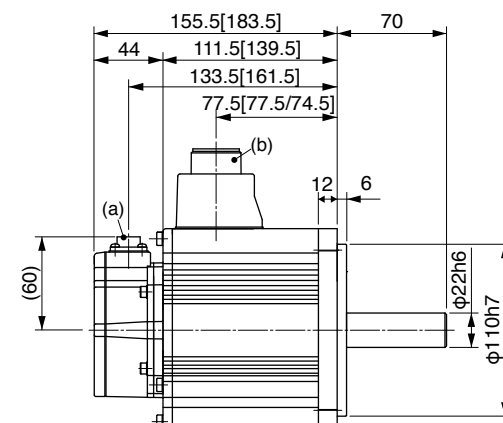


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MGME09□□1 *

[Unit: mm]

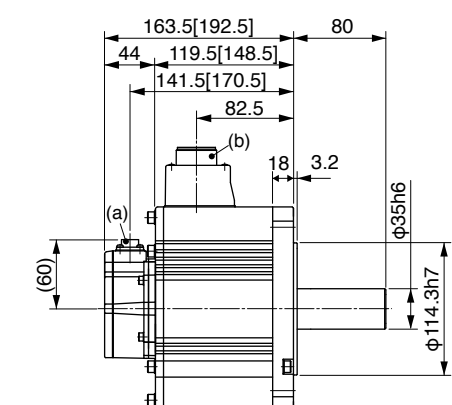


(a) Encoder connector (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.
If you find two figures in [], left figure is for 200 V and right figure is for 400 V.

• MGME20□□1 *

[Unit: mm]

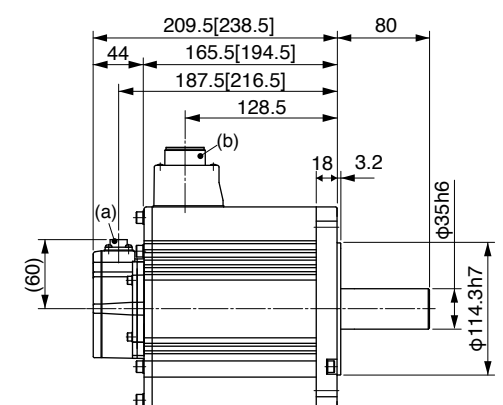


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MGME30□□1 *

[Unit: mm]



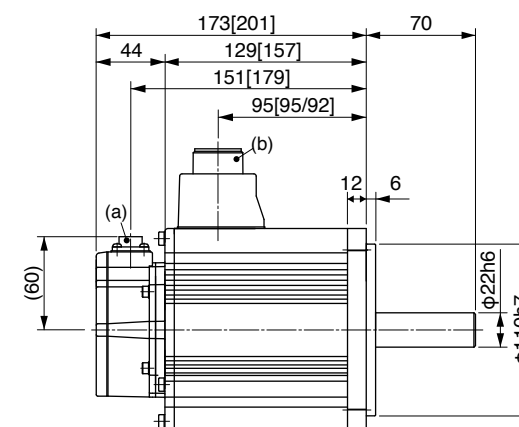
(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

* For motor specifications, refer to IP65 motor page.

• MHME10□□1 *

[Unit: mm]

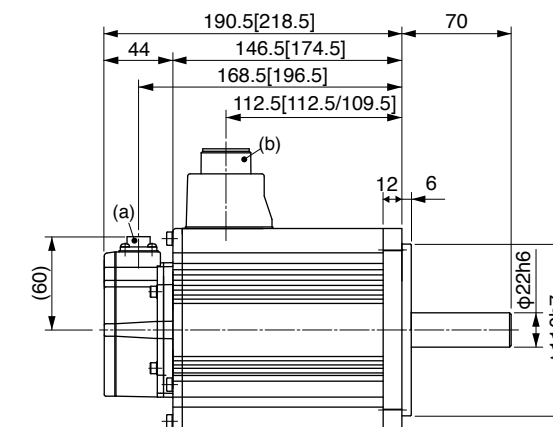


(a) Encoder connector (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.
If you find two figures in [], left figure is for 200 V and right figure is for 400 V.

• MHME15□□1 *

[Unit: mm]

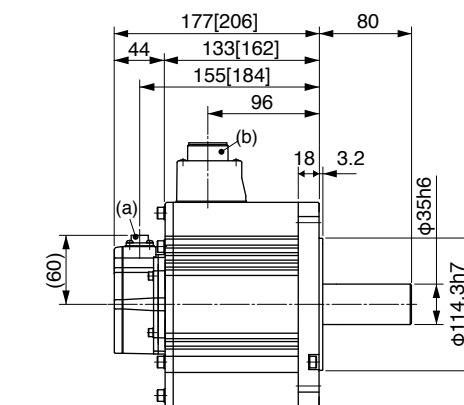


(a) Encoder connector (b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.
If you find two figures in [], left figure is for 200 V and right figure is for 400 V.

• MHME20□□1 *

[Unit: mm]

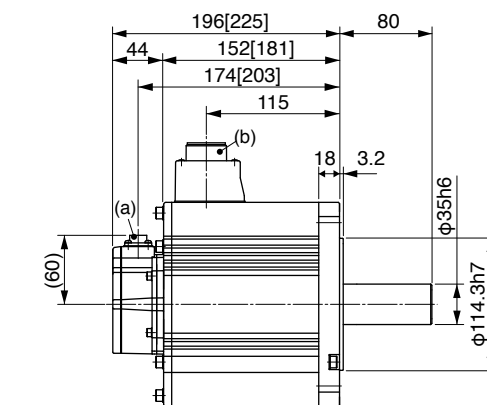


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MHME30□□1 *

[Unit: mm]

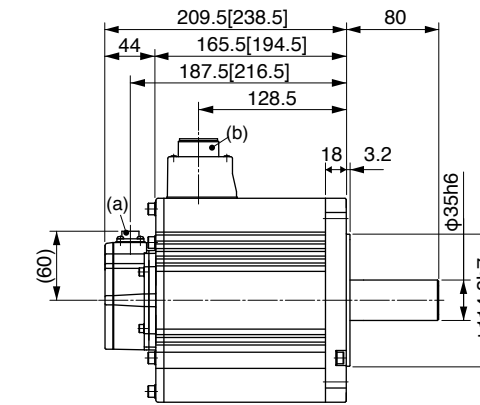


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MHME40□□1 *

[Unit: mm]

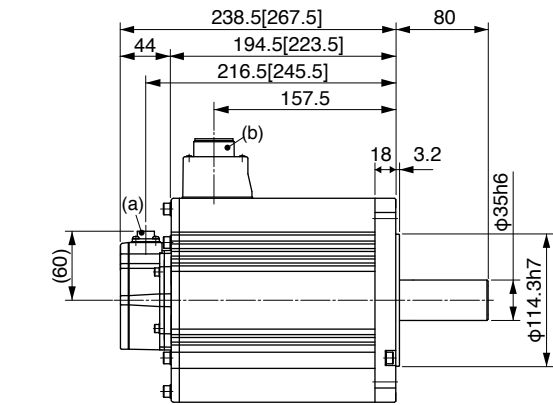


(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

• MHME50□□1 *

[Unit: mm]



(a) Encoder connector
(b) Motor/Brake connector

* Figures in [] represent the dimensions with brake.

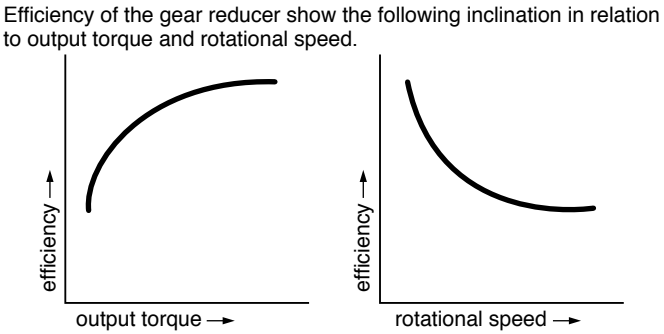
* For motor specifications, refer to IP65 motor page.

Motor Types with Gear Reducer



Reduction ratio	Motor output (W)				Type of reducer
	100	200	400	750	
1/5	●	●	●	●	For high precision
1/9	●	●	●	●	
1/15	●	●	●	●	
1/25	●	●	●	●	

* MHMD 100 W is not prepared.



Specifications of Motor with Gear Reducer

Items		Specifications
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 %
	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
Environment	Protective structure	IP44 (at gear reducer)
	Ambient temperature	0 °C to 40 °C (free from condensation)
	Ambient humidity	85 %RH (free from condensation) or less
	Vibration resistance	49 m/s ² or less (at motor frame)
	Impact resistance	98 m/s ² or less

* For combination of elements of model number, refer to Index.

Model Designation

M

S

M

E

0

1

1

G

3

1

N

Symbol	Type
MSMD	Low inertia 100 W to 750 W
MSME	Low inertia 100 W to 750 W
MHMD	High inertia 200 W to 750 W

Symbol	Specifications
01	100 W
02	200 W
04	400 W
08	750 W

Symbol	Rated output
1	100 V
2	200 V

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	●	●	●	●	

* MHMD 100 W is not prepared.

Symbol	Shaft Key way	Holding brake	
		without	with
3	●	●	
4	●		●

Symbol	Format	Pulse counts	Resolution	Wire
G	Incremental	20-bit	1048576	5
S	Absolute	17-bit	131072	7

* S: can be used in incremental.

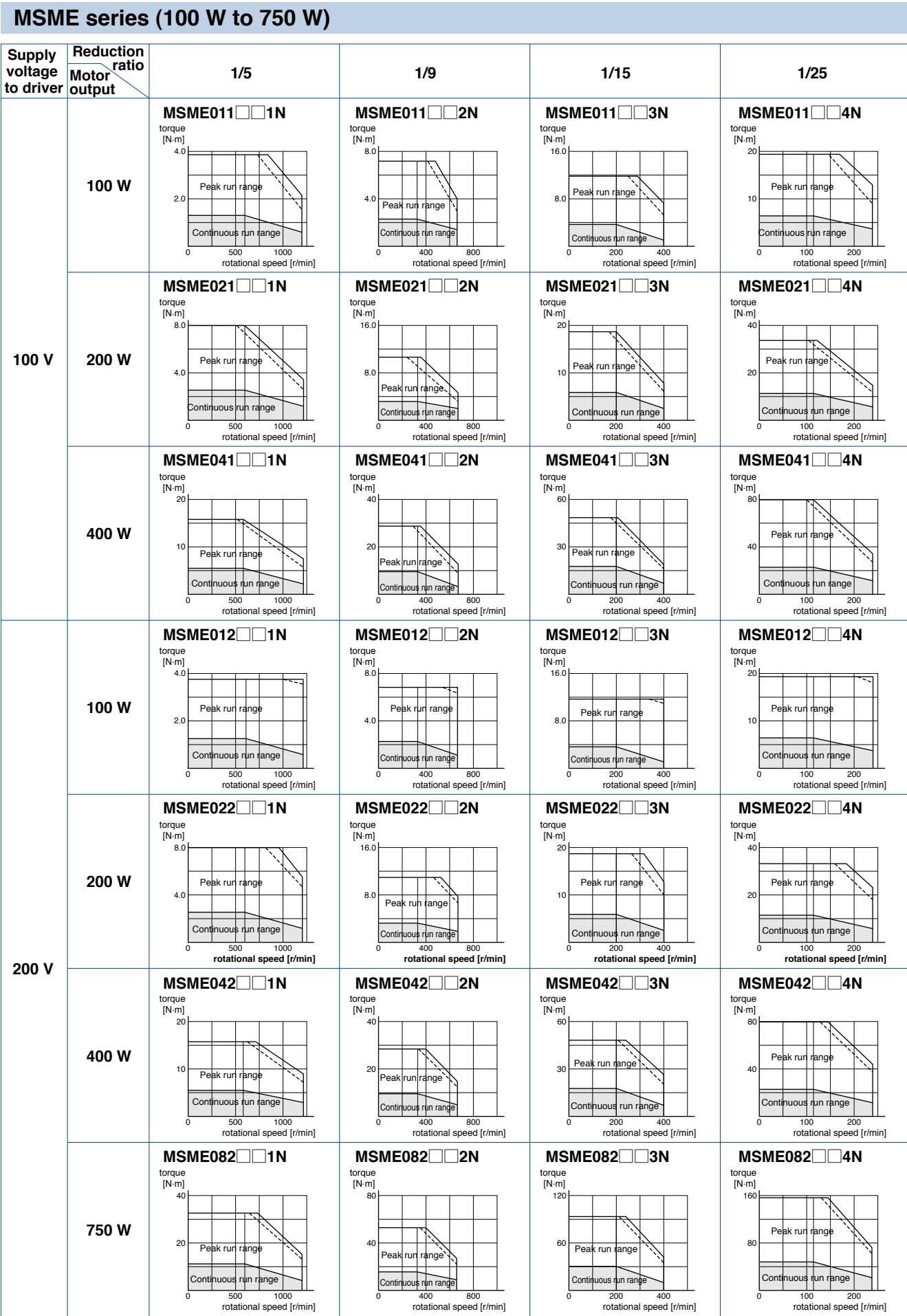
The Combination of the Driver and the Motor with gear reducer

Motor output	100 V		200 V	
	Part No. of motor with gear reducer	Single phase, 100 V	Part No. of motor with gear reducer	Single/3-phase, 200 V
		Part No. of driver		Part No. of driver
100 W	MSME011□□□N MSMD011□□□N	MADHT1107 MADKT1107	MSME012□□□N MSMD012□□□N	MADHT1505 MADKT1505
		MADHT1107E MADKT1107E		MADHT1505E MADKT1505E
200 W	MSME021□□□N MSMD021□□□N MHMD021□□□N	MBDHT2110 MBDKT2110	MSME022□□□N MSMD022□□□N MHMD022□□□N	MADHT1507 MADKT1507
		MBDHT2110E MBDKT2110E		MADHT1507E MADKT1507E
400 W	MSME041□□□N MSMD041□□□N MHMD041□□□N	MCDHT3120 MCDKT3120	MSME042□□□N MSMD042□□□N MHMD042□□□N	MBDHT2510 MBDKT2510
		MCDHT3120E MCDKT3120E		MBDHT2510E MBDKT2510E
750 W	—	—	MSME082□□□N MSMD082□□□N MHMD082□□□N	MCDHT3520 MCDKT3520
				MCDHT3520E MCDKT3520E

* Motor specifications enter to □□□ of the motor model number. Refer to “Model designation”.

Table of Motor Specifications														
Model		Motor Output	Reduction ratio	Output	Rated speed	Max. speed	Rated torque	Peak max. torque	Moment of inertia (motor + reducer/ converted to motor shaft)		Mass		Permissible radial load	Permissible thrust load
									w/o brake	w/ brake	w/o brake	w/ brake		
		(W)	(W)	(r/min)	(r/min)	(N·m)	(N·m)	J (×10 ⁻⁴ kg·m²)	(kg)	(N)	(N)			
MSME Low inertia	MSME01 □□□ 1N	100	1/5	75	600	1200	1.18	3.72	0.091	0.094	1.0	1.2	490	245
	MSME01 □□□ 2N		1/9	80	333	666	2.25	6.86	0.0853	0.0883	1.0	1.2	588	294
	MSME01 □□□ 3N		1/15	80	200	400	3.72	11.4	0.086	0.089	1.15	1.35	784	392
	MSME01 □□□ 4N		1/25	80	120	240	6.27	19.0	0.0885	0.0915	2.15	2.35	1670	833
	MSME02 □□□ 1N	200	1/5	170	600	1200	2.65	8.04	0.258	0.278	1.5	1.92	490	245
	MSME02 □□□ 2N		1/9	132	333	666	3.72	11.3	0.408	0.428	2.48	2.9	1180	588
	MSME02 □□□ 3N		1/15	132	200	400	6.27	18.8	0.44	0.46	2.88	3.3	1470	735
	MSME02 □□□ 4N		1/25	140	120	240	11.1	33.3	0.428	0.448	2.88	3.3	1670	833
	MSME04 □□□ 1N	400	1/5	340	600	1200	5.39	16.2	0.623	0.643	2.9	3.3	980	490
	MSME04 □□□ 2N		1/9	332	333	666	9.51	28.5	0.528	0.548	2.9	3.3	1180	588
	MSME04 □□□ 3N		1/15	332	200	400	15.8	47.5	0.56	0.58	3.3	3.7	1470	735
	MSME04 □□□ 4N		1/25	332	120	240	26.4	79.2	0.56	0.58	4.4	4.8	2060	1030
	MSME082 □□ 1N	750	1/5	672	600	1200	10.7	32.1	1.583	1.683	4.4	5.2	980	490
	MSME082 □□ 2N		1/9	635	333	666	18.2	54.7	1.52	1.62	5.7	6.5	1470	735
	MSME082 □□ 3N		1/15	635	200	400	30.4	91.2	1.57	1.67	6.1	6.9	1760	882
	MSME082 □□ 4N		1/25	635	120	240	50.7	152	1.52	1.62	6.1	6.9	2650	1320
MSMD Low inertia	MSMD01 □□□ 1N	100	1/5	75	600	1000	1.18	3.72	0.091	0.094	1.02	1.23	490	245
	MSMD01 □□□ 2N		1/9	80	333	555	2.25	6.86	0.0853	0.0883	1.02	1.23	588	294
	MSMD01 □□□ 3N		1/15	80	200	333	3.72	11.4	0.086	0.089	1.17	1.38	784	392
	MSMD01 □□□ 4N		1/25	80	120	200	6.27	19.0	0.0885	0.0915	2.17	2.38	1670	833
	MSMD02 □□□ 1N	200	1/5	170	600	1000	2.65	8.04	0.258	0.278	1.54	2.02	490	245
	MSMD02 □□□ 2N		1/9	132	333	555	3.72	11.3	0.408	0.428	2.52	3	1180	588
	MSMD02 □□□ 3N		1/15	132	200	333	6.27	18.8	0.44	0.46	2.92	3.4	1470	735
	MSMD02 □□□ 4N		1/25	140	120	200	11.1	33.3	0.428	0.448	2.92	3.4	1670	833
	MSMD04 □□□ 1N	400	1/5	340	600	1000	5.39	16.2	0.623	0.643	2.9	3.4	980	490
	MSMD04 □□□ 2N		1/9	332	333	555	9.51	28.5	0.528	0.548	2.9	3.4	1180	588
	MSMD04 □□□ 3N		1/15	332	200	333	15.8	47.5	0.56	0.58	3.3	3.8	1470	735
	MSMD04 □□□ 4N		1/25	332	120	200	26.4	79.2	0.56	0.58	4.4	4.9	2060	1030
	MSMD082 □□ 1N	750	1/5	672	600	900	10.7	32.1	1.583	1.683	4.4	5.2	980	490
	MSMD082 □□ 2N		1/9	635	333	500	18.2	54.7	1.52	1.62	5.7	6.5	1470	735
	MSMD082 □□ 3N		1/15	635	200	300	30.4	91.2	1.57	1.67	6.1	6.9	1760	882
	MSMD082 □□ 4N		1/25	635	120	180	50.7	152	1.52	1.62	6.1	6.9	2650	1320
MHMD High inertia	MHMD02 □□□ 1N	200	1/5	170	600	1000	2.65	8.04	0.538	0.568	1.68	2.12	490	245
	MHMD02 □□□ 2N		1/9	132	333	555	3.72	11.3	0.688	0.718	2.66	3.1	1180	588
	MHMD02 □□□ 3N		1/15	132	200	333	6.27	18.8	0.72	0.75	3.06	3.5	1470	735
	MHMD02 □□□ 4N		1/25	140	120	200	11.1	33.3	0.708	0.738	3.06	3.5	1670	833
	MHMD04 □□□ 1N	400	1/5	340	600	1000	5.39	16.2	1.033	1.063	3.1	3.5	980	490
	MHMD04 □□□ 2N		1/9	332	333	555	9.51	28.5	0.938	0.968	3.1	3.5	1180	588
	MHMD04 □□□ 3N		1/15	332	200	333	15.8	47.5	0.97	1.0	3.5	3.9	1470	735
	MHMD04 □□□ 4N		1/25	332	120	200	26.4	79.2	0.97	1.0	4.6	5.0	2060	1030
	MHMD082 □□ 1N	750	1/5	672	600	900	10.7	32.1	2.223	2.323	4.6	5.4	980	490
	MHMD082 □□ 2N		1/9	635	333	500	18.2	54.7	2.16	2.26	5.9	6.7	1470	735
	MHMD082 □□ 3N		1/15	635	200	300	30.4	91.2	2.21	2.31	6.3	7.1	1760	882
	MHMD082 □□ 4N		1/25	635	120	180	50.7	152	2.16	2.26	6.3	7.1	2650	1320

* Motor specifications enter to □□□ of the motor model number. Refer to “Model designation”.



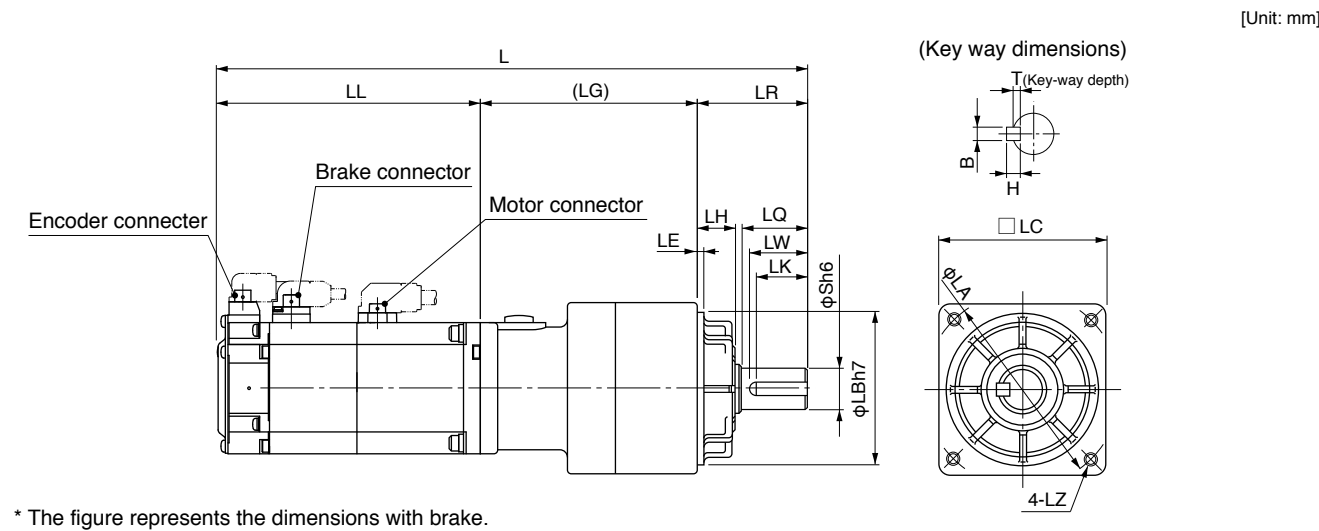
MSMD series (100 W to 750 W)					
Supply voltage to driver	Reduction ratio Motor output	1/5	1/9	1/15	1/25
100 V	100 W	MSMD011□□1N	MSMD011□□2N	MSMD011□□3N	MSMD011□□4N
	200 W	MSMD021□□1N	MSMD021□□2N	MSMD021□□3N	MSMD021□□4N
	400 W	MSMD041□□1N	MSMD041□□2N	MSMD041□□3N	MSMD041□□4N
200 V	100 W	MSMD012□□1N	MSMD012□□2N	MSMD012□□3N	MSMD012□□4N
	200 W	MSMD022□□1N	MSMD022□□2N	MSMD022□□3N	MSMD022□□4N
	400 W	MSMD042□□1N	MSMD042□□2N	MSMD042□□3N	MSMD042□□4N
200 V	750 W	MSMD082□□1N	MSMD082□□2N	MSMD082□□3N	MSMD082□□4N

Dotted line represents the torque at 10 % less supply voltage.

MHMD series (200 W to 750 W)					
Supply voltage to driver	Reduction ratio Motor output	1/5	1/9	1/15	1/25
100 V	200 W	MHMD021□□1N	MHMD021□□2N	MHMD021□□3N	MHMD021□□4N
	400 W	MHMD041□□1N	MHMD041□□2N	MHMD041□□3N	MHMD041□□4N
200 V	200 W	MHMD022□□1N	MHMD022□□2N	MHMD022□□3N	MHMD022□□4N
	400 W	MHMD042□□1N	MHMD042□□2N	MHMD042□□3N	MHMD042□□4N
	750 W	MHMD082□□1N	MHMD082□□2N	MHMD082□□3N	MHMD082□□4N

Dotted line represents the torque at 10 % less supply voltage.

MSME series

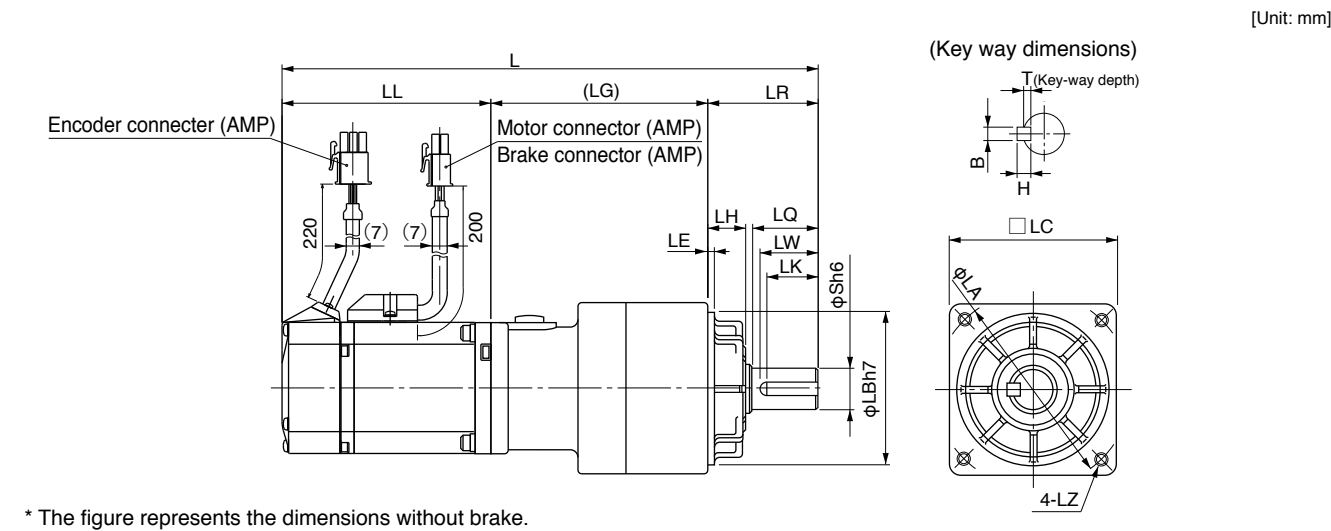


Model	Motor output (W)	Reduction ratio	L	LL	LR	LQ	LC	LB	LA	S	LH	LZ	LW	(LG)	LE	Key way B×H×LK	T												
MSME01□□□1N	100	1/5	191.5	92	32	20	52	50	60	12	10	M5 Depth 12	18	67.5		4×4×16	2.5												
			221.5	122																									
MSME01□□□2N		1/9	191.5	92														78											
			221.5	122																									
MSME01□□□3N		1/15	202	92										50					30	78	70	90	19	17	M6 Depth 20	26	92	6×6×22	3.5
			232	122																									
MSME01□□□4N	1/25	234	92	264	122																								
		264	122																										
MSME02□□□1N	200	1/5	184	79.5	32	20	52	50	60	12	10	M5 Depth 12	18		72.5	3	4×4×16	2.5											
			220.5	116																									
MSME02□□□2N		1/9	219	79.5										89.5															
			255.5	116																									
MSME02□□□3N		1/15	229.5	79.5											50				30	78	70	90	19	17	M6 Depth 20	26	100	6×6×22	3.5
			266	116																									
MSME02□□□4N	1/25	229.5	79.5	266	116																								
		266	116																										
MSME04□□□1N	400	1/5	238.5	99	50	30	78	70	90	19	17	M6 Depth 20	26	89.5			6×6×22	3.5											
			275	135.5																									
MSME04□□□2N		1/9	238.5	99											100														
			275	135.5																									
MSME04□□□3N		1/15	249	99										61					40	98	90	115	24	18	M8 Depth 20	35	100	5	8×7×30
			285.5	135.5																									
MSME04□□□4N	1/25	264	99	300.5	135.5																								
		300.5	135.5																										
MSME082□□1N	750	1/5	255.7	112.2	50	30	78	70	90	19	17	M6 Depth 20	26		93.5	3	6×6×22	3.5											
			291.7	148.2																									
MSME082□□2N		1/9	270.7	112.2										61					40	98	90	115	24	18	M8 Depth 20	35	97.5	5	8×7×30
			306.7	148.2																									
MSME082□□3N		1/15	283.2	112.2											319.2														
			319.2	148.2																									
MSME082□□4N	1/25	283.2	112.2	319.2	148.2																								
		319.2	148.2																										

Upper column: without brake

Lower column: with brake

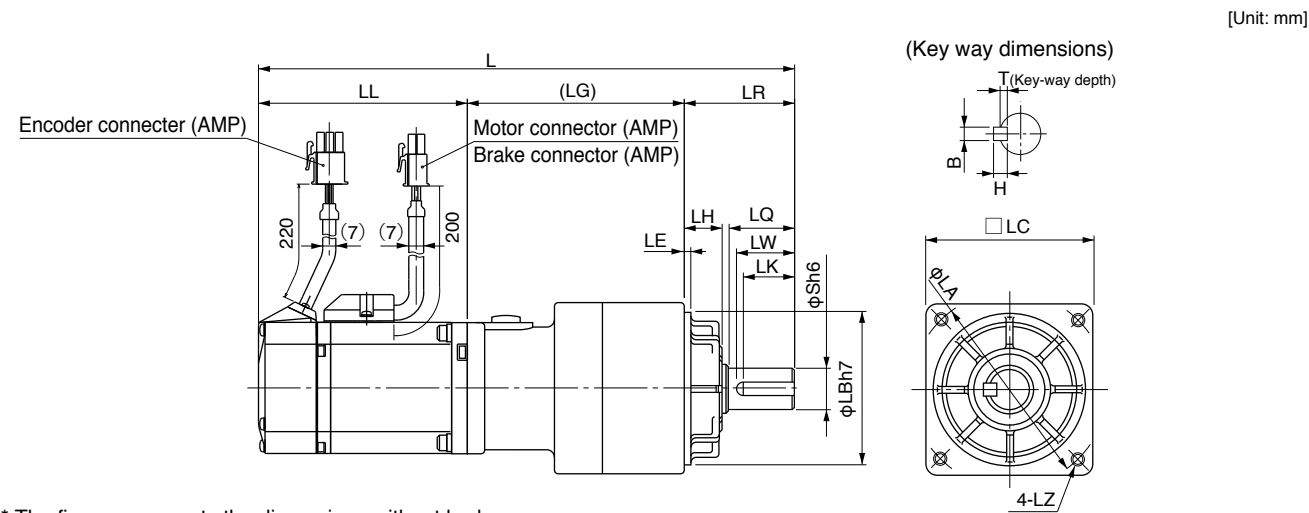
MSMD series



Model	Motor output (W)	Reduction ratio	L	LL	LR	LQ	LC	LB	LA	S	LH	LZ	LW	(LG)	LE	Key way B×H×LK	T													
MSMD01□□□1N	100	1/5	191.5	92	32	20	52	50	60	12	10	M5 Depth 12	18	67.5		4×4×16	2.5													
MSMD01□□□2N			1/9	191.5														92												
MSMD01□□□3N		1/15		202														92	78											
MSMD01□□□4N			1/25	234										92				50		30	78	70	90	19	17	M6 Depth 20	26	92	6×6×22	3.5
		264		122																										
MSMD02□□□1N		200	1/5	184										79.5				32	20	52	50	60	12	10	M5 Depth 12	18	72.5	3	4×4×16	2.5
	MSMD02□□□2N			1/9	219	79.5																								
	MSMD02□□□3N		1/15		229.5	79.5	89.5																							
	MSMD02□□□4N			1/25	266	116		100																						
			229.5		79.5	266	116																							
	MSMD04□□□1N		400	1/5	238.5	99	50	30	78	70	90	19	17	M6 Depth 20	26	89.5											6×6×22			
MSMD04□□□2N		1/9			238.5	99																								
MSMD04□□□3N				1/15	249	99												100												
MSMD04□□□4N		1/25			285.5	135.5																								
				264	99	61										40		98	90	115	24	18	M8 Depth 20	35	104	5		8×7×30	4	
300.5		135.5																												
MSMD082□□1N	750	1/5	255.7	112.2	50	30	78	70	90	19	17	M6 Depth 20	26	93.5	3	6×6×22	3.5													
			292.7	149.2																										
		MSMD082□□2N	1/9	270.7														112.2	61	40	98	90	115	24	18	M8 Depth 20	35	97.5	5	8×7×30
		307.7		149.2																										
		MSMD082□□3N	1/15	283.2										112.2				110												
		320.2		149.2																										
MSMD082□□4N	1/25	283.2	112.2																											
		320.2	149.2																											

Upper column: without brake

Lower column: with brake



* The figure represents the dimensions without brake.

Model	Motor output (W)	Reduction ratio	L	LL	LR	LQ	LC	LB	LA	S	LH	LZ	LW	(LG)	LE	Key way B×H×LK	T												
MHMD02□□□1N	200	1/5	203.5	99	32	20	52	50	60	12	10	M5 Depth 12	18	72.5	3	4×4×16	2.5												
240			135.5																										
MHMD02□□□2N		1/9	238.5	99	50	30	78	70	90	19	17	M6 Depth 20	26	89.5		6×6×22	3.5												
275			135.5																										
MHMD02□□□3N		1/15	249	99										100															
285.5			135.5																										
MHMD02□□□4N		1/25	249	99										100															
285.5			135.5																										
MHMD04□□□1N		1/5	258	118.5										61				40	98	90	115	24	18	M8 Depth 20	35	89.5	5	8×7×30	4
294.5			155																										
MHMD04□□□2N	1/9	258	118.5	100																									
294.5		155																											
MHMD04□□□3N	1/15	268.5	118.5	104																									
305		155																											
MHMD04□□□4N	1/25	283.5	118.5	104																									
320		155																											
MHMD082□□1N	750	1/5	270.7	127.2	50	30	78	70	90	19	17	M6 Depth 20	26		93.5	3	6×6×22									3.5			
307.7			164.2																										
MHMD082□□2N		1/9	285.7	127.2	61	40	98	90	115	24	18	M8 Depth 20	35	97.5	5	8×7×30	4												
322.7			164.2																										
MHMD082□□3N		1/15	298.2	127.2										110															
335.2			164.2																										
MHMD082□□4N		1/25	298.2	127.2										110															
335.2			164.2																										

Upper column: without brake

Lower column: with brake

- Line-up IP65 motor: 200 W to 5.0 kW
- Max speed: 5000 r/min (MSMJ, MHMJ)
- Low inertia (MSME) to High inertia (MHME).
- 20-bit incremental encoder (1048576 pulse)
- 17-bit absolute encoder (131072 pulse).

Motors displayed at P.151 to P.181 are Special Order Product. Please contact us for more information.

Small capacity	MSMJ Low inertia Max. speed : 5000 r/min : 4500 r/min (750 W) Rated speed : 3000 r/min Rated output : 200 W to 750 W Enclosure : IP65	MHMJ High inertia Max. speed : 5000 r/min : 4500 r/min (750 W) Rated speed : 3000 r/min Rated output : 200 W to 750 W Enclosure : IP65
	MSME Low inertia Max. speed : 5000 r/min : 4500 r/min (from 4.0 kW) Rated speed : 3000 r/min Rated output : 1.0 kW to 5.0 kW Enclosure : IP65	MDME Middle inertia Max. speed : 3000 r/min Rated speed : 2000 r/min Rated output : IP65 1.0 kW to 5.0 kW Enclosure : IP65
Middle capacity	MGME (Low speed/ High torque type) High inertia Max. speed : 2000 r/min Rated speed : 1000 r/min Rated output : IP65 0.9 kW to 3.0 kW Enclosure : IP65	MHME High inertia Max. speed : 3000 r/min Rated speed : 2000 r/min Rated output : IP65 1.0 kW to 5.0 kW Enclosure : IP65

MHME (200 V)
1.0 kW to 5.0 kW P.176

151

Servo Motor

M S M E 5 0 2 G C C M *

Special specifications

MSMJ, MHMJ
Special specifications

MSME, MDME, MGME, MHME
M: Special Order Product

Symbol	Type
MSMJ	Low inertia (200 W to 750 W)
MSME	Low inertia (1.0 kW to 5.0 kW)

Symbol	Type
MSMJ	Low inertia (200 W to 750 W)
MSME	Low inertia (1.0 kW to 5.0 kW)
MDME	Middle inertia (1.0 kW to 5.0 kW)
MGME	High inertia (0.9 kW to 3.0 kW)
MHMJ	High inertia (200 W to 750 W)
MHME	High inertia (1.0 kW to 5.0 kW)

Symbol	Rated output
02	200 W
04	400 W
08	750 W
09	0.9 kW
10	1.0 kW
15	1.5 kW
20	2.0 kW
30	3.0 kW
40	4.0 kW
50	5.0 kW

Symbol	Format	Pulse counts	Resolution	Wires
G	Incremental	20-bit	1048576	5
S	Absolute	17-bit	131072	7

Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Symbol	Frame
MAD	Frame A
MBD	Frame B
MCD	Frame C
MDD	Frame D
MED	Frame E
MFD	Frame F

Symbol	Velocity, Position, Torque, Full-Closed type	Position control type
K	A5 Π series	A5 Π E series

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way, center tap	without	with	without	with
A	●		●		●	
B	●			●	●	
C	●		●			●
D	●			●		●
S		●	●		●	
T		●		●	●	
U		●	●			●
V		●		●		●

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Symbol	Specifications
C	IP65 motor (MSME, MDME, MGME, MHME)
1	IP65 motor (MSMJ, MHMJ)

Symbol	Specifications
3	3-phase, 200 V
5	Single/3-phase, 200 V

Symbol	Current rating
T1	10 A
T2	15 A
T3	30 A
T5	50 A
T7	75 A
TA	100 A
TB	150 A

Symbol	Specifications
07	7.5 A
10	10 A
20	20 A
30	30 A
40	40 A
64	64 A
90	90 A
A2	120 A

A5 Family

Motor					Driver			Power capacity (at rated load (kVA)	Optional parts															
Motor series	Power supply	Output (W)	Part No. Note) 1	Rating/ Spec. (page)	A5II series Part No. (Speed, Position, Torque, Full-Closed type)	A5IIE series Part No. (Position control type Note) 2	Frame		Encoder Cable		Motor Cable		Brake Cable	External Regenerative Resistor	Reactor (Single phase 3-phase)	Noise Filter (Single phase 3-phase)								
									20-bit Incremental Note) 3	17-bit Absolute Note) 2,3,7	without Brake Note) 3	with Brake Note) 3	Note) 3											
Low inertia	MSMJ (Leadwire type) 3000 r/min	Single phase/ 3-phase 200 V	200	MSMJ022 □ 1 *	155	MADKT1507	MADKT1507E	A-frame	Approx. 0.5	MFECA 0**0EAM	MFECA 0**0EAE Note) 4		MFMCA 0**0EED		MFMCB 0**0GET	DV0P4283	DV0P227 DV0P220	DV0P4170						
			400	MSMJ042 □ 1 *	156	MBDKT2510	MBDKT2510E	B-frame	Approx. 0.9								DV0PM20042							
			750	MSMJ082 □ 1 *	157	MCDKT3520	MCDKT3520E	C-frame	Approx. 1.3								DV0P228 DV0P220	DV0PM20042						
	MSME 3000 r/min	Single phase/ 3-phase 200 V	1000	MSME102 □ C * M	158	MDDKT5540	MDDKT5540E	D-frame	Approx. 1.8	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P228 DV0P222 DV0PM20047 DV0P222	DV0P4220						
			1500	MSME152 □ C * M	159	MDDKT5540	MDDKT5540E		Approx. 2.3								DV0P4285 Note) 5	DV0P223	DV0PM20043					
		3-phase 200 V	2000	MSME202 □ C * M	160	MEDKT7364	MEDKT7364E	E-frame	Approx. 3.3				MFMCA 0**3ECT	MFMCA 0**3FCT	DV0P4285 x2 in parallel	—	Note) 6	DV0P224	DV0P3410					
			3000	MSME302 □ C * M	161	MFDKTA390	MFDKTA390E	F-frame	Approx. 4.5									DV0P225	DV0P3410					
			4000	MSME402 □ C * M	162	MFDKTB3A2	MFDKTB3A2E		Approx. 6									—	—					
			5000	MSME502 □ C * M	163	MFDKTB3A2	MFDKTB3A2E	Approx. 7.5																
			Middle inertia	MDME 2000 r/min	Single phase/ 3-phase 200 V	1000	MDME102 □ C * M	164	MDDKT3530				MDDKT3530E	D-frame				Approx. 1.8	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCA 0**2FCD	—
	1500	MDME152 □ C * M				165	MDDKT5540	MDDKT5540E	Approx. 2.3				DV0P4285 Note) 5		DV0P223	DV0PM20043								
	3-phase 200 V	2000			MDME202 □ C * M	166	MEDKT7364	MEDKT7364E	E-frame				Approx. 3.3	MFMCA 0**3ECT	MFMCA 0**3FCT	DV0P4285 x2 in parallel	—	Note) 6				DV0P224	DV0P3410	
		3000			MDME302 □ C * M	167	MFDKTA390	MFDKTA390E	F-frame				Approx. 4.5									DV0P225	DV0P3410	
4000		MDME402 □ C * M			168	MFDKTB3A2	MFDKTB3A2E	Approx. 6					—									—		
5000		MDME502 □ C * M			169	MFDKTB3A2	MFDKTB3A2E	Approx. 7.5																
MGME (Low speed/ High torque type) 1000 r/min	Single phase/ 3-phase 200 V	900		MGME092 □ C * M	170	MDDKT5540	MDDKT5540E	D-frame	Approx. 1.8				MFMCD 0**2ECD	MFMCA **2FCD	DV0P4284	DV0P228 DV0P221	DV0P4220							
		2000		MGME202 □ C * M	171	MFDKTA390	MFDKTA390E	F-frame	Approx. 3.8									DV0P4285 x2 in parallel	DV0P223 DV0P224	DV0P3410				
	3-phase 200 V	3000		MGME302 □ C * M	172	MFDKTB3A2	MFDKTB3A2E		Approx. 4.5															
High inertia	MHMJ (Leadwire type) 3000 r/min	Single phase/ 3-phase 200 V		200	MHMJ022 □ 1 *	173	MADKT1507	MADKT1507E	A-frame				Approx. 0.5	MFECA 0**0EAM	MFECA 0**0EAE Note) 4		MFMCA 0**0EED		MFMCB 0**0GET	DV0P4283	DV0P227 DV0P220	DV0P4170		
				400	MHMJ042 □ 1 *	174	MBDKT2510	MBDKT2510E	B-frame				Approx. 0.9								DV0PM20042			
				750	MHMJ082 □ 1 *	175	MCDKT3520	MCDKT3520E	C-frame				Approx. 1.3								DV0P228 DV0P220	DV0PM20042		
	MHME 2000 r/min	Single phase/ 3-phase 200 V		1000	MHME102 □ C * M	176	MDDKT3530	MDDKT3530E	D-frame				Approx. 1.8	MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P228 DV0P222 DV0PM20047 DV0P222	DV0P4220		
			1500	MHME152 □ C * M	177	MDDKT5540	MDDKT5540E	Approx. 2.3					DV0P4285 Note) 5								DV0P223	DV0PM20043		
		3-phase 200 V	2000	MHME202 □ C * M	178	MEDKT7364	MEDKT7364E	E-frame	Approx. 3.3	MFMCE 0**2ECD	MFMCE 0**2FCD	DV0P4285 x2 in parallel	—				Note) 6	DV0P224		DV0P3410				
			3000	MHME302 □ C * M	179	MFDKTA390	MFDKTA390E	F-frame	Approx. 4.5									DV0P225		DV0P3410				
			4000	MHME402 □ C * M	180	MFDKTB3A2	MFDKTB3A2E		Approx. 6															
			5000	MHME502 □ C * M	181	MFDKTB3A2	MFDKTB3A2E		Approx. 7.5															

Note) 1 Rotary encoder specifications: □ Motor specification: * (refer to P.152)

Note) 2 Because A5IIE series drivers (dedicated for position control) do not support the 17-bit absolute specification, only 20-bit incremental type can be used in combination.

Note) 3 Cable length: ** (03: 3 m, 05: 5 m, 10: 10 m, 20: 20 m), (Example. 3 m: MFECA0030EAM)

Note) 4 When you use a 17-bit absolute encoder as an incremental encoder, please use the encoder cable MFECA0**0EAD.

Note) 5 Other combinations exist, and refer to P.210 for details.

Note) 6 Reactor should be prepared by the user.

<Cautions> Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Options				
Title			Part No.	Page
Interface Cable			DV0P4360	197
Interface Conversion Cable			DV0P4120	
			DV0P4121	
			DV0P4130	
			DV0P4131	
			DV0P4132	
Connector Kit for Power Supply Input Connection	A-frame to D-frame	Single row type	DV0PM20032	200
		Double row type	DV0PM20033	
	E-frame	DV0PM20044		
Connector Kit for Motor Connection	A-frame to D-frame		DV0PM20034	201
	E-frame		DV0PM20046	
Connector Kit for Regenerative Resistor	E-frame		DV0PM20045	
Connector Kit for Motor/Encoder Connection			DV0P4290	202
			DV0P4310	204
			DV0P4320	
			DV0P4330	205
			DV0P4340	
			DV0P4380	202
Connector Kit	RS485, RS232		DV0PM20024	198
	Safety		DV0PM20025	
	Interface		DV0P4350	
	External Scale		DV0PM20026	199
	Encoder		DV0PM20010	
	Analog Monitor Signal		DV0PM20031	
Battery For Absolute Encoder			DV0P2990	207
Battery Box Note) 7			DV0P4430	
Mounting Bracket	A-frame		DV0PM20027	208
	B-frame		DV0PM20028	
	C-frame		DV0PM20029	
	D-frame		DV0PM20030	
Encoder Cable	without Battery Box		MFECA0**0EAD	188
			MFECA0**0EAM	
			MFECA0**0ESD	189
	with Battery Box Note) 7		MFECA0**0EAE	188
			MFECA0**0ESE	190
Motor Cable	without Brake		MFMCA0**0EED	191
			MFMCD0**2ECD	192
			MFMCE0**2ECD	
	with Brake		MFMCA0**3ECT	193
			MFMCA0**2FCD	194
			MFMCA0**3FCT	195
Brake Cable			MFMCB0**0GET	196
External Regenerative Resistor	A-frame		DV0P4283	210
	B-frame			
	C-frame			
	D-frame		DV0P4284	
	E-frame		DV0P4285	
	F-frame			
Reactor	DV0P220, DV0P221, DV0P222, DV0P223, DV0P224, DV0P225, DV0P227, DV0P228, DV0PM20047			209
Noise Filter	DV0P4170, DV0PM20042 DV0P4220, DV0PM20043			250
	DV0P3410			251
Surge Absorber	Single phase		DV0P4190	253
	3-phase		DV0P1450	
Noise Filter for Signal Lines			DV0P1460	254

Note) 7 Please note that a battery is not supplied together with 17-bit absolute encoder cable (with battery box).
Please buy the battery part number “DV0P2990” separately.

<Cautions> 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	IP65	MSMJ022G1□	MSMJ022S1□
	IP67	—	—
Applicable driver *2	Model No.	A5I series	MADKT1507
	A5IE series	MADKT1507E	—
Frame symbol		A-frame	
Power supply capacity (kVA)		0.5	
Rated output (W)		200	
Rated torque (N·m)		0.64	
Momentary Max. peak torque (N·m)		1.91	
Rated current (A(rms))		1.6	
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)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		0.14
	With brake		0.16
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	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.183)

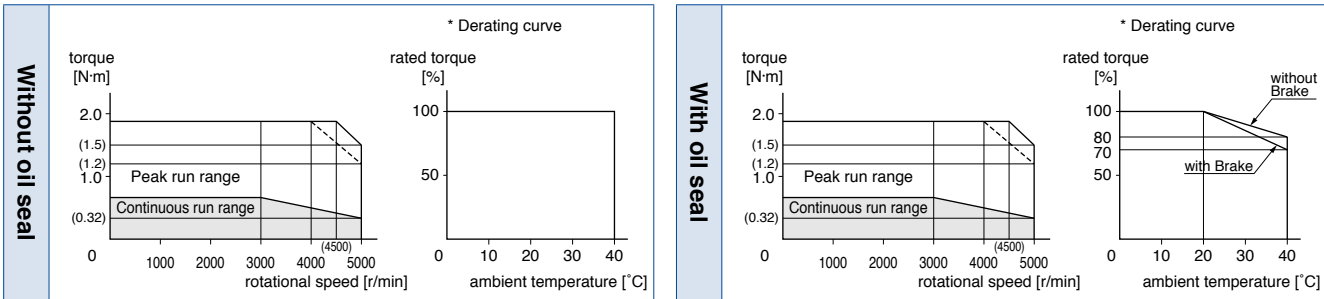
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.42.

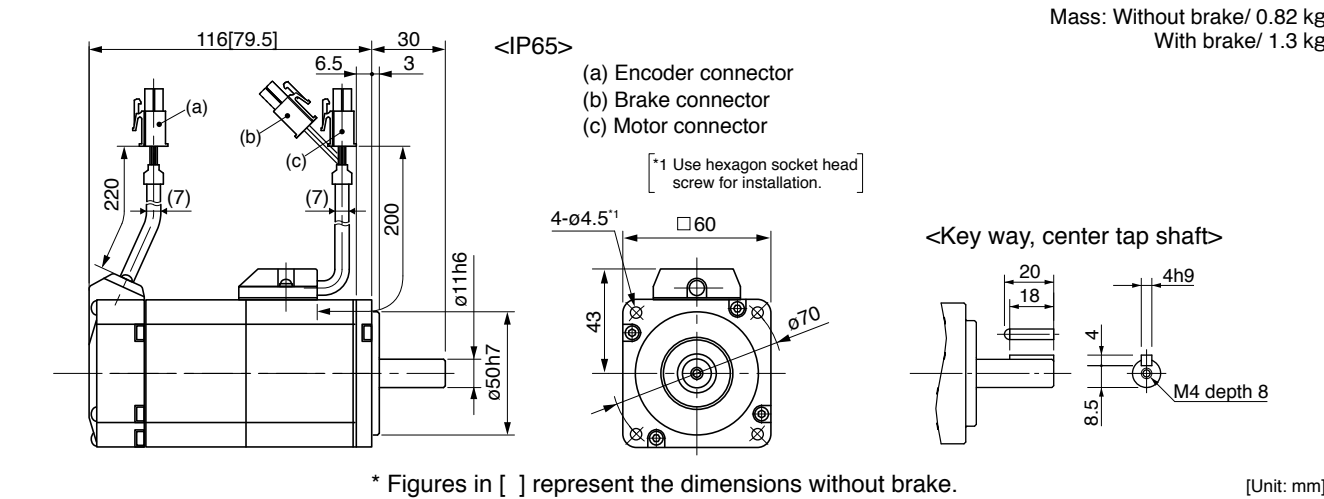
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



• Please contact us for more information.

Specifications

			AC200 V	
Motor model *1	IP65		MSMJ082G1□	MSMJ082S1□
	IP67		—	—
Applicable driver *2	Model No.	A5II series	MCDKT3520	
		A5IE series	MCDKT3520E	—
	Frame symbol		C-frame	
Power supply capacity (kVA)			1.3	
Rated output (W)			750	
Rated torque (N·m)			2.4	
Momentary Max. peak torque (N·m)			7.1	
Rated current (A(rms))			4.0	
Max. current (A(o-p))			17.0	
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)			4500	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.87	
		With brake	0.97	
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
			Resolution per single turn	
			1048576	131072

- **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

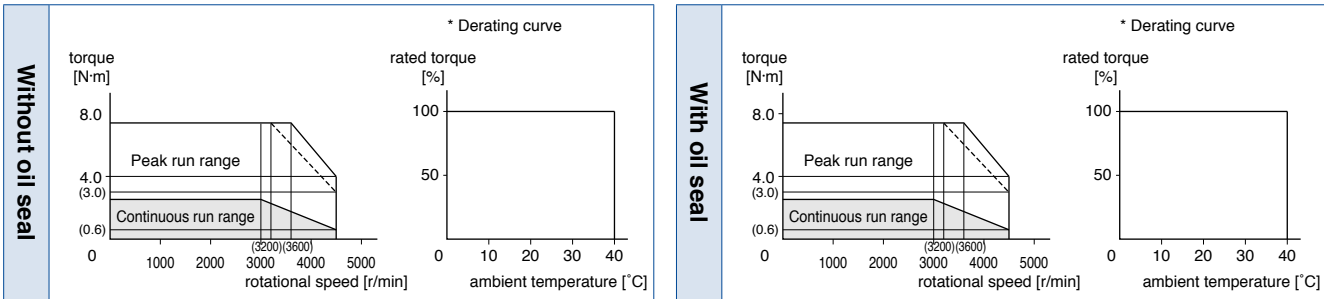
Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

- **Permissible load** (For details, refer to P.183)

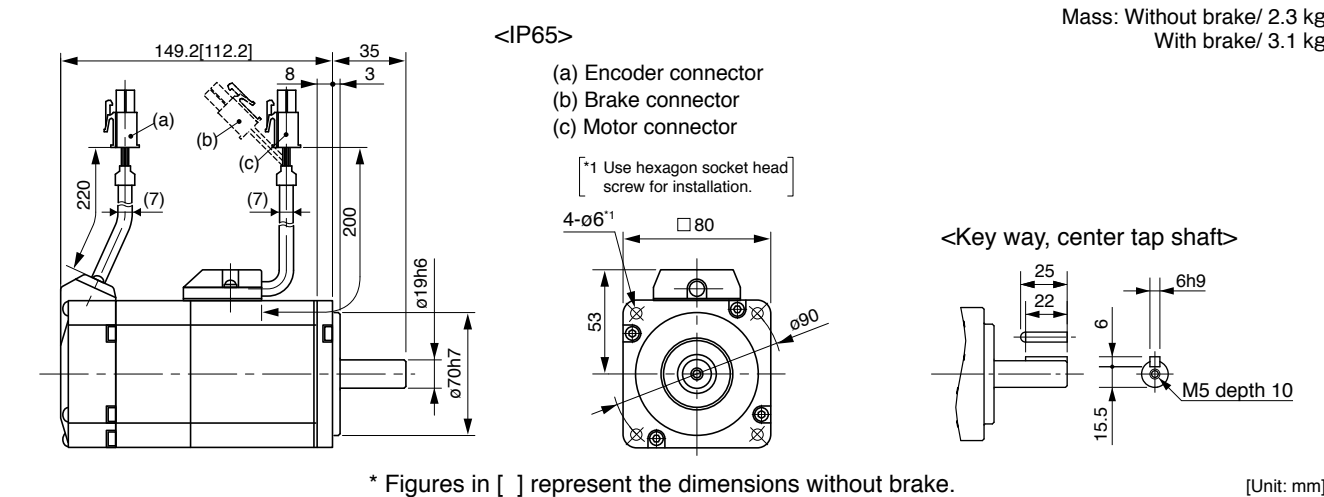
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.
*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



• Please contact us for more information.

Specifications

		AC200 V	
Motor model *1	IP65	MSME152GC□M	MSME152SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5II series	MDDKT5540
	A5IE series	MDDKT5540E	—
	Frame symbol	D-frame	
Power supply capacity (kVA)		2.3	
Rated output (W)		1500	
Rated torque (N·m)		4.77	
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) Note)1	Without option	No limit	Note)2
	DV0P4284	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	2.84	
	With brake	3.17	
Recommended moment of inertia ratio of the load and the rotor		15 times or less	
Rotary encoder specifications	Note)5	20-bit Incremental	17-bit Absolute
		Resolution per single turn	1048576 131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

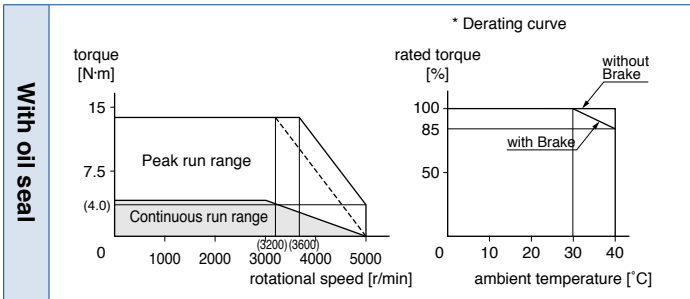
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

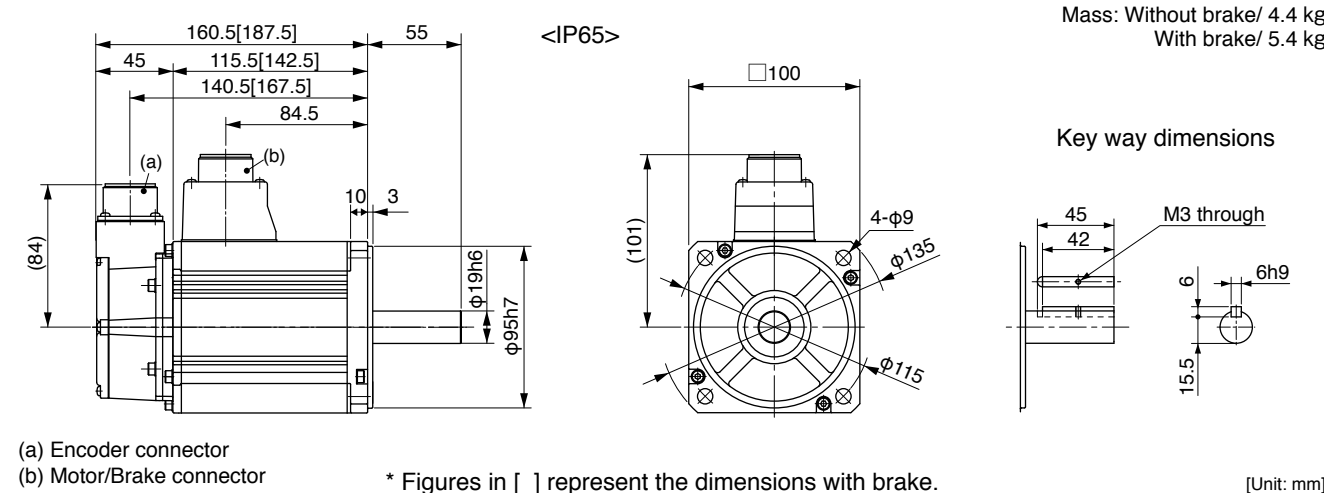
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<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	IP65	MSME202GC□M	MSME202SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5II series	MEDKT7364
	A5IE series	MEDKT7364E	—
	Frame symbol	E-frame	
Power supply capacity (kVA)		3.3	
Rated output (W)		2000	
Rated torque (N·m)		6.37	
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) Note)1	Without option	No limit	Note)2
	DV0P4285	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	3.68	
	With brake	4.01	
Recommended moment of inertia ratio of the load and the rotor		15 times or less	
Rotary encoder specifications	Note)5	20-bit Incremental	17-bit Absolute
		Resolution per single turn	1048576 131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

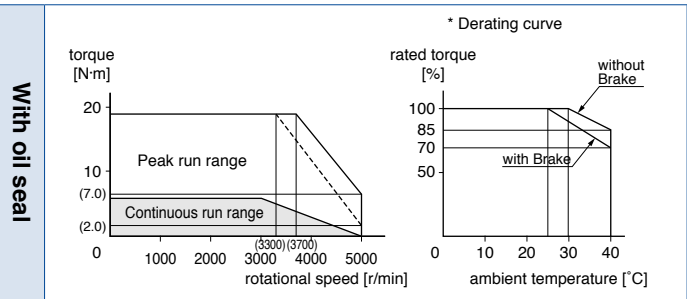
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.44.

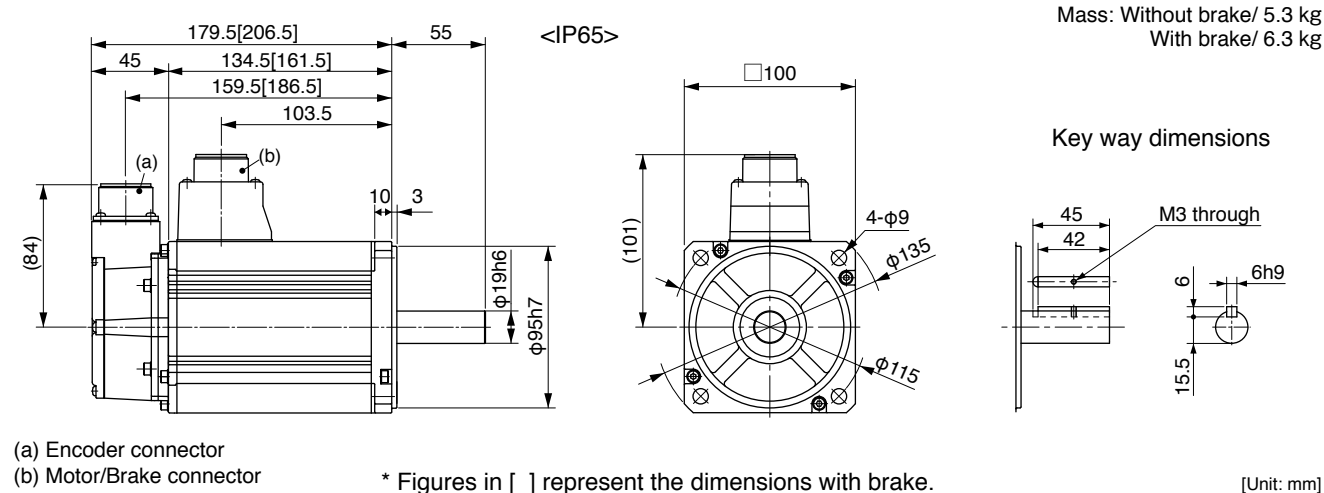
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<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 *1	IP65	MSME302GC□M	MSME302SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5II series	MFDKTA390
	A5IE series	MFDKTA390E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		4.5	
Rated output (W)		3000	
Rated torque (N·m)		9.55	
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) Note)1	Without option	No limit	Note)2
	DV0P4285×2	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	6.50	
	With brake	7.85	
Recommended moment of inertia ratio of the load and the rotor		15 times or less	
Rotary encoder specifications	Note)5	20-bit Incremental	17-bit Absolute
		Resolution per single turn	1048576 131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	11.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

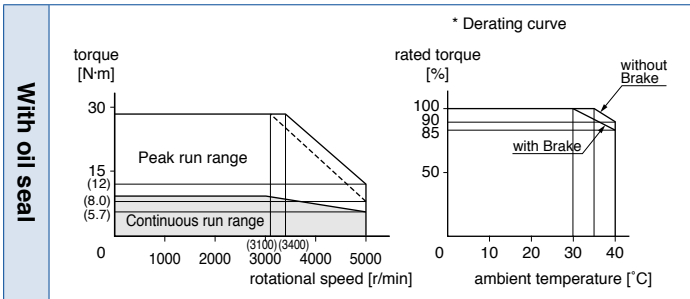
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

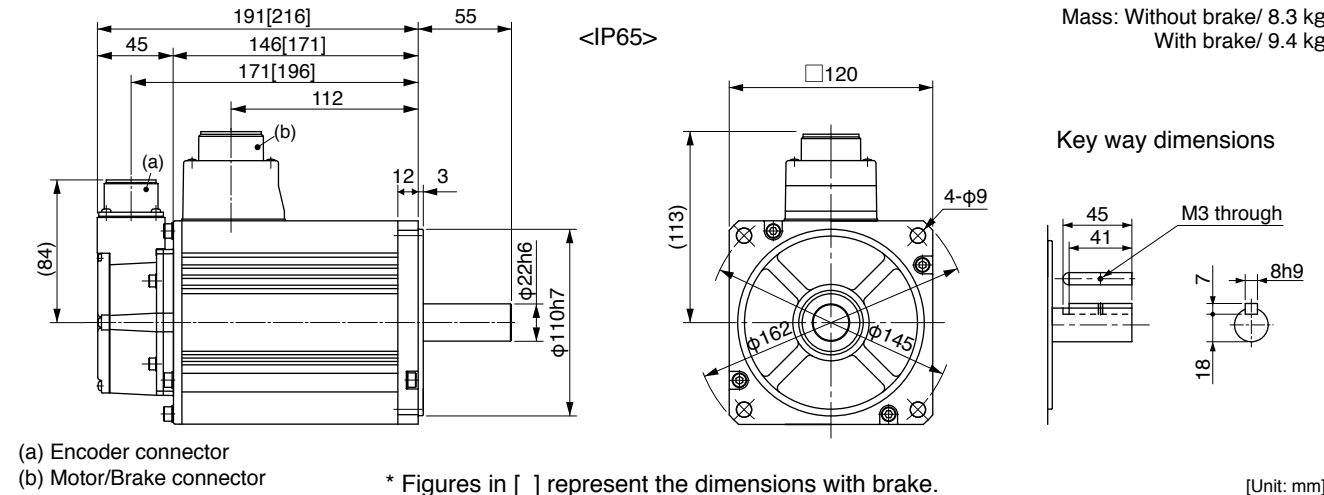
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<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 *1	IP65	MSME402GC□M	MSME402SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5II series	MFDKTB3A2
	A5IE series	MFDKTB3A2E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		6.0	
Rated output (W)		4000	
Rated torque (N·m)		12.7	
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) Note)1	Without option	No limit	Note)2
	DV0P4285×2	No limit	Note)2
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		4500	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	12.9	
	With brake	14.2	
Recommended moment of inertia ratio of the load and the rotor		15 times or less	
Rotary encoder specifications	Note)5	20-bit Incremental	17-bit Absolute
		Resolution per single turn	1048576 131072

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

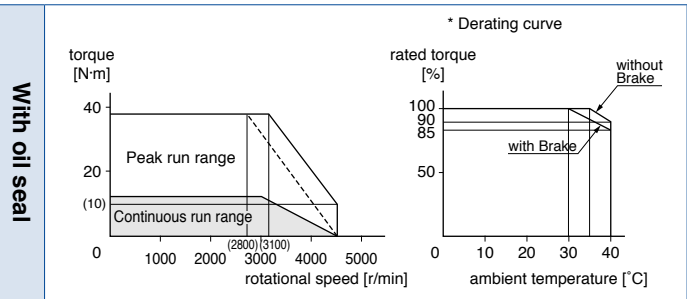
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

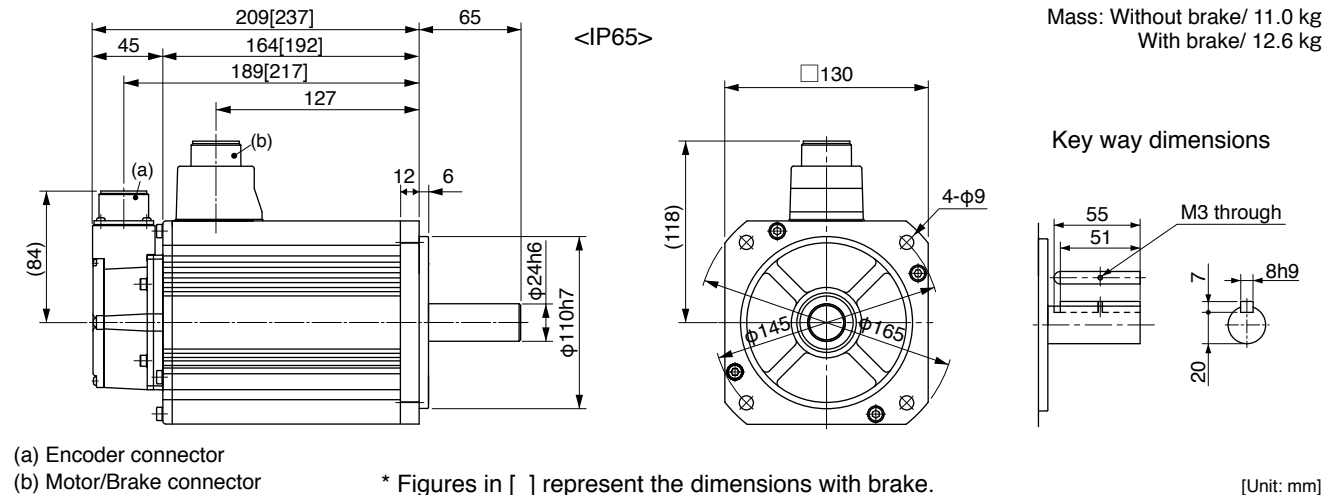
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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Specifications

		AC200 V	
Motor model *1	IP65	MSME502GC□M	MSME502SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5II series	MFDKTB3A2
	A5IE series	MFDKTB3A2E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		7.5	
Rated output (W)		5000	
Rated torque (N·m)		15.9	
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) Note)1	Without option	357	
	DV0P4285×2	No limit Note)2	
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		4500	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	17.4	
	With brake	18.6	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

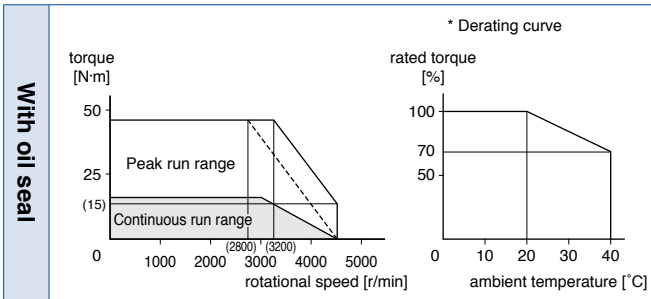
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

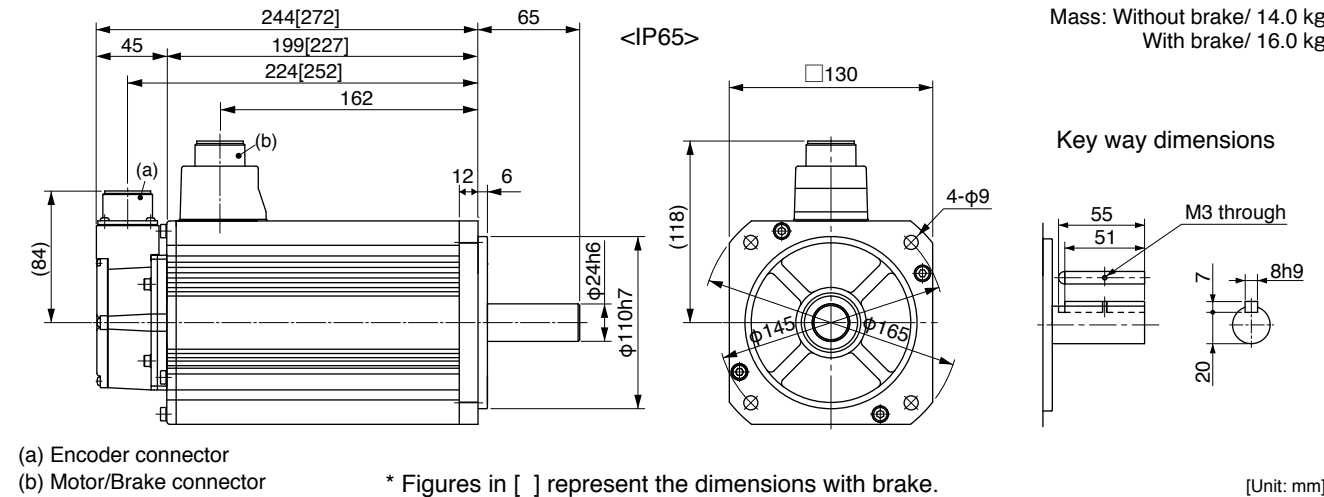
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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Specifications

		AC200 V	
Motor model *1	IP65	MDME102GC□M	MDME102SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5II series	MDDKT3530
	A5IE series	MDDKT3530E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		1.8	
Rated output (W)		1000	
Rated torque (N·m)		4.77	
Momentary Max. peak torque (N·m)		14.3	
Rated current (A(rms))		5.7	
Max. current (A(o-p))		24	
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2	
	DV0P4284	No limit Note)2	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	4.60	
	With brake	5.90	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576	131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

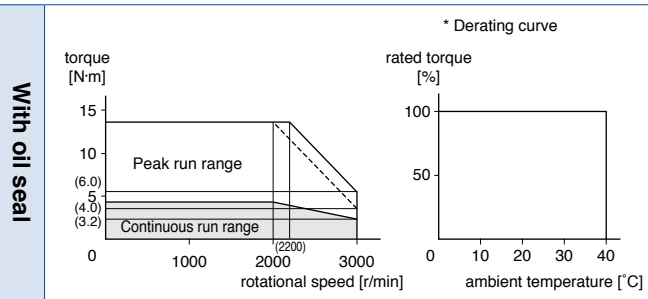
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

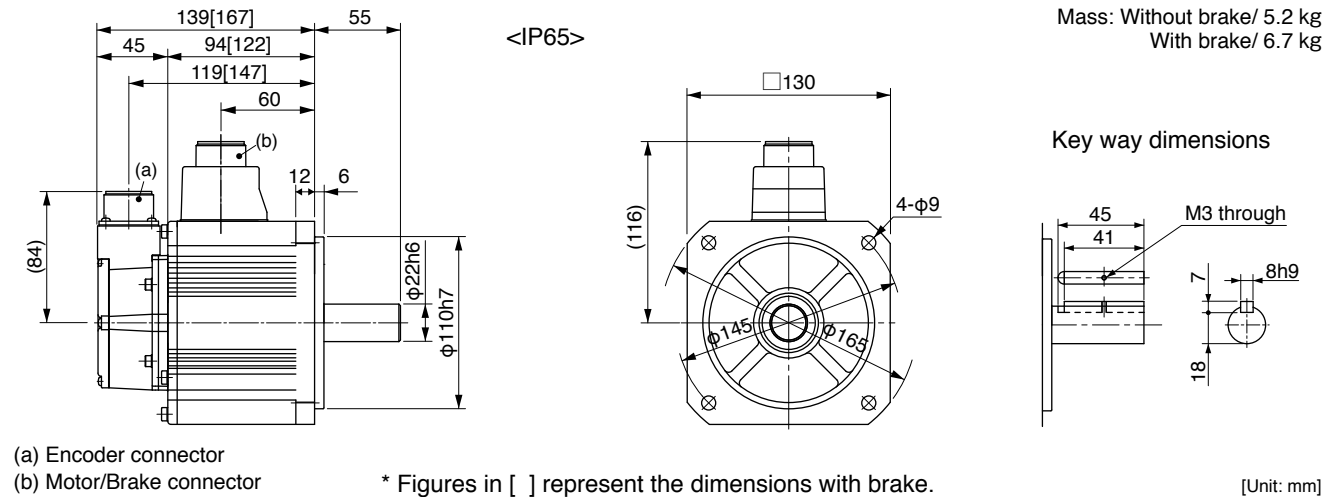
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<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.

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Specifications

		AC200 V	
Motor model *1	IP65	MDME152GC□M	MDME152SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5I series	MDDKT5540
	A5IE series	MDDKT5540E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		2.3	
Rated output (W)		1500	
Rated torque (N·m)		7.16	
Momentary Max. peak torque (N·m)		21.5	
Rated current (A(rms))		9.4	
Max. current (A(o-p))		40	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2
	DV0P4284		No limit Note)2
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		6.70
	With brake		7.99
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

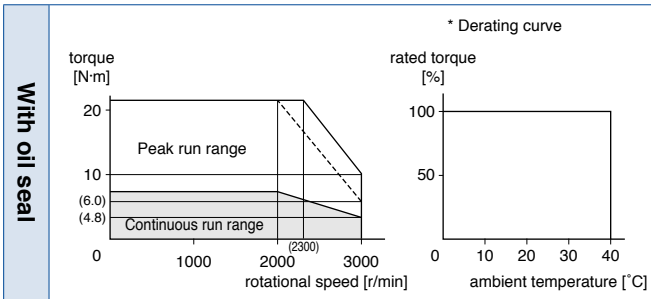
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

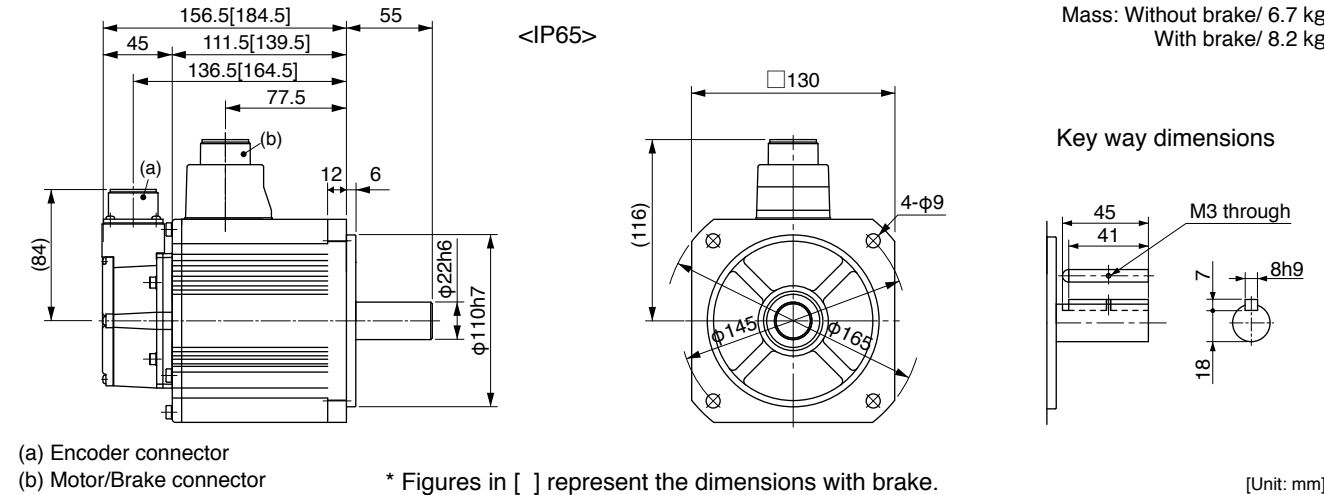
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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Specifications

		AC200 V	
Motor model *1	IP65	MDME202GC□M	MDME202SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5I series	MEDKT7364
	A5IE series	MEDKT7364E	—
Frame symbol		E-frame	
Power supply capacity (kVA)		3.3	
Rated output (W)		2000	
Rated torque (N·m)		9.55	
Momentary Max. peak torque (N·m)		28.6	
Rated current (A(rms))		11.5	
Max. current (A(o-p))		49	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2
	DV0P4285		No limit Note)2
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		8.72
	With brake		10.0
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

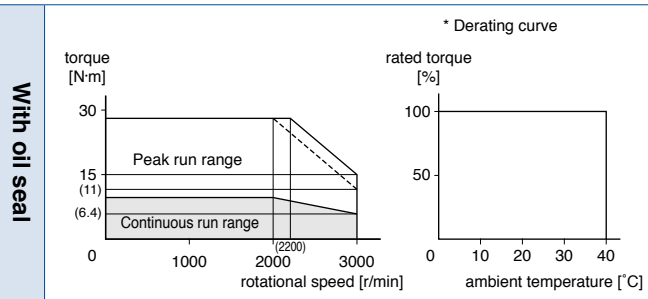
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

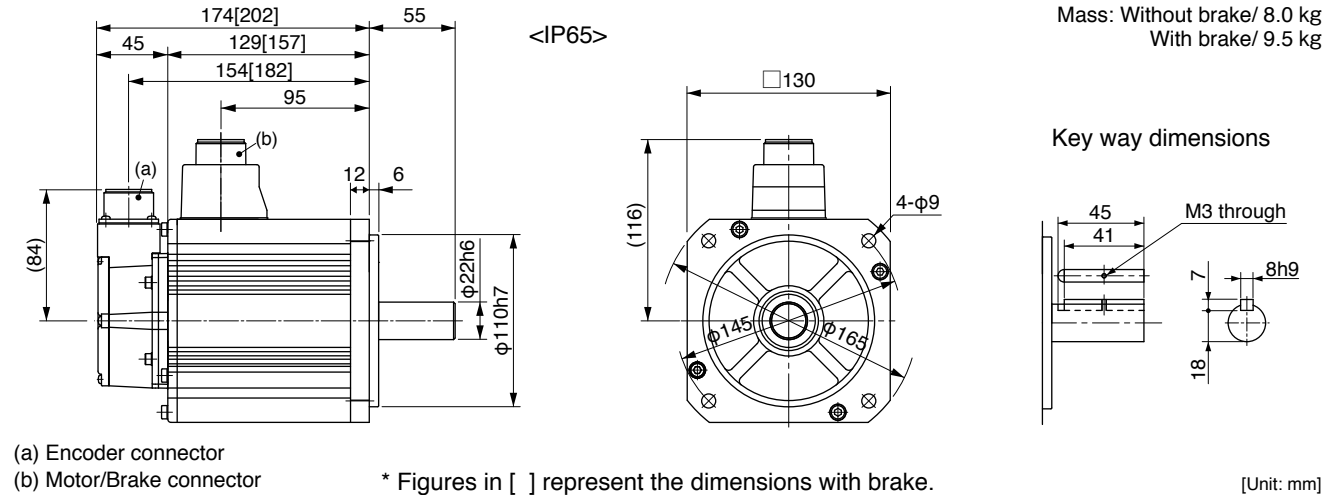
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<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.

Motor Specifications

200 V MDME 3.0 kW [Middle inertia, Middle capacity]

Specifications

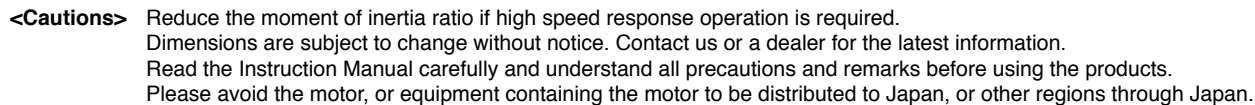
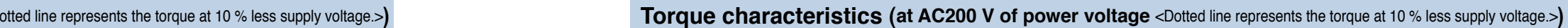
- **Brake specifications** (For details, refer to P.183)
 (This brake will be released when it is energized.)
 (Do not use this for braking the motor in motion.)

- **Permissible load** (For details, refer to P.183)

- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.45.

*1 Motor specifications: ☐

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



200 V MDME 4.0 kW [Middle inertia, Middle capacity]

Specifications

- **Brake specifications** (For details, refer to P.183)
 (This brake will be released when it is energized.)
 (Do not use this for braking the motor in motion.)

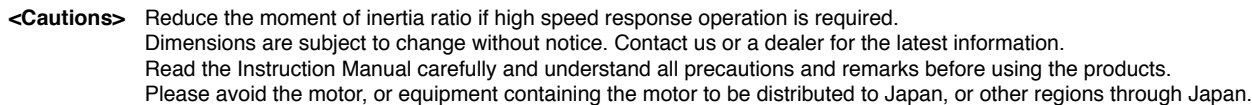
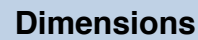
- **Permissible load** (For details, refer to P.183)

- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.45.

*1 Motor specifications: ☐

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Motor Specifications

200 V MDME 5.0 kW [Middle inertia, Middle capacity]

Specifications

- **Brake specifications** (For details, refer to P.183)
 (This brake will be released when it is energized.)
 (Do not use this for braking the motor in motion.)

- **Permissible load** (For details, refer to P.183)

- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.45.

*1 Motor specifications: ☐

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

200 V MGME 0.9 kW [Middle inertia, Middle capacity]

Specifications

- **Brake specifications** (For details, refer to P.183)
 (This brake will be released when it is energized.)
 (Do not use this for braking the motor in motion.)

- **Permissible load** (For details, refer to P.183)

- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.43.

*1 Motor specifications: ☐

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

without
Brake

Figure 10 consists of two graphs. The left graph plots torque [N·m] on the y-axis (0 to 20) against rotational speed [r/min] on the x-axis (0 to 3000). It shows a 'Peak run range' (dashed line) and a 'Continuous run range' (solid line). The right graph plots 'rated torque [%]' on the y-axis (0 to 100) against 'ambient temperature [°C]' on the x-axis (0 to 40). It shows a derating curve that starts at 100% and drops to 0% at 40°C.

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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Specifications

		AC200 V	
Motor model *1	IP65	MGME202GC□M	MGME202SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5I series	MFDKTA390
	A5IE series	MFDKTA390E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		3.8	
Rated output (W)		2000	
Rated torque (N·m)		19.1	
Momentary Max. peak torque (N·m)		47.7	
Rated current (A(rms))		17.0	
Max. current (A(o-p))		60	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2
	DV0P4285×2		No limit Note)2
Rated rotational speed (r/min)		1000	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		30.3
	With brake		31.4
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

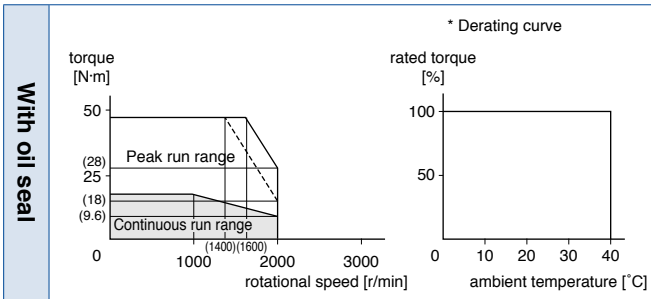
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

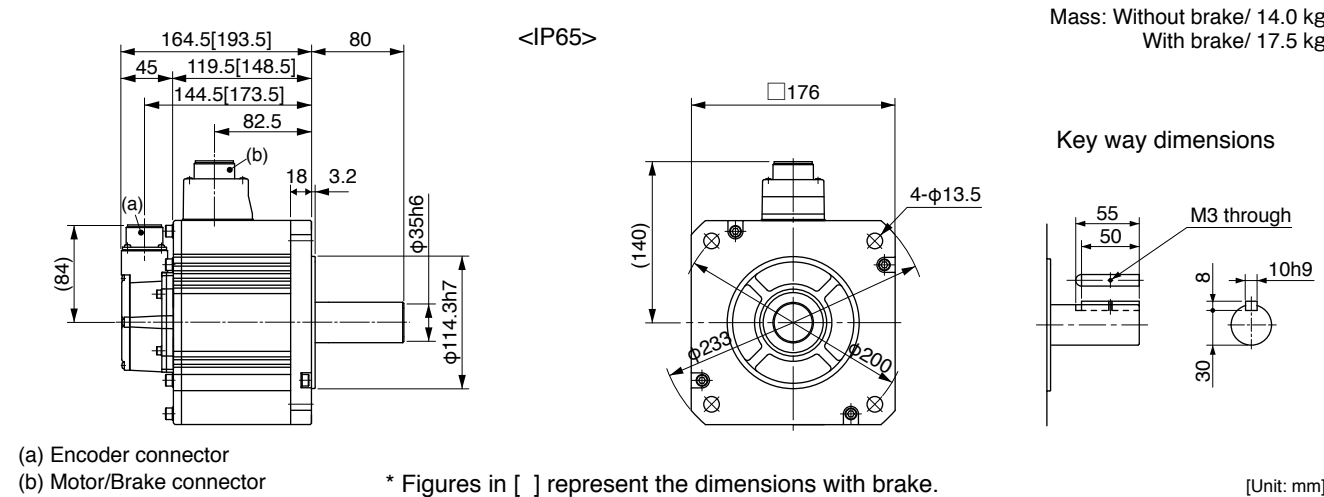
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.
*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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Specifications

		AC200 V	
Motor model *1	IP65	MGME302GC□M	MGME302SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5I series	MFDKTB3A2
	A5IE series	MFDKTB3A2E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		4.5	
Rated output (W)		3000	
Rated torque (N·m)		28.7	
Momentary Max. peak torque (N·m)		71.7	
Rated current (A(rms))		22.6	
Max. current (A(o-p))		80	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2
	DV0P4285×2		No limit Note)2
Rated rotational speed (r/min)		1000	
Max. rotational speed (r/min)		2000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		48.4
	With brake		49.2
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

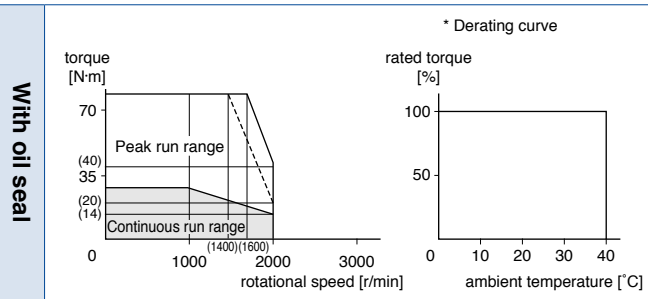
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

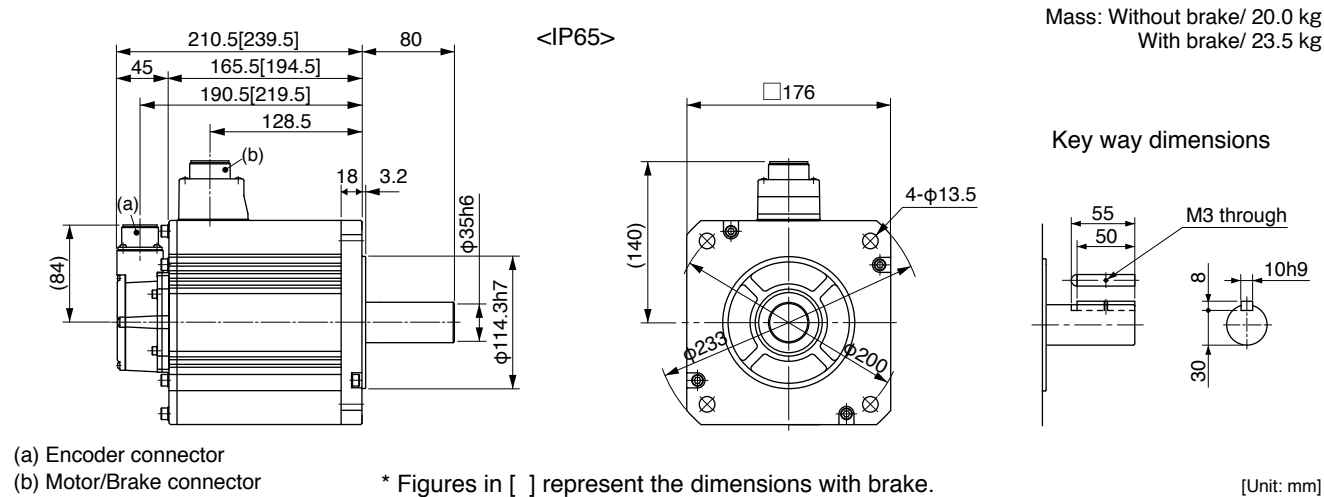
During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.
*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<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	IP65	MHMJ022G1□	MHMJ022S1□
	IP67	—	—
Applicable driver *2	Model No.	MADKT1507	
	A5IE series	MADKT1507E	—
Frame symbol		A-frame	
Power supply capacity (kVA)		0.5	
Rated output (W)		200	
Rated torque (N·m)		0.64	
Momentary Max. peak torque (N·m)		1.91	
Rated current (A(rms))		1.6	
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)		5000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	0.42	
	With brake	0.45	
Recommended moment of inertia ratio of the load and the rotor		30 times or less	
Rotary encoder specifications	Note)5		
	Resolution per single turn		1048576 131072

- **Brake specifications** (For details, refer to P.183)
(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) Note)4	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.183)

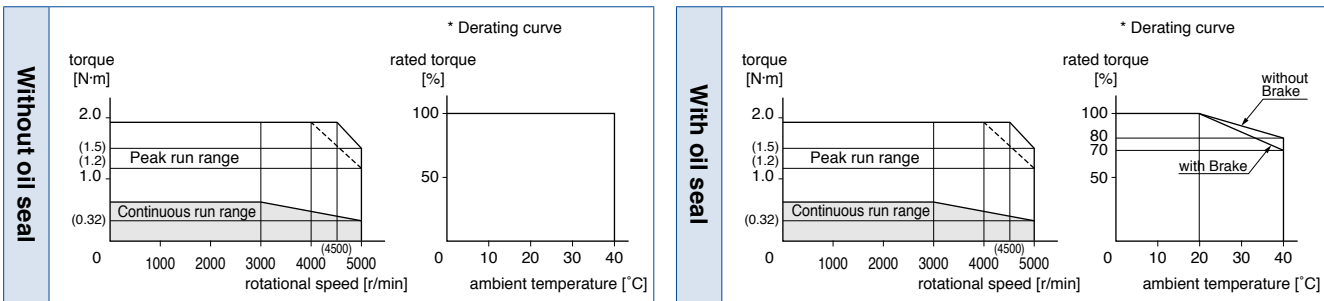
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.42.

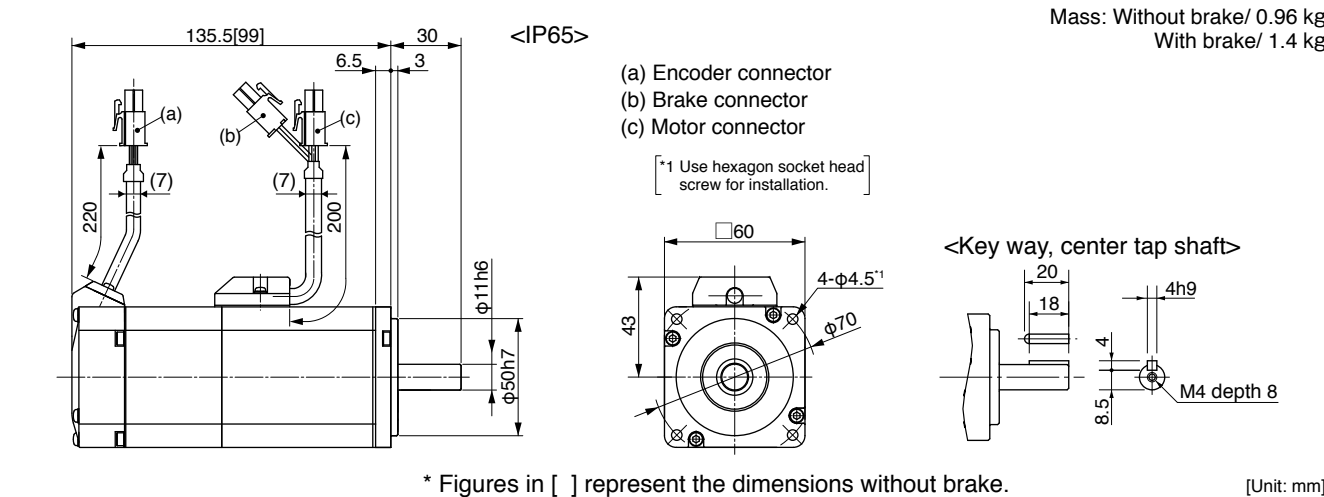
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



• Please contact us for more information.

Specifications

		AC200 V	
Motor model *1	IP65	MHMJ082G1□	MHMJ082S1□
	IP67	—	—
Applicable driver *2	Model No.	A5I series	MCDKT3520
	A5IE series	MCDKT3520E	—
Frame symbol		C-frame	
Power supply capacity (kVA)		1.3	
Rated output (W)		750	
Rated torque (N·m)		2.4	
Momentary Max. peak torque (N·m)		7.1	
Rated current (A(rms))		4.0	
Max. current (A(o-p))		17.0	
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)		4500	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		1.51
	With brake		1.61
Recommended moment of inertia ratio of the load and the rotor Note)3		20 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

- **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

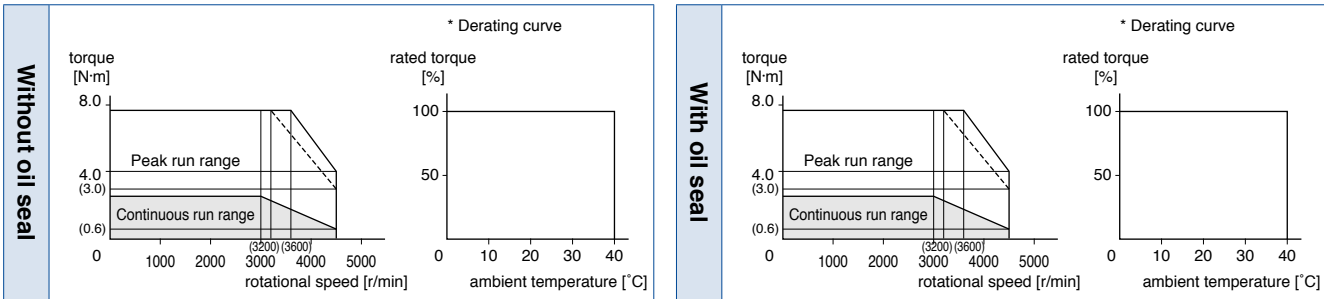
Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

- **Permissible load** (For details, refer to P.183)

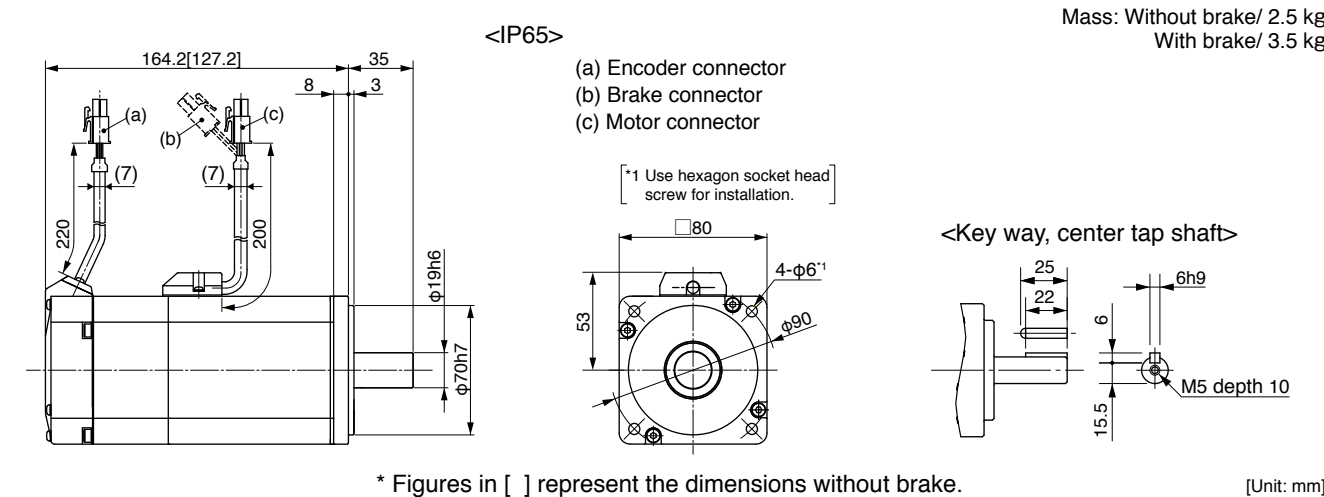
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.
*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<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	IP65	MHME102GC□M	MHME102SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5I series	MDDKT3530
	A5IE series	MDDKT3530E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		1.8	
Rated output (W)		1000	
Rated torque (N·m)		4.77	
Momentary Max. peak torque (N·m)		14.3	
Rated current (A(rms))		5.7	
Max. current (A(o-p))		24	
Regenerative brake frequency (times/min) Note)1	Without option		83
	DV0P4284		No limit Note)2
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		24.7
	With brake		26.0
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

- **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

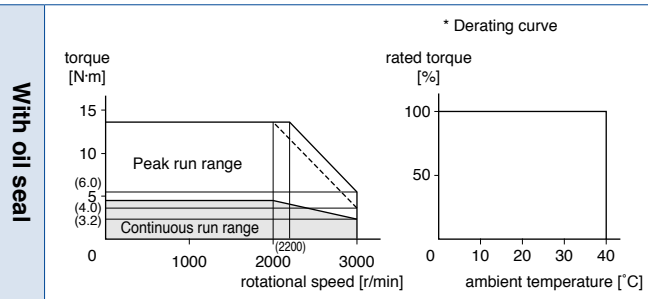
Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.183)

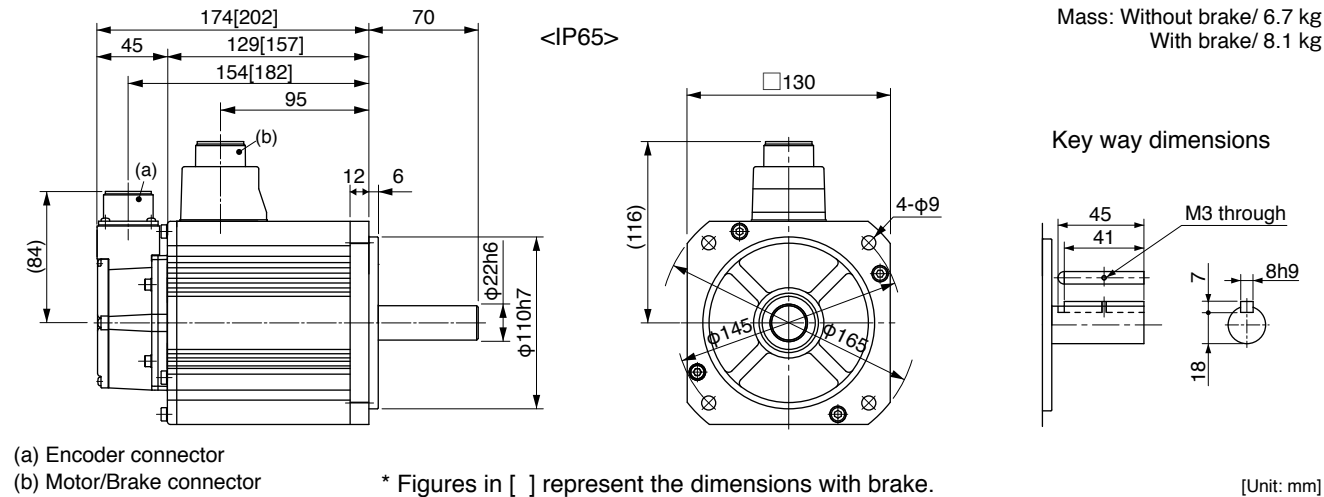
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.
*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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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	IP65	MHME152GC□M	MHME152SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5II series	MDDKT5540
	A5IE series	MDDKT5540E	—
Frame symbol		D-frame	
Power supply capacity (kVA)		2.3	
Rated output (W)		1500	
Rated torque (N·m)		7.16	
Momentary Max. peak torque (N·m)		21.5	
Rated current (A(rms))		9.4	
Max. current (A(o-p))		40	
Regenerative brake frequency (times/min) Note)1	Without option	22	
	DV0P4284	130	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	37.1	
	With brake	38.4	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576 131072	

• **Brake specifications** (For details, refer to P.183)
(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) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

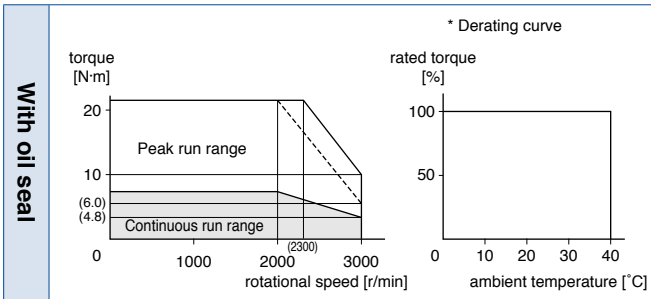
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

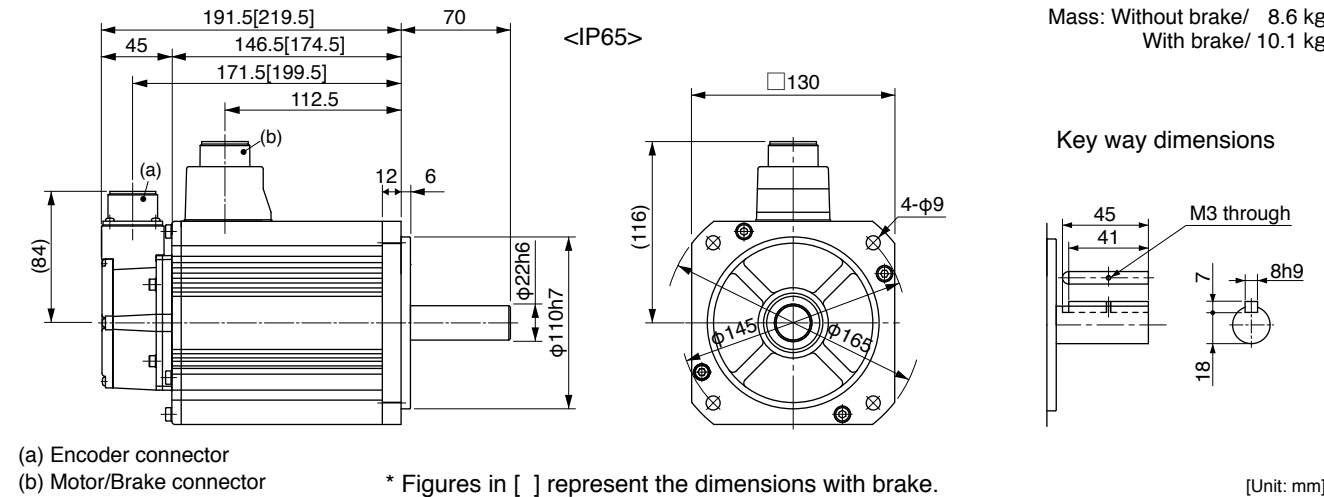
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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Specifications

		AC200 V	
Motor model *1	IP65	MHME202GC□M	MHME202SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5II series	MEDKT7364
	A5IE series	MEDKT7364E	—
Frame symbol		E-frame	
Power supply capacity (kVA)		3.3	
Rated output (W)		2000	
Rated torque (N·m)		9.55	
Momentary Max. peak torque (N·m)		28.6	
Rated current (A(rms))		11.1	
Max. current (A(o-p))		47	
Regenerative brake frequency (times/min) Note)1	Without option	45	
	DV0P4285	142	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	57.8	
	With brake	59.6	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576 131072	

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

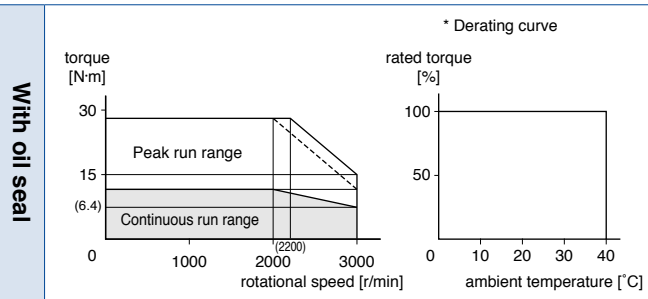
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.43.

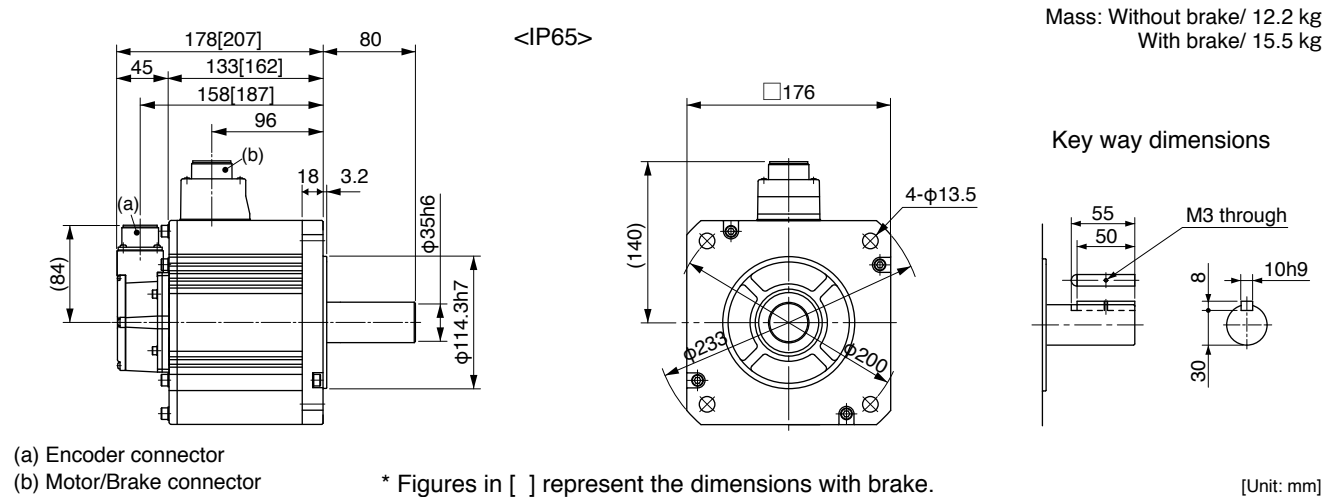
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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Specifications

		AC200 V	
Motor model *1	IP65	MHME302GC□M	MHME302SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5I series	MFDKTA390
	A5IE series	MFDKTA390E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		4.5	
Rated output (W)		3000	
Rated torque (N·m)		14.3	
Momentary Max. peak torque (N·m)		43.0	
Rated current (A(rms))		16.0	
Max. current (A(o-p))		68	
Regenerative brake frequency (times/min) Note)1	Without option	19	
	DV0P4285×2	142	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	90.5	
	With brake	92.1	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576 131072	

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

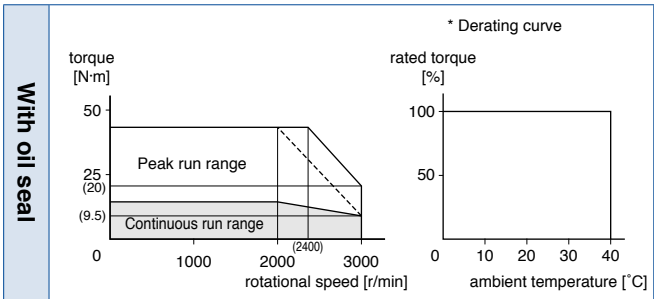
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

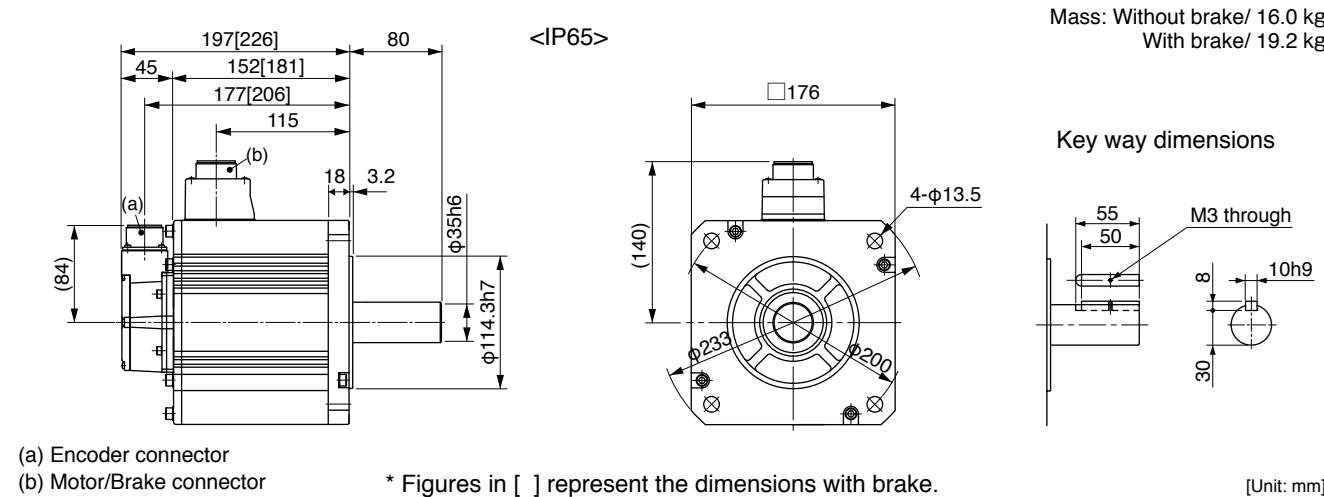
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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Specifications

		AC200 V	
Motor model *1	IP65	MHME402GC□M	MHME402SC□M
	IP67	—	—
Applicable driver *2	Model No.	A5I series	MFDKTB3A2
	A5IE series	MFDKTB3A2E	—
Frame symbol		F-frame	
Power supply capacity (kVA)		6.0	
Rated output (W)		4000	
Rated torque (N·m)		19.1	
Momentary Max. peak torque (N·m)		57.3	
Rated current (A(rms))		21.0	
Max. current (A(o-p))		89	
Regenerative brake frequency (times/min) Note)1	Without option	17	
	DV0P4285×2	125	
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake	112	
	With brake	114	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental	17-bit Absolute	
	Resolution per single turn	1048576 131072	

• **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.183)

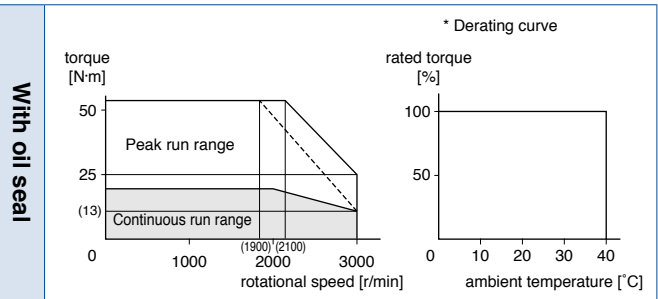
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.

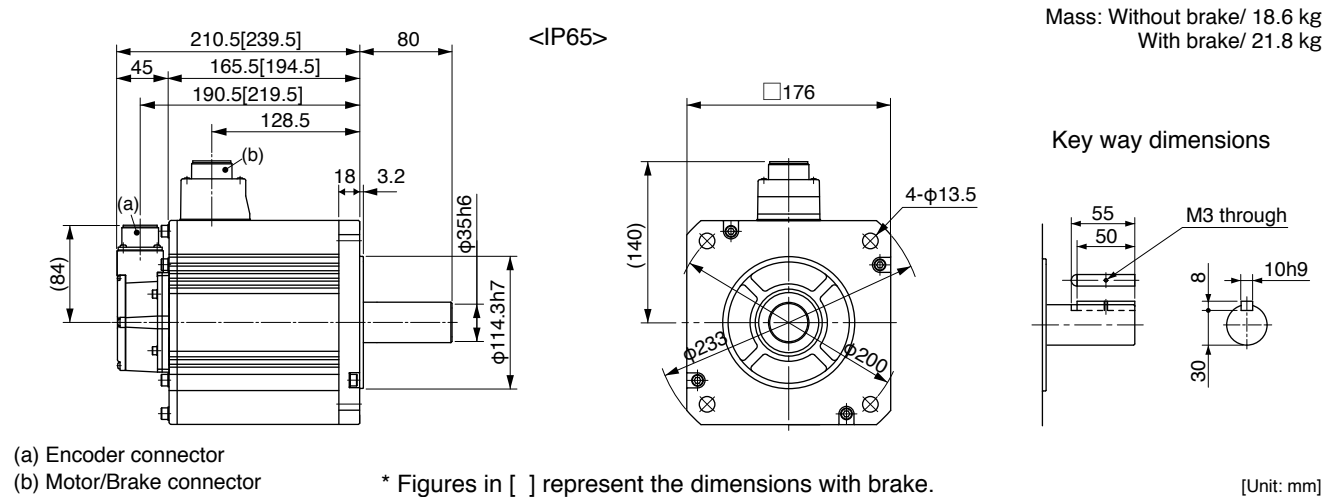
*1 Motor specifications: □

*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<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 *1	IP65		MHME502GC□M MHME502SC□M
	IP67		— —
Applicable driver *2	Model No.	A5II series	MFDKTB3A2
		A5IE series	MFDKTB3A2E —
	Frame symbol		F-frame
Power supply capacity (kVA)		7.5	
Rated output (W)		5000	
Rated torque (N·m)		23.9	
Momentary Max. peak torque (N·m)		71.6	
Rated current (A(rms))		25.9	
Max. current (A(o-p))		110	
Regenerative brake frequency (times/min) Note)1	Without option		10
	DV0P4285×2		76
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		162
	With brake		164
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications Note)5	20-bit Incremental		17-bit Absolute
	Resolution per single turn		1048576 131072

- **Brake specifications** (For details, refer to P.183)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

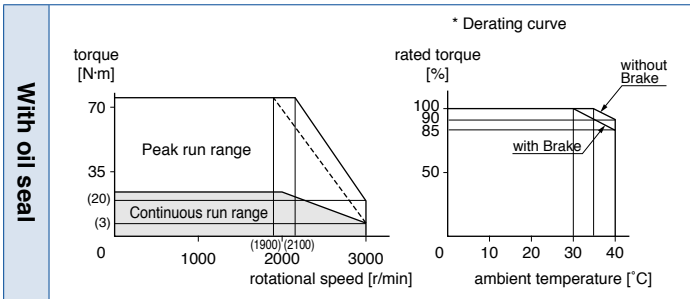
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.183)

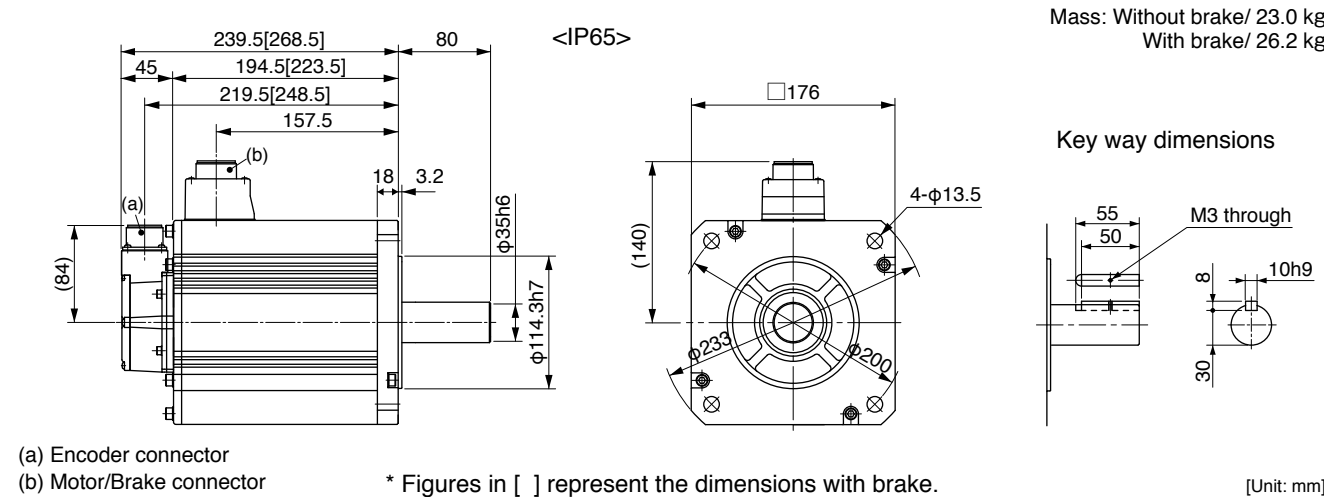
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
• Dimensions of Driver, refer to P.45.
*1 Motor specifications: □
*2 The product that the end of driver model designation has “E” is “Position control type”.
Detail of model designation, refer to P.152.

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



Dimensions



<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.

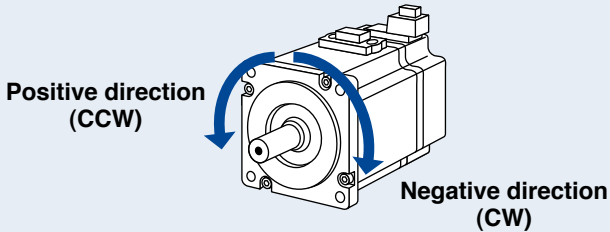
Environmental Conditions

Item		Conditions
Ambient temperature *1		0 °C to 40 °C (free from freezing)
Ambient humidity		20 % to 85 % RH (free from condensation)
Storage temperature *2		−20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation*5)
Storage humidity		20 % to 85 % RH (free from condensation*5)
Vibration	Motor only	50 W to 5.0 kW : Lower than 49 m/s ² (5 G) at running, 24.5 m/s ² (2.5 G) at stall 6.0 kW to 15.0 kW : Lower than 24.5 m/s ² (2.5 G) at running, 24.5 m/s ² (2.5 G) at stall
Impact	Motor only	Lower than 98 m/s ² (10 G)
Enclosure rating (Motor only)	IP65 *3	MSMD, MHMD, MSMJ, MHMJ (except rotating portion of output shaft and readwire end.)
		M * ME (IP65 motor: 0.9 kW or more) (except rotating portion of output shaft and connecting pin part of the motor connector and the encoder connector)
	IP67 *3*4	M * ME IP67 motor (except rotating portion of output shaft and connecting pin part of the motor connector and the encoder connector)
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.

<Note>

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



Notes on [Motor specification] page

Note) 1. [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.

[At AC400 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 AC460 V (at 400 V of the main voltage).
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/460) 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.

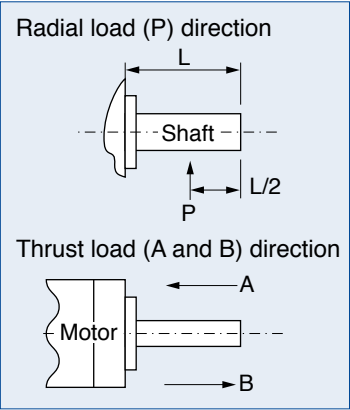
Note) 4. Releasing time values represent the ones with DC-cutoff using a varistor.

Note) 5. The 17-bit absolute encoder can also be used as a 17-bit incremental encoder.

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 ⁻⁴ kg·m ²	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 ³ J	Permissible angular acceleration rad/s ²
MSMD	50 W, 100 W	0.29 or more	0.002	35 or less	20 or less	0.3	1 V or more 24 ±1.2	39.2	4.9	30000
	200 W, 400 W	1.27 or more	0.018	50 or less	15 or less	0.36		137	44.1	
	750 W	2.45 or more	0.075	70 or less	20 or less	0.42		196	147	
MSME	50 W, 100 W	0.29 or more	0.002	35 or less	20 or less	0.3	1 V or more 24 ±1.2	39.2	4.9	30000
	200 W, 400 W	1.27 or more	0.018	50 or less	15 or less	0.36		137	44.1	
	750 W(200 V)	2.45 or more	0.075	70 or less	20 or less	0.42		196	147	
	750 W(400 V)	2.5 or more	0.33	50 or less	15 or less (100)	0.7	2 V or more 24 ±2.4	392	490	10000
	1.0 kW, 1.5 kW, 2.0 kW	7.8 or more				0.81				
	3.0 kW	11.8 or more		80 or less						
	4.0 kW, 5.0 kW	16.2 or more	1.35	110 or less	50 or less (130)	0.9		1470	2200	
MDME	400 W(400 V), 600 W(400 V)	2.5 or more	1.35	50 or less	15 or less	0.7	2 V or more 24 ±2.4	392	490	10000
	1.0 kW	4.9 or more		80 or less	70 or less (200)	0.59		588	780	
	1.5 kW, 2.0 kW	13.7 or more		100 or less	50 or less (130)	0.79		1176	1500	
	3.0 kW	16.2 or more		110 or less	0.9	1470		2200		
	4.0 kW, 5.0 kW	24.5 or more	4.7	80 or less	25 or less (200)	1.3		1372	2900	5440
	7.5 kW	58.8 or more		150 or less	50 or less	1.4		2000	4000	5000
	11.0 kW, 15.0 kW	100 or more		7.1	300 or less	140 or less		1.08	2000	4000
MFME	1.5 kW	7.8 or more	4.7	80 or less	35 or less	0.83	2 V or more 24 ±2.4	1372	2900	10000
	2.5 kW	21.6 or more	8.75	150 or less	100 or less	0.75		1470	1500	
	4.5 kW	31.4 or more						2200		
MGME	0.9 kW	13.7 or more	1.35	100 or less	50 or less (130)	0.79	2 V or more 24 ±2.4	1176	1500	10000
	2.0 kW	24.5 or more	4.7	80 or less	25 or less (200)	1.3		1372	2900	5440
	3.0 kW	58.8 or more		150 or less	50 or less (130)	1.4				
	4.5 kW, 6.0 kW				50 or less					
MHMD	200 W, 400 W	1.27 or more	0.018	50 or less	15 or less	0.36	1 V or more 24 ±1.2	137	44.1	30000
MSMJ	750 W	2.45 or more	0.075	70 or less	20 or less	0.42		196	147	
MHME	1.0 kW	4.9 or more	1.35	80 or less	70 or less (200)	0.59	2 V or more 24 ±2.4	588	780	10000
	1.5 kW	13.7 or more		100 or less	50 or less (130)	0.79		1176	1500	
	2.0 kW~5.0 kW	24.5 or more	4.7	80 or less	25 or less (200)	1.3		1372	2900	5440
	7.5 kW	58.8 or more		150 or less	50 or less	1.4		5000		

- Releasing time values represent the ones with DC-cutoff using a varistor.
Values in () represent those measured by using a diode (V03C by Hitachi, Ltd.)
- Above values (except static friction torque, releasing voltage and excitation current) represent typical values.
- Backlash of the built-in holding brake is kept ±1° 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.)

Encoder Cable

12-pin connector layout

Type classification

MFECA: Encoder cable

Cable length

Cable type

Cable end (Encoder side)

Cable end (Driver side)

00303 m

00505 m

010010 m

020020 m

E PVC cable with shield by Oki Electric Cable Co., 0.20 mm² × 4P(8-wire), 3P(6-wire)

M Hitachi Cable, Ltd. Highly bendable type

T Hitachi Cable, Ltd. Standard bendable type

A Tyco Electronics connector

J Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)

K Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)

S “S” shaped cannonplug

T Japan Aviation Electronics Industry, Ltd. plug connector

D Connector (Incremental)

E Connector (Absolute)

M Connector (MSMD, MHMD)

Motor Cable, Brake Cable

12-pin connector layout

AC servo motor cable

Type classification

Cable length

Sectional area of cable core

Cable end at driver side

Cable end at motor side

Cable type

A Standard

B Special

⋮ Design order

0033 m

0055 m

01010 m

02020 m

0 0.75 mm²

1 1.25 mm²

2 2.0 mm²

3 3.5 mm²

D Rod terminal

T Clamp terminal

C S type cannon plug

E Tyco Electronics connector

J Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)

K Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)

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)

R 4-wire by Hitachi Cable, Ltd. (Standard bendable type)

P 2-wire by Hitachi Cable, Ltd. (Highly bendable type)

S 2-wire by Hitachi Cable, Ltd. (Standard bendable type)

ROBO-TOP[®] is a trade mark of DYDEN CORPORATION

Specifications of Motor connector

• When the motors of <MSMD, MHMD, MSMJ, MHMJ> are used, they are connected as shown below.

Connector: Made by Tyco Electronics (The figures below show connectors for the motor.)

Connector for encoder

172168-1 20-bit Incremental

172169-1 17-bit Absolute

<Remarks> Do not connect anything to NC.

PIN No. Application

1 NC

2 PS

3 PS

4 E5V

5 E0V

6 FG(SHIELD)

PIN No. Application

1 BAT+

2 BAT-

3 FG(SHIELD)

4 PS

5 PS

6 NC

7 E5V

8 E0V

9 NC

Connector for brake

Connector for motor

<Connector for motor>

172167-1

PIN No. Application

1 U-phase

2 V-phase

3 W-phase

4 Ground

<Connector for brake>

172165-1

PIN No. Application

1 Brake

2 Brake

* Electromagnetic brake is a nonpolar device.

• When the motors of <MSME (50 W to 750 W (200 V))> are used, they are connected as shown below.

Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)

* 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 for encoder

JN6CR07PM2

20-bit Incremental

17-bit Absolute

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.

PIN No. Application

1 FG(SHIELD)

2 —

3 E0V

4 PS

5 —

6 E5V

7 PS

PIN No. Application

1 FG(SHIELD)

2 BAT-

3 E0V

4 PS

5 BAT+

6 E5V

7 PS

Connector for motor

JN8AT04NJ1

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.

[Motor with brake]

Connector for brake

JN4AT02PJM-R

PIN No. Application

1 Brake

2 Brake

* Electromagnetic brake is a nonpolar device.

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 the motors of <MSME (750 W(400 V), 1.0 kW to 5.0 kW), MDME, MGME, MHME> are used, they are connected as shown below.

Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)

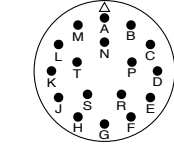
• Connector for encoder

<Encoder connector for IP65 motor>

<Encoder connector for IP67 motor>

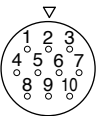
IP65 motor
Connector for encoder
(Large type)

IP67 motor
Connector for encoder
(Small type)



N/MS3102A20-29P

20-bit Incremental		17-bit Absolute	
PIN No.	Application	PIN No.	Application
A	NC	A	NC
B	NC	B	NC
C	NC	C	NC
D	NC	D	NC
E	NC	E	NC
F	NC	F	NC
G	E0V	G	E0V
H	E5V	H	E5V
J	FG(SHIELD)	J	FG(SHIELD)
K	PS	K	PS
L	PS	L	PS
M	NC	M	NC
N	NC	N	NC
P	NC	P	NC
R	NC	R	NC
S	NC	S	BAT-
T	NC	T	BAT+



JN2AS10ML3-R

20-bit Incremental		17-bit Absolute	
PIN No.	Application	PIN No.	Application
1	E0V	1	E0V
2	NC	2	NC
3	PS	3	PS
4	E5V	4	E5V
5	NC	5	BAT-
6	NC	6	BAT+
7	PS	7	PS
8	NC	8	NC
9	FG(SHIELD)	9	FG(SHIELD)
10	NC	10	NC

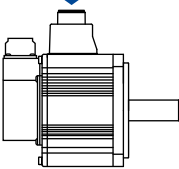
<Remarks>

Do not connect anything to NC.

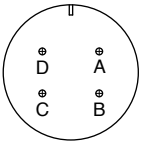
• Connector for motor/brake

[0.9 kW to 5.0 kW]

Connector for motor/brake



<without Brake>



JL04V-2E20-4PE-B-R

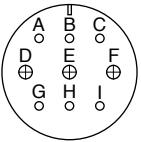
MSME	750 W(400 V), 1.0 kW to 2.0 kW
MDME	400 W (400 V), 600 W (400 V), 1.0 kW to 2.0 kW
MGME	0.9 kW
MHME	1.0 kW to 1.5 kW

JL04V-2E20-18PE-B-R

MSME	1.0 kW to 2.0 kW
MDME	1.0 kW to 2.0 kW
MFME*	1.5 kW
MGME	0.9 kW
MHME	1.0 kW to 1.5 kW

<with Brake>

* Electromagnetic brake is a nonpolar device.



JL04V-2E24-11PE-B-R

[200 V]

MSME	3.0 kW to 5.0 kW
MDME	3.0 kW to 5.0 kW
MFME*	2.5 kW, 4.5 kW
MGME	2.0 kW to 4.5 kW
MHME	2.0 kW to 5.0 kW

[400 V]

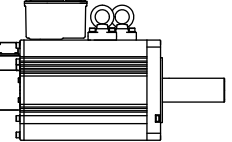
MSME	750 W, 1.0 kW to 5.0 kW
MDME	400 W, 600 W, 1.0 kW to 5.0 kW
MFME*	1.5 kW to 4.5 kW
MGME	0.9 kW to 4.5 kW
MHME	1.0 kW to 5.0 kW

PIN No.	Application
G	Brake
H	Brake
A	NC
F	U-phase
I	V-phase
B	W-phase
E	Ground
D	Ground
C	NC

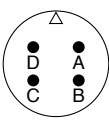
PIN No.	Application
A	Brake
B	Brake
C	NC
D	U-phase
E	V-phase
F	W-phase
G	Ground
H	Ground
I	NC

[6.0 kW or more]

Connector for motor
Connector for brake



<Motor>

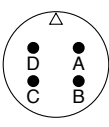


JL04V-2E32-17PE-B-R

MDME	7.5 kW to 15.0 kW
MGME	6.0 kW
MHME	7.5 kW

PIN No.	Application
A	U-phase
B	V-phase
C	W-phase
D	Ground

<Brake>



N/MS3102A 14S-2P

MDME	7.5 kW to 15.0 kW
MGME	6.0 kW
MHME	7.5 kW

PIN No.	Application
A	Brake
B	Brake
C	NC
D	NC

* Electromagnetic brake is a nonpolar device.

* MFME is common to with or without brake.

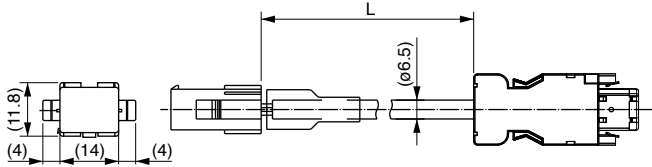
<Remarks>

Do not connect anything to NC.

Encoder Cable

* It doesn't correspond to IP65 and IP67.

Part No.	MFECA0 ** 0EAM	Compatible motor output	MSMD 50 W to 750 W, MSMJ 200 W to 750 W,	MHMD 200 W to 750 W, MHMJ 200 W to 750 W
Specifications	For 20-bit incremental encoder (Without battery box)			



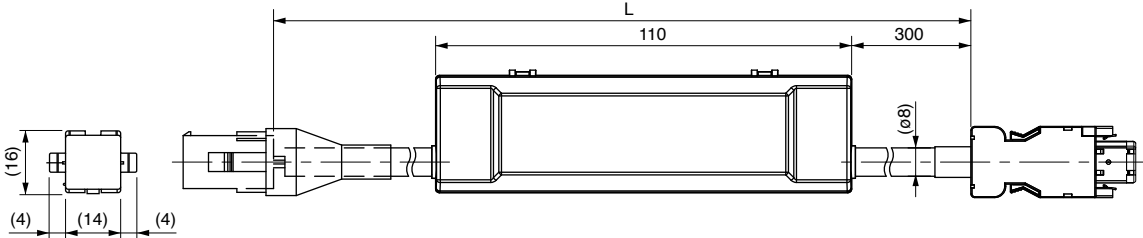
[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M (or equivalent)	3	MFECA0030EAM
Shell kit	3E306-3200-008		5	MFECA0050EAM
Connector (Motor side)	172160-1	Tyco Electronics	10	MFECA0100EAM
Connector pin	170365-1		20	MFECA0200EAM
Cable	0.20 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 ** 0EAE	Compatible motor output	MSMD 50 W to 750 W, MSMJ 200 W to 750 W,	MHMD 200 W to 750 W, MHMJ 200 W to 750 W
Specifications	For 17-bit absolute encoder (With battery box) *			

* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

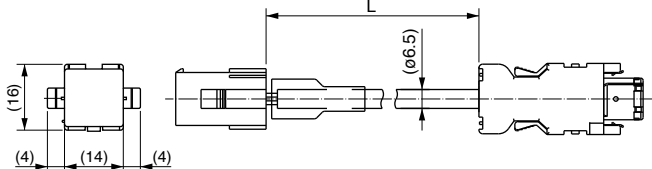
[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.
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	10	MFECA0100EAE
Connector pin	170365-1		20	MFECA0200EAE
Cable	0.20 mm ² ×4P (8-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 ** 0EAD	Compatible motor output	MSMD 50 W to 750 W, MSMJ 200 W to 750 W,	MHMD 200 W to 750 W, MHMJ 200 W to 750 W
Specifications	For 17-bit incremental encoder (Without battery box)			

[Unit: mm]

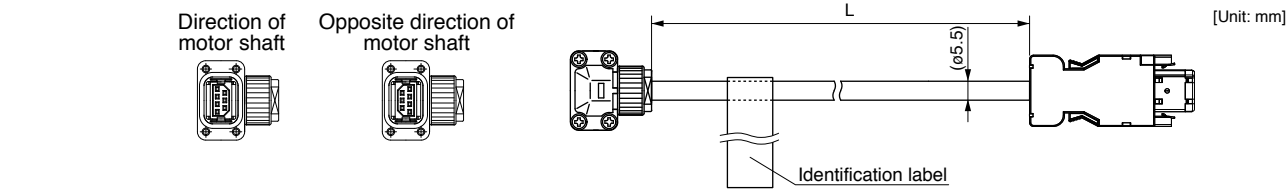


Title	Part No.	Manufacturer	L (m)	Part No.
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M (or equivalent)	3	MFECA0030EAD
Shell kit	3E306-3200-008		5	MFECA0050EAD
Connector (Motor side)	172161-1	Tyco Electronics	10	MFECA0100EAD
Connector pin	170365-1		20	MFECA0200EAD
Cable	0.20 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Encoder Cable

* It doesn't correspond to IP65 and IP67.

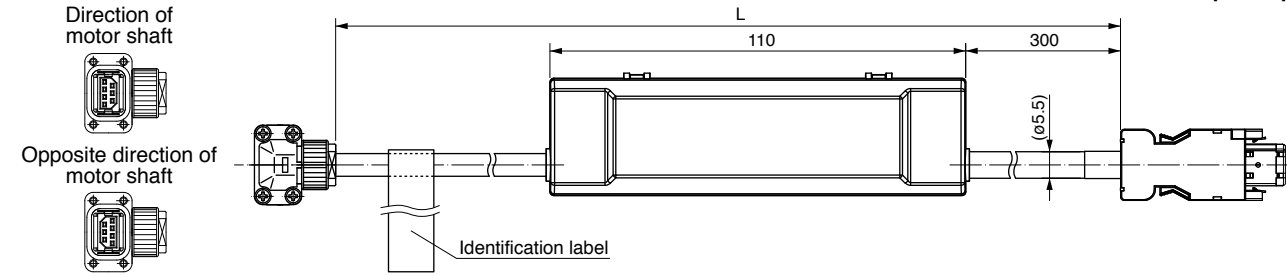
Part No.	MFECA0 ** 0MJD (Highly bendable type, Direction of motor shaft)	Compatible motor output	MSME 50 W to 750 W (200 V)
	MFECA0 ** 0MKD (Highly bendable type, Opposite direction of motor shaft)		
	MFECA0 ** 0TJD (Standard bendable type, Direction of motor shaft)		
	MFECA0 ** 0TKD (Standard bendable type, Opposite direction of motor shaft)		
Specifications	For 20-bit incremental encoder (Without battery box) * 17bit-use is possible		



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030MJD
Shell kit	3E306-3200-008	(or equivalent)	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.		

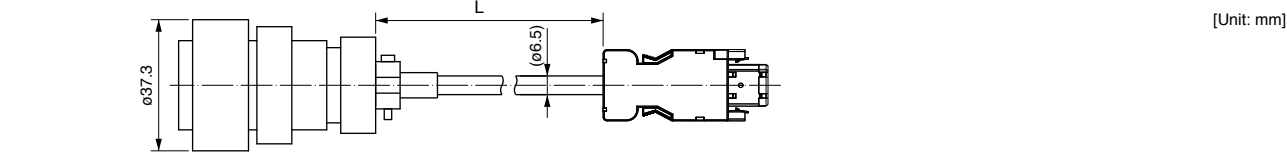
Part No.	MFECA0 ** 0MJE (Highly bendable type, Direction of motor shaft)	Compatible motor output	MSME 50 W to 750 W (200 V)
	MFECA0 ** 0MKE (Highly bendable type, Opposite direction of motor shaft)		
	MFECA0 ** 0TJE (Standard bendable type, Direction of motor shaft)		
	MFECA0 ** 0TKE (Standard bendable type, Opposite direction of motor shaft)		
Specifications	For 17-bit absolute encoder (With battery box) *		

* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.



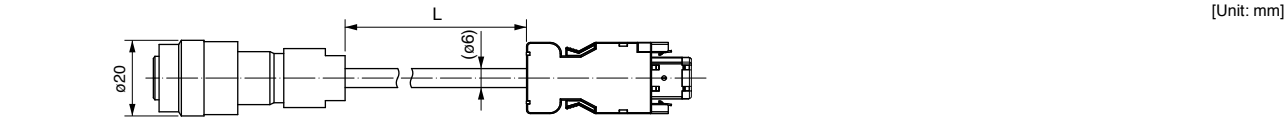
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030MJE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050MJE
Connector (Motor side)	JN6FR07SM1	Japan Aviation Electronics Ind.	10	MFECA0100MJE
Connector pin	LY10-C1-A1-10000		20	MFECA0200MJE
Cable	AWG24 4-wire, AWG22 2-wire (ø5.5)	Hitachi Cable, Ltd.		

Part No.	MFECA0 ** 0ESD	Compatible motor output	MDME 400 W(400 V), MDME 600 W(400 V) MSME 750 W(400 V) 0.9 kW to 15.0 kW (IP65 Motor)
Specifications	For 20-bit incremental encoder (Without battery box)		



Title	Part No.	Manufacturer	L (m)	Part No.
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 ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

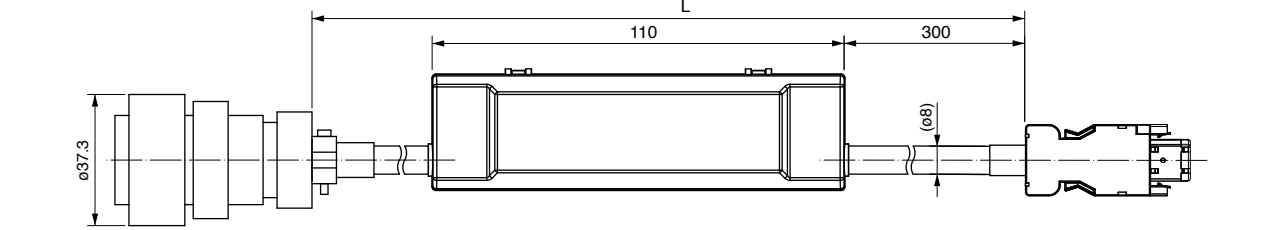
Part No.	MFECA0 ** 0ETD	Compatible motor output	MDME 400 W(400 V), MDME 600 W(400 V), MSME 750 W(400 V) 0.9 kW to 15.0 kW (IP67 Motor)
Specifications	For 20-bit incremental encoder (Without battery box)		



Title	Part No.	Manufacturer	L (m)	Part No.
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 ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 ** 0ESE	Compatible motor output	0.9 kW to 5.0 kW (IP65 Motor)
Specifications	For 17-bit absolute encoder (With battery box) *		

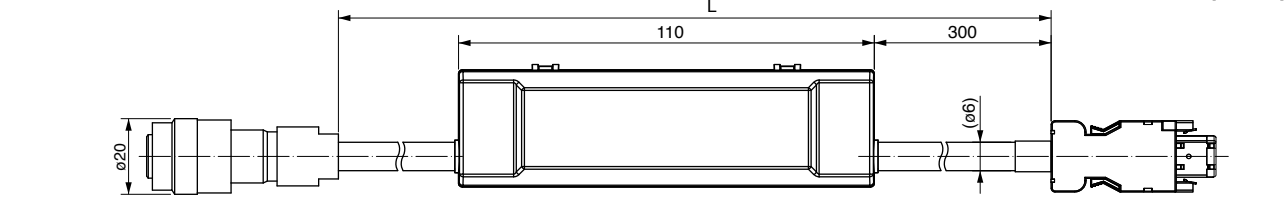
* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.



Title	Part No.	Manufacturer	L (m)	Part No.
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 ² ×4P (8-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 ** 0ETE	Compatible motor output	MDME 400 W(400 V), MDME 600 W(400 V) MSME 750 W(400 V) 0.9 kW to 15.0 kW (IP67 Motor)
Specifications	For 17-bit absolute encoder (With battery box) *		

* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

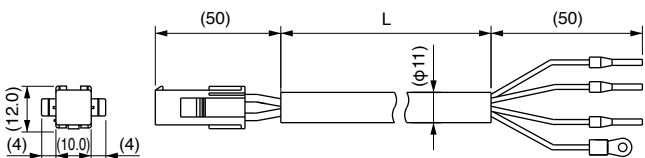


Title	Part No.	Manufacturer	L (m)	Part No.
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ETE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETE
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation Electronics Ind.	10	MFECA0100ETE
Connector pin	JN1-22-22S-PKG100		20	MFECA0200ETE
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Motor Cable (without Brake)

* It doesn't correspond to IP65 and IP67.

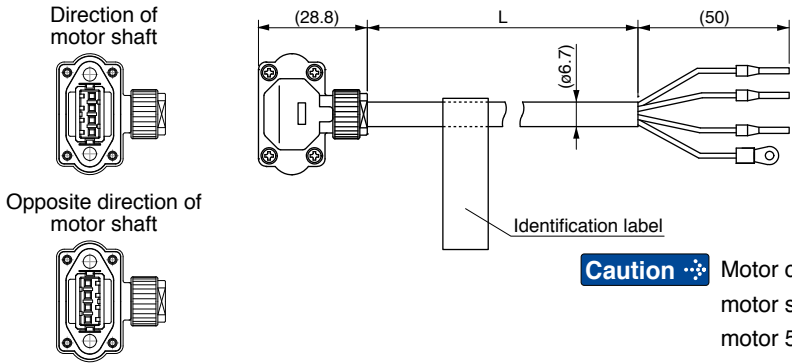
Part No.	MFMCA0 ** 0EED	Applicable model	MSMD 50 W to 750 W, MHMD 200 W to 750 W MSMJ 200 W to 750 W, MHMJ 200 W to 750 W
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.
Connector	172159-1	Tyco Electronics	3	MFMCA0030EED
Connector pin	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 0.75mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCA0 ** 0NJD (Highly bendable type, Direction of motor shaft)	Applicable model	MSME 50 W to 750 W(200V)
	MFMCA0 ** 0NKD (Highly bendable type, Opposite direction of motor shaft)		MSME 200 W to 750 W(200V)
	MFMCA0 ** 0RJD (Standard bendable type, Direction of motor shaft)		MSME 50 W to 750 W(200V)
	MFMCA0 ** 0RKD (Standard bendable type, Opposite direction of motor shaft)		MSME 200 W to 750 W(200V)

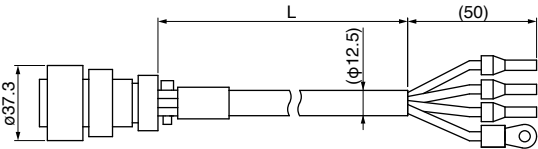


Caution ⚠ Motor cable for opposite direction of motor shaft cannot be used with a motor 50W and 100W.

[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN8FT04SJ1	Japan Aviation Electronics Ind.	3	MFMCA0030NJ
Connector pin	ST-TMH-S-C1B-3500		5	MFMCA0050NJ
Rod terminal	AI0.75-8GY	Phoenix Contact	10	MFMCA0100NJ
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200NJ
Cable	AWG18 4-wire (φ6.7)	Hitachi Cable, Ltd.		

Part No.	MFMCA0 ** 2ECD	Applicable model	MFME 1.5 kW(200 V)
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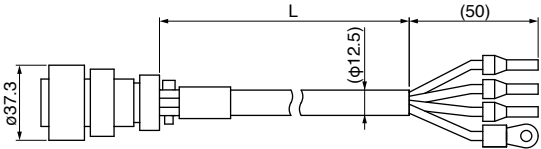


[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JL04V-6A20-18SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCA0032ECD
Cable clamp	JL04-2022CK(14)-R		5	MFMCA0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCA0102ECD
Nylon insulated round terminal	N2-M4		20	MFMCA0202ECD
Cable	ROBO-TOP 600V 2.0mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCD0 ** 2ECD	Applicable model	MSME 750 W(400 V), 1.0 kW to 2.0 kW, MDME 400 W(400 V), 600 W(400 V), 1.0 kW to 2.0 kW MHME 1.0 kW to 1.5 kW, MGME 0.9 kW (All model 200 V and 400 V commonness)
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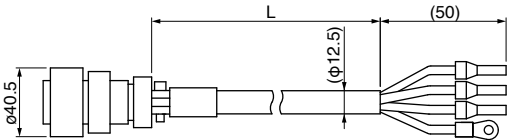
[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JL04V-6A20-4SE-EB-R	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		20	MFMCD0202ECD
Cable	ROBO-TOP 600 V 2.0 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCE0 ** 2ECD	Applicable model	MHME 2.0 kW (200 V and 400 V commonness)
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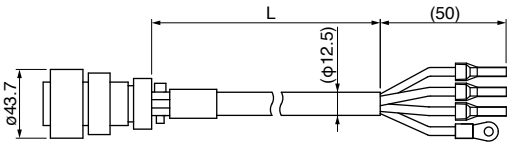
[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCE0032ECD
Cable clamp	JL04-2022CK(14)-R		5	MFMCE0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102ECD
Nylon insulated round terminal	N2-M4		20	MFMCE0202ECD
Cable	ROBO-TOP 600 V 2.0 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCF0 ** 2ECD	Applicable model	MFME 1.5 kW(400 V), 2.5 kW(200 V and 400 V commonness)
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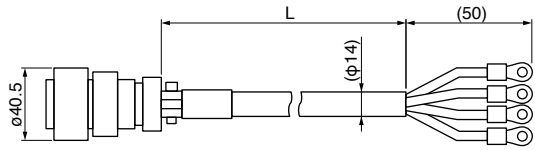
[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCF0032ECD
Cable clamp	JL04-2428CK(17)-R		5	MFMCF0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCF0102ECD
Nylon insulated round terminal	N2-M4		20	MFMCF0202ECD
Cable	ROBO-TOP 600 V 2.0 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCA0 * * 3ECT	Applicable model	MSME 3.0 kW to 5.0 kW, MDME 3.0kW to 5.0 kW MHME 3.0 kW to 5.0 kW, MGME 2.0kW to 4.5 kW (All model 200 V and 400 V commonness)
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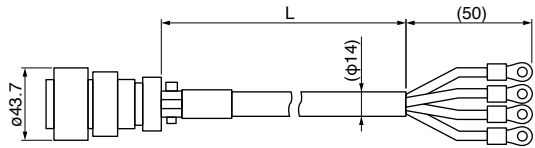
[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCA0033ECT
Cable clamp	JL04-2022CK(14)-R		5	MFMCA0053ECT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCA0103ECT
Cable	ROBO-TOP 600 V 3.5 mm ² 4-wire	DYDEN CORPORATION	20	MFMCA0203ECT

Part No.	MFMCD0 * * 3ECT	Applicable model	MFME 4.5 kW (200 V and 400 V commonness)
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[Unit: mm]



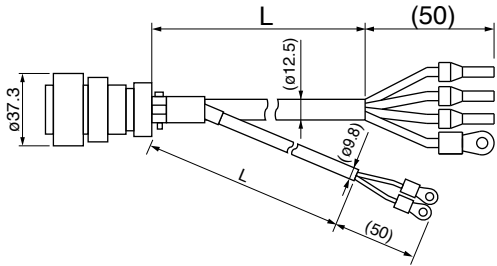
Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCD0033ECT
Cable clamp	JL04-2428CK(17)-R		5	MFMCD0053ECT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCD0103ECT
Cable	ROBO-TOP 600 V 3.5 mm ² 4-wire	DYDEN CORPORATION	20	MFMCD0203ECT

Motor Cable (with Brake)

* It doesn't correspond to IP65 and IP67.

Part No.	MFMCA0 * * 2FCD	Applicable model	MSME 1.0 kW to 2.0 kW(200 V), MDME 1.0 kW to 2.0 kW(200 V), MFME 1.5 kW(200 V), MHME 1.0 kW(200 V) to 1.5 kW(200 V) MGME 0.9 kW(200V)
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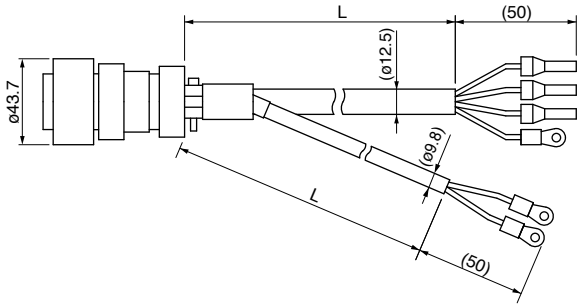
[Unit: mm]



Title		Part No.	Manufacturer	L (m)	Part No.
Connector		JL04V-6A20-18SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCA0032FCD
Cable clamp		JL04-2022CK(14)-R		5	MFMCA0052FCD
Rod terminal		NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCA0102FCD
Nylon insulated round terminal	Earth	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0202FCD
	Brake	N1.25-M4			
Cable		ROBO-TOP 600 V 0.75 mm ² and ROBO-TOP 600 V 2.0 mm ² 6-wire	DYDEN CORPORATION		

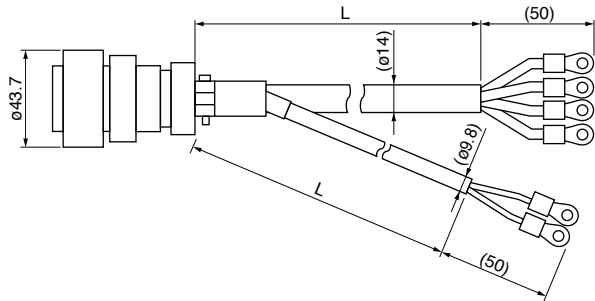
Part No.	MFMCE0 * * 2FCD	Applicable model	MSME 750 W(400 V) to 2.0 kW(400 V), MDME 400 W(400 V) to 2.0 kW(400 V), MFME 1.5 kW(400 V), 2.5 kW(200 V/400 V), MGME 0.9 kW(400 V) MHME 1.0 kW(400 V), 1.5 kW(400 V), 2.0 kW(200 V/400 V)
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[Unit: mm]



Title		Part No.	Manufacturer	L (m)	Part No.
Connector		JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCE0032FCD
Cable clamp		JL04-2428CK(17)-R		5	MFMCE0052FCD
Rod terminal		NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102FCD
Nylon insulated round terminal	Earth	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202FCD
	Brake	N1.25-M4			
Cable		ROBO-TOP 600 V 0.75 mm ² and ROBO-TOP 600 V 2.0 mm ² 6-wire	DYDEN CORPORATION		

Part No.	MFMCA0 * * 3FCT	Applicable model	MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kW MFME 4.5 kW, MHME 3.0 kW to 5.0 kW MGME 2.0 kW to 4.5 kW (All model 200 V and 400 V commonness)
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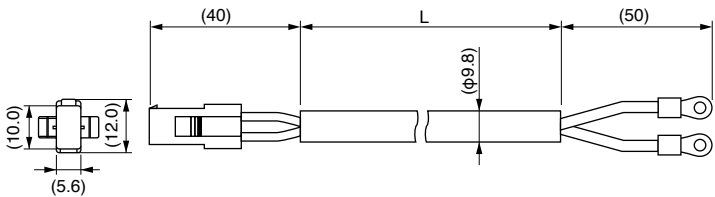


[Unit: mm]

Title	Part No.	Manufacturer
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.
Cable clamp	JL04-2428CK(17)-R	
Nylon insulated round terminal	Earth Brake N5.5-5 N1.25-M4	J.S.T Mfg. Co., Ltd.
Cable	ROBO-TOP 600 V 0.75 mm ² and ROBO-TOP 600 V 3.5 mm ² 6-wire	DYDEN CORPORATION

L (m)	Part No.
3	MFMCA0033FCT
5	MFMCA0053FCT
10	MFMCA0103FCT
20	MFMCA0203FCT

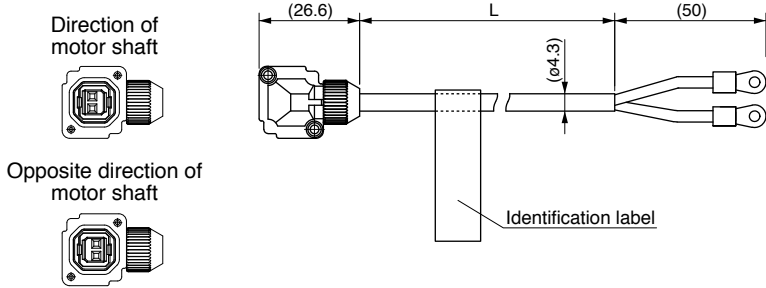
Part No.	MFMCB0 * * 0GET	Applicable model	MSMD 50 W to 750 W, MHMD 200 W to 750 W MSMJ 200 W to 750 W, MHMJ 200 W to 750 W
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.
Connector	172157-1	Tyco Electronics	3	MFMCB0030GET
Connector pin	170366-1, 170362-1		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 ² 2-wire	DYDEN CORPORATION	20	MFMCB0200GET

Part No.	MFMCB0 * * 0PJT (Highly bendable type, Direction of motor shaft)	Applicable model	MSME 50 W to 750 W (200 V)
	MFMCB0 * * 0PKT (Highly bendable type, Opposite direction of motor shaft)		
	MFMCB0 * * 0SJT (Standard bendable type, Direction of motor shaft)		
	MFMCB0 * * 0SKT (Standard bendable type, Opposite direction of motor shaft)		

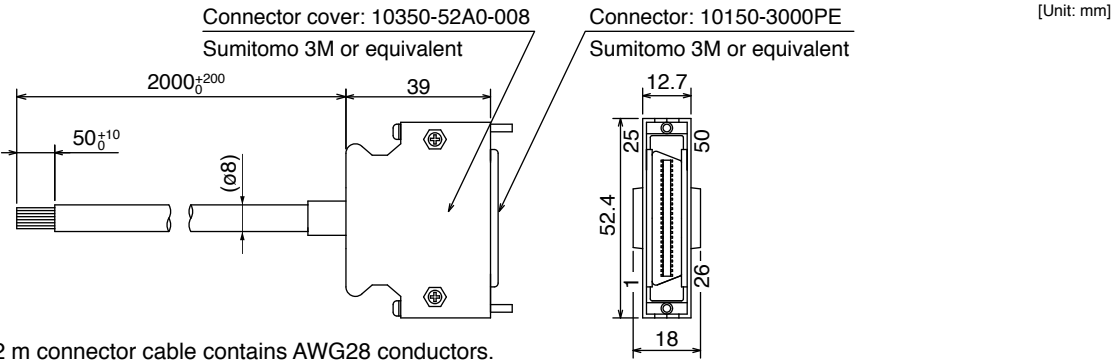


[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.
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 (ø4.3)	Hitachi Cable, Ltd.	20	MFMCB0200PJT

Cable for Interface

Part No.	DV0P4360
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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
The shield of this cable is connected to the connector shell but not to the terminal.

Interface Conversion Cable

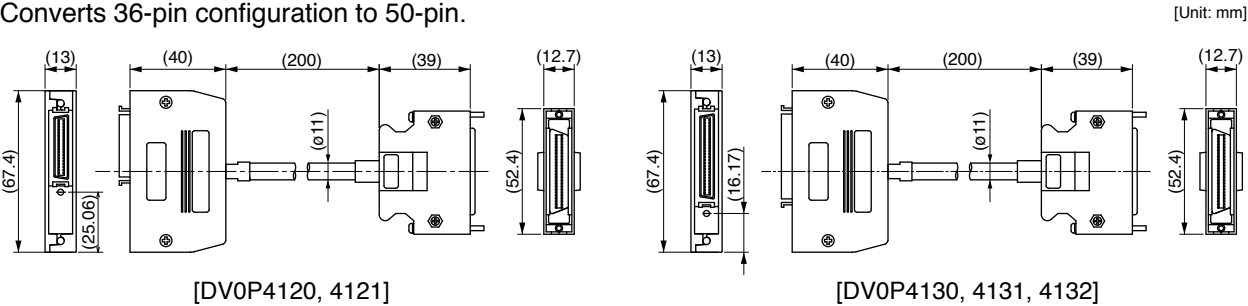
Part No.	DV0P4120, 4121, 4130, 4131, 4132
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Interface cables for old product (XX series or V series) can be connected to the current product by using the connector conversion cable shown below.

DV0P4120	MINAS XX → A5Ⅱ, A5 series (A4, A series) for position control/ velocity control
DV0P4121	MINAS XX → A5Ⅱ, A5 series (A4, A series) for torque control
DV0P4130	MINAS V → A5Ⅱ, A5 series (A4, A series) for position control
DV0P4131	MINAS V → A5Ⅱ, A5 series (A4, A series) for velocity control
DV0P4132	MINAS V → A5Ⅱ, A5 series (A4, A series) for torque control

* For details of wiring, contact our sales department.

Converts 36-pin configuration to 50-pin.



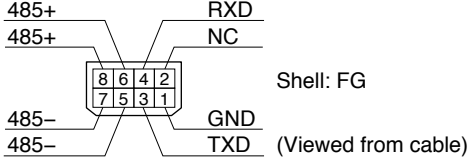
Connector Kit for Communication Cable (for RS485, RS232) (Excluding A5ⅡE, A5E Series)

Part No.	DV0PM20024
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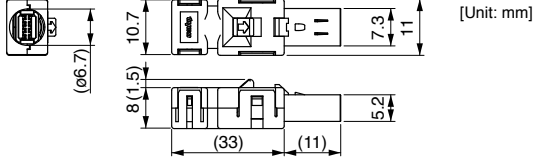
• Components

Title	Part No.	Manufacturer	Note
Connector	2040008-1	Tyco Electronics	For Connector X2 (8-pins)

• Pin disposition of connector, connector X2



• Dimensions



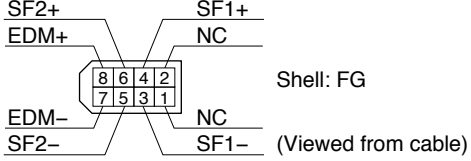
Connector Kit for Safety (Excluding A5ⅡE, A5E Series)

Part No.	DV0PM20025
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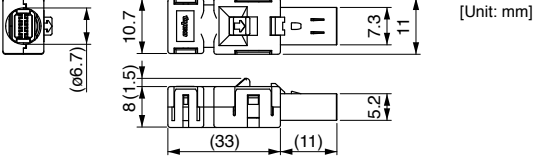
• Components

Title	Part No.	Manufacturer	Note
Connector	2013595-1	Tyco Electronics	For Connector X3 (8-pins)

• Pin disposition of connector, connector X3



• Dimensions



Safety bypass plug (Excluding A5ⅡE, A5E Series)

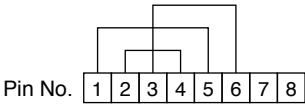
Part No.	DV0PM20094
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• Components

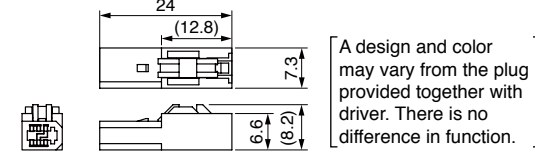
Title	Part No.	Manufacturer	Note
Connector	CIF-PB08AK-GF1R	J.S.T Mfg. Co., Ltd.	For Connector X3

• Internal wiring

(Wiring of the following has been applied inside the plug.)



• Dimensions (Resin color : black)



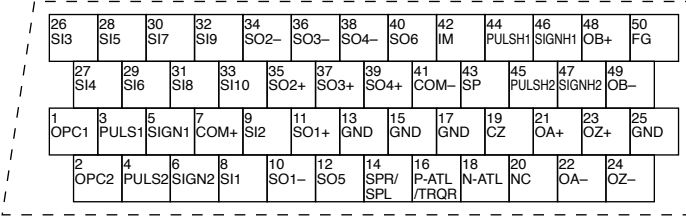
Connector Kit for Interface

Part No.	DV0P4350
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	10150-3000PE	1	Sumitomo 3M	For Connector X4
Connector cover	10350-52A0-008	1	(or equivalent)	(50-pins)

• 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.

<Remarks>

• For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.213 "List of Peripheral Equipments".

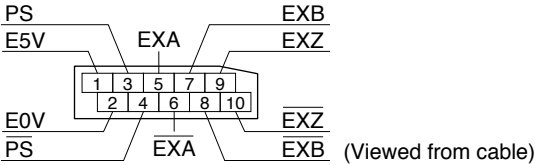
Connector Kit for External Scale (Excluding A5IIE, A5E Series)

Part No.	DV0PM20026
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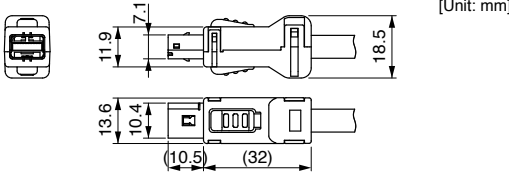
• Components

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



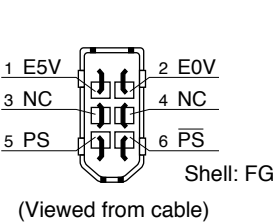
Connector Kit for Encoder

Part No.	DV0PM20010
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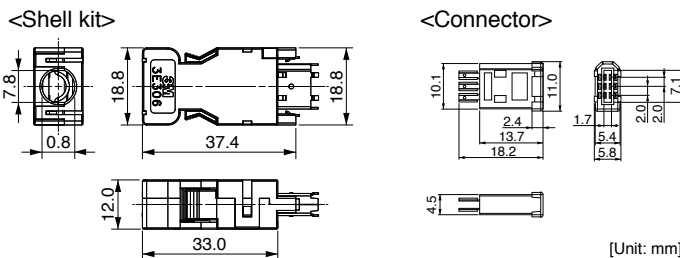
• Components

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



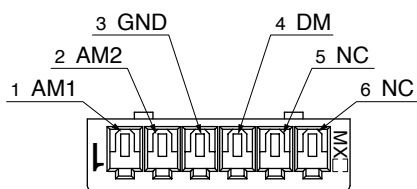
Connector Kit for Analog Monitor Signal

Part No.	DV0PM20031
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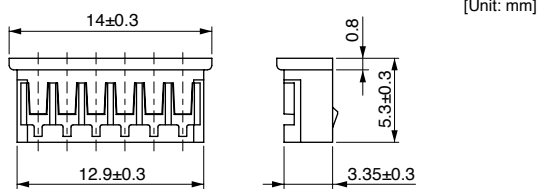
• Components

Title	Part No.	Number	Manufacturer	Note
Connector	510040600	1	Molex Inc	For Connector X7 (6-pins)
Connector pin	500118100	6		

• Pin disposition of connector, connector X7



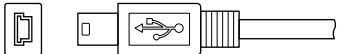
• Dimensions



<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 C-frame 100 V, A-frame to D-frame 200 V: Single row type)
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• Components

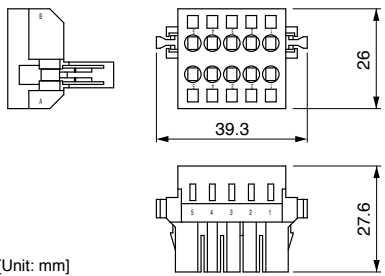
Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGF	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT	2		

Part No.	DV0PM20033 (For A-frame to D-frame 200 V: Double row type)
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• 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 MDDKT5540 *** or MDDHT5540 *** in single-phase power supply, do not use DV0PM20033.

Driver part No.	Power supply	Rated input current
MADHT1105 *** MADKT1105 ***	Single phase 100 V	1.7 A
MADHT1107 *** MADKT1107 ***	Single phase 100 V	2.6 A
MADHT1505 *** MADKT1505 ***	Single phase/3-phase 200 V	1.6 A/0.9 A
MADHT1507 *** MADKT1507 ***	Single phase/3-phase 200 V	2.4 A/1.3 A
MBDHT2110 *** MBDKT2110 ***	Single phase 100 V	4.3 A
MBDHT2510 *** MBDKT2510 ***	Single phase/3-phase 200 V	4.1 A/2.4 A
MCDHT3120 *** MCDKT3120 ***	Single phase 100 V	7.6 A
MCDHT3520 *** MCDKT3520 ***	Single phase/3-phase 200 V	6.6 A/3.6 A
MDDHT3530 *** MDDKT3530 ***	Single phase/3-phase 200 V	9.1 A/5.2 A
MDDHT5540 *** MDDKT5540 ***	Single phase/3-phase 200 V	14.2 A/8.1 A

Part No.	DV0PM20044 (For E-frame 200 V)
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• 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		

Part No.	DV0PM20051 (For D-frame 400 V)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	03JFAT-SAYGSA-M	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT-L	2		

Part No.	DV0PM20052 (For E-frame 400 V)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	03JFAT-SAYGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT-L	2		

Connector Kit for Control Power Supply Input

Part No.	DV0PM20053 (For D, E-frame 400 V)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	02MJFAT-SAGF	1	J.S.T Mfg. Co., Ltd.	For Connector XD
Handle lever	MJFAT-0T	1		

Connector Kit for Regenerative Resistor Connection (E-frame)

Part No.	DV0PM20045 (For E-frame 200 V/400 V)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	04JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XC * Jumper wire is included.
Handle lever	J-FAT-OT-L	2		

Part No.	DV0PM20055 (For D-frame 400 V)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	04JFAT-SAXGSA-M	1	J.S.T Mfg. Co., Ltd.	For Connector XC
Handle lever	J-FAT-OT-L	2		

Connector Kit for Motor Connection (Driver side)

Part No.	DV0PM20034 (For A-frame to C-frame 100 V, A-frame to D-frame 200 V)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	06JFAT-SAXGF	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 200 V/400 V)
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• 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		

Part No.	DV0PM20054 (For D-frame 400 V)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	03JFAT-SAXGSA-M	1	J.S.T Mfg. Co., Ltd.	For Connector XB
Handle lever	J-FAT-OT-L	2		

Connector Kit

* When IP65 or IP67 are necessary, the customer must give appropriate processing.

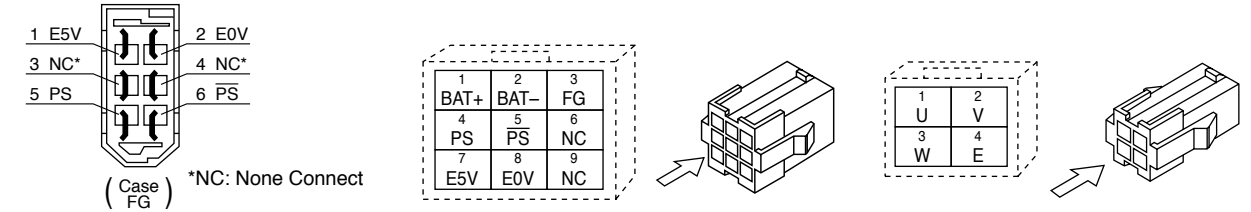
Connector Kit for Motor/Encoder Connection

Part No.	DV0P4290	Applicable model	MSMD 50 W to 750 W, MHMD 200 W to 750 W (absolute encoder type)
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• 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	For Encoder cable (9-pins)
Connector pin	170365-1	9		
Connector	172159-1	1	Tyco Electronics	For Motor cable (4-pins)
Connector pin	170366-1	4		

- Pin disposition of connector, connector X6
- Pin disposition of connector for encoder cable
- Pin disposition of connector for motor cable



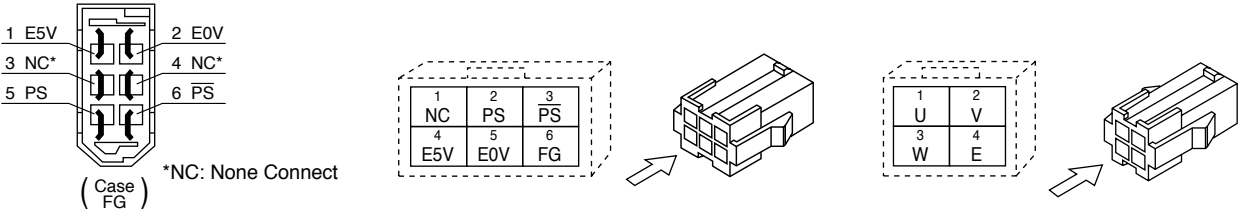
* When you connect the battery for absolute encoder, refer to P.207, "When you make your own cable for 17-bit absolute encoder"

Part No.	DV0P4380	Applicable model	MSMD 50 W to 750 W, MSMJ 200 W to 750 W, MHMD 200 W to 750 W, MHMJ 200 W to 750 W (incremental encoder type)
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• 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	172160-1	1	Tyco Electronics	For Encoder cable (6-pins)
Connector pin	170365-1	6		
Connector	172159-1	1	Tyco Electronics	For Motor cable (4-pins)
Connector pin	170366-1	4		

- Pin disposition of connector, connector X6
- Pin disposition of connector for encoder cable
- Pin disposition of connector for motor cable

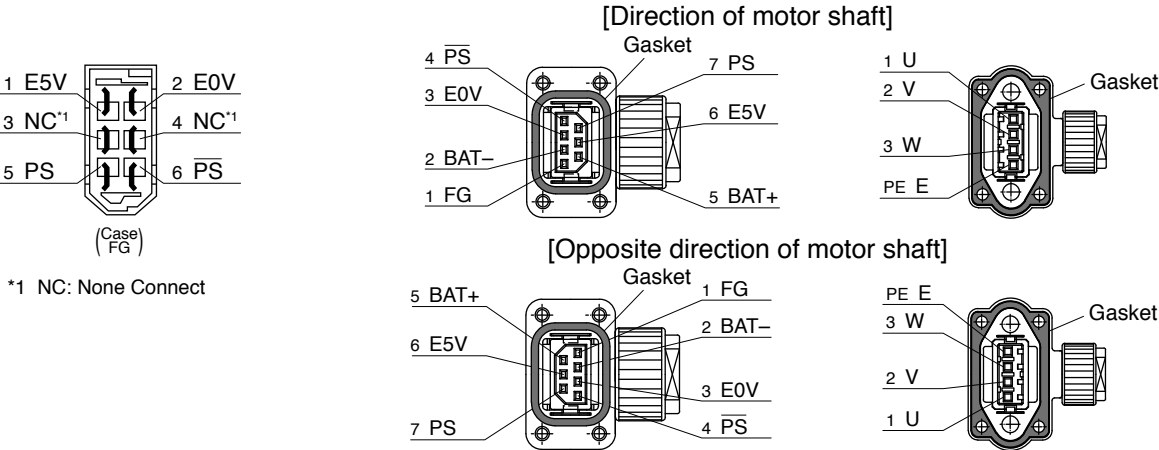


Part No.	DV0PM20035	Applicable model	MSME 50 W to 400 W(100 V), 50 W to 750 W(200 V)
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• Components

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	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



*1 NC: None Connect

* Pins 2 and 5 are left unused (NC) with an incremental encoder.

Remarks Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

Part No.	DV0PM20036	Applicable model	<IP67 motor> MSME 750 W (400 V), 1.0 kW to 2.0 kW, MDME 400 W (400 V), 600 W (400 V), 1.0 kW to 2.0 kW MHME 1.0 kW to 1.5 kW, MGME 0.9 kW (All model 200 V and 400 V commonness)	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		
Motor connector	JL04V-6A-20-4SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		

<Remarks>

- For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.213 "List of Peripheral Equipments".

Part No.	DV0P4310	Applicable model	<IP65 motor> MSME 750 W (400 V), 1.0 kW to 2.0 kW MDME 400 W (400 V), 600 W (400 V), 1.0 kW to 2.0 kW MHME 1.0 kW to 1.5 kW, MGME 0.9 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		
Motor connector	N/MS3106B20-4S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-12A	1		

Part No.	DV0PM20037	Applicable model	<IP67 motor> MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kW MHME 2.0 kW to 5.0 kW, MGME 2.0 kW to 4.5 kW (All model 200 V and 400 V commonness)	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		
Motor connector	JL04V-6A22-22SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		

Part No.	DV0P4320	Applicable model	<IP65 motor> MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kW MHME 2.0 kW to 5.0 kW, MGME 2.0 kW to 4.5 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		
Motor connector	N/MS3106B22-22S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-12A	1		

Part No.	DV0PM20038	Applicable model	<IP67 motor> MSME 1.0 kW to 2.0 kW, MDME 1.0 kW to 2.0 kW MFME 1.5 kW (Common to with/ without brake), MHME 1.0 kW to 1.5 kW, MGME 0.9 kW (All model 200 V)	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		
Motor connector	JL04V-6A20-18SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		

Part No.	DV0P4330	Applicable model	<IP65 motor> MSME 1.0 kW to 2.0 kW, MDME 1.0 kW to 2.0 kW MHME 1.0 kW to 1.5 kW, MGME 0.9 kW (All model 200 V)	With brake
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• 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		
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		
Motor connector	N/MS3106B20-18S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-12A	1		

Part No.	DV0PM20039	Applicable model	<IP67 motor> (200V) MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kW MFME 2.5 kW to 4.5 kW (Common to with/ without brake), MHME 2.0 kW to 5.0 kW, MGME 2.0 kW to 4.5 kW (400V) MSME 750 W to 5.0 kW, MDME 400 W to 5.0 kW MFME 1.5 kW to 4.5 kW (Common to with/ without brake), MHME 1.0 kW to 5.0 kW, MGME 0.9 kW to 4.5 kW	With brake
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• 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		
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		
Motor connector	JL04V-6A24-11SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2428CK(17)-R	1		

Part No.	DV0P4340	Applicable model	<IP65 motor> (200V) MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kW MHME 2.0 kW to 5.0 kW, MGME 2.0 kW to 3.0 kW (400V) MSME 750 W to 5.0 kW, MDME 400 W to 5.0 kW MHME 1.0 kW to 5.0 kW, MGME 0.9 kW to 3.0 kW	With brake
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• 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		
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		
Motor connector	N/MS3106B24-11S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-16A	1		

<Remarks>

- For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.213 "List of Peripheral Equipments".

Part No.	DV0PM20056	Applicable model	<IP67 motor> MDME 7.5 kW to 15.0 kW MGME 6.0 kW, MHME 7.5 kW	Without brake
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• 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		
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		
Motor connector	JL04V-6A32-17SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-32CK(24)-R	1		

* Cable cover size: Φ22 to Φ25. Cable core material is not specified. The user can select the cable compatible with the connector to be used.

Part No.	DV0PM20057	Applicable model	<IP67 motor> MDME 7.5 kW to 15.0 kW MGME 6.0 kW, MHME 7.5 kW	With brake
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• 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		
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		
Motor connector	JL04V-6A32-17SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-32CK(24)-R	1		
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable
Cable clamp	N/MS3057-6A	1		

* Cable cover size: Φ22 to Φ25. Cable core material is not specified. The user can select the cable compatible with the connector to be used.

Connector Kit for Motor/Brake Connection

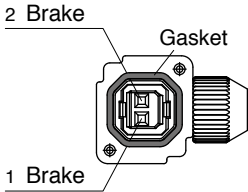
Part No.	DV0PM20040	Applicable model	MSME 50 W to 750 W
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• Components

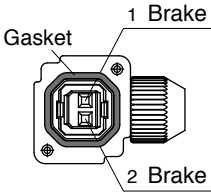
Title	Part No.	Number	Manufacturer	Note
Connector	JN4FT02SJM-R	1	Japan Aviation Electronics Ind.	For brake cable
Socket contact	ST-TMH-S-C1B-3500	2		

• 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.

<Remarks>

- For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.213 "List of Peripheral Equipments".

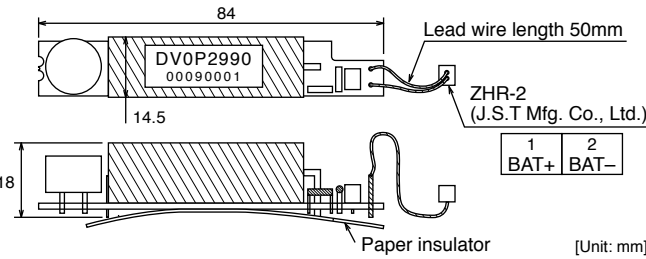
Battery for Absolute Encoder

* A5IIIE, A5E series does not support to absolute encoder.

Battery for Absolute Encoder

Part No. DV0P2990

• Lithium battery: 3.6 V 2000 mAh

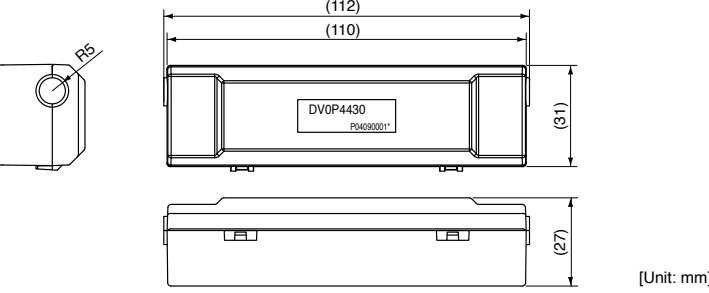


<Caution>
This battery is categorized as hazardous substance, and you may be required to present an application of hazardous substance when you transport by air (both passenger and cargo airlines).

Battery Box for Absolute Encoder *

* Battery is not included. Please buy the absolute encoder battery “DV0P2990” separately.

Part No. DV0P4430

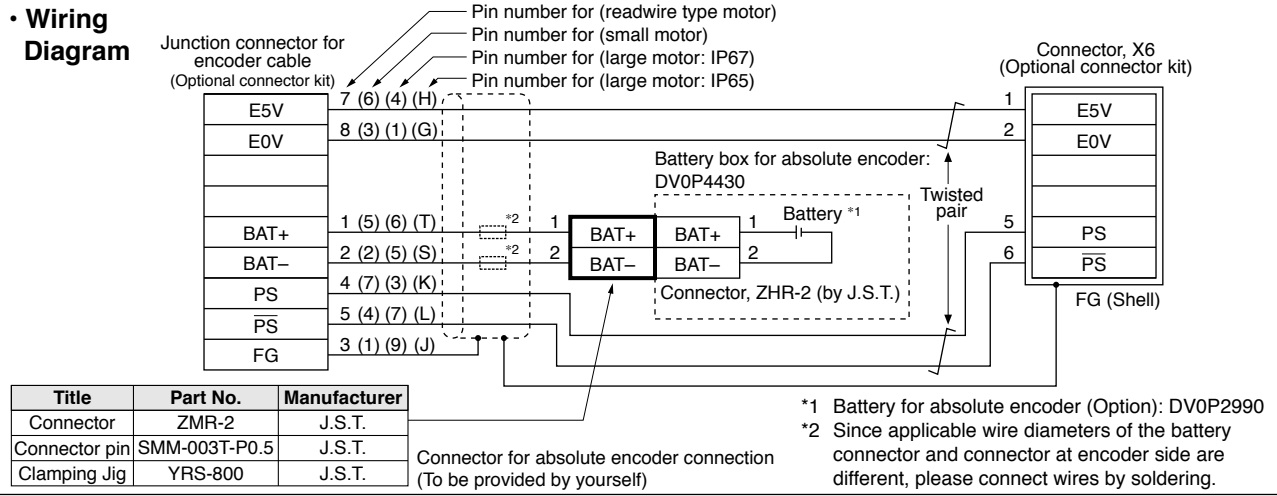


When waking a cable for 17-bit absolute encoder by yourself

When you make your own cable for 17-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.

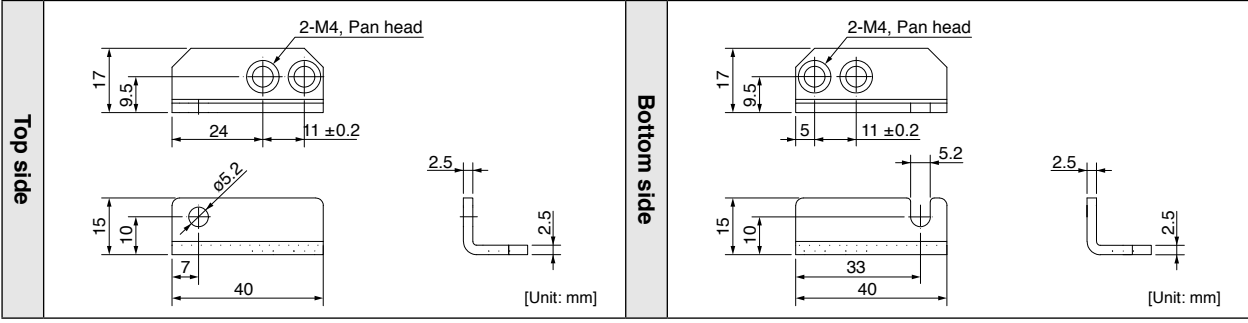
<Caution>
Install and fix the battery securely. If the installation and fixing of the battery is not appropriate, it may cause the wire breakdown or damage of the battery.
Refer to the instruction manual of the battery for handling the battery.

- **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

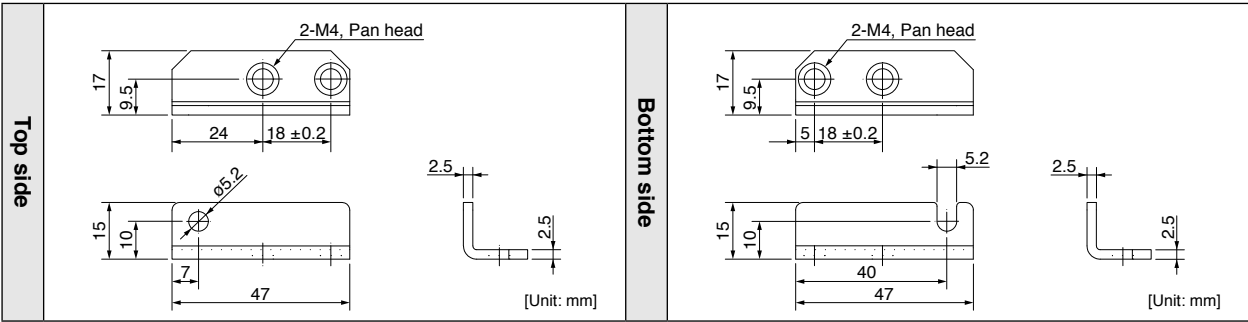


Mounting Bracket

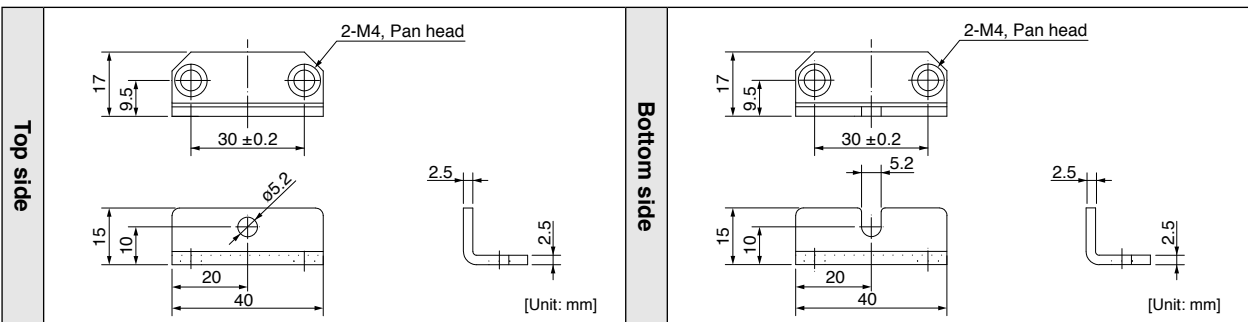
Part No.	DV0PM20027	Frame symbol of applicable driver	A-frame	Mounting screw	M4 × L6	Pan head	4pcs
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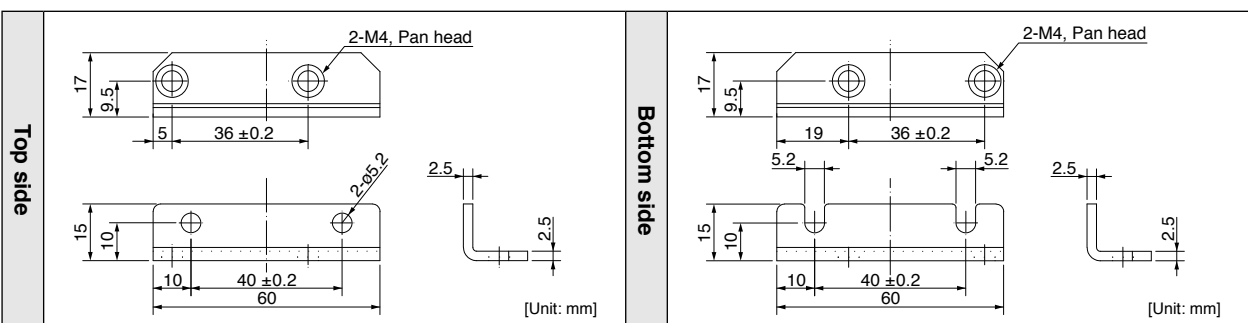
Part No.	DV0PM20028	Frame symbol of applicable driver	B-frame	Mounting screw	M4 × L6	Pan head	4pcs
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Part No.	DV0PM20029	Frame symbol of applicable driver	C-frame	Mounting screw	M4 × L6	Pan head	4pcs
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Part No.	DV0PM20030	Frame symbol of applicable driver	D-frame	Mounting screw	M4 × L6	Pan head	4pcs
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<Caution>
For E, F and G-frame, it is possible to make both a front end and back end mounting by changing the mounting direction of L-shape bracket (attachment).

Fig.1

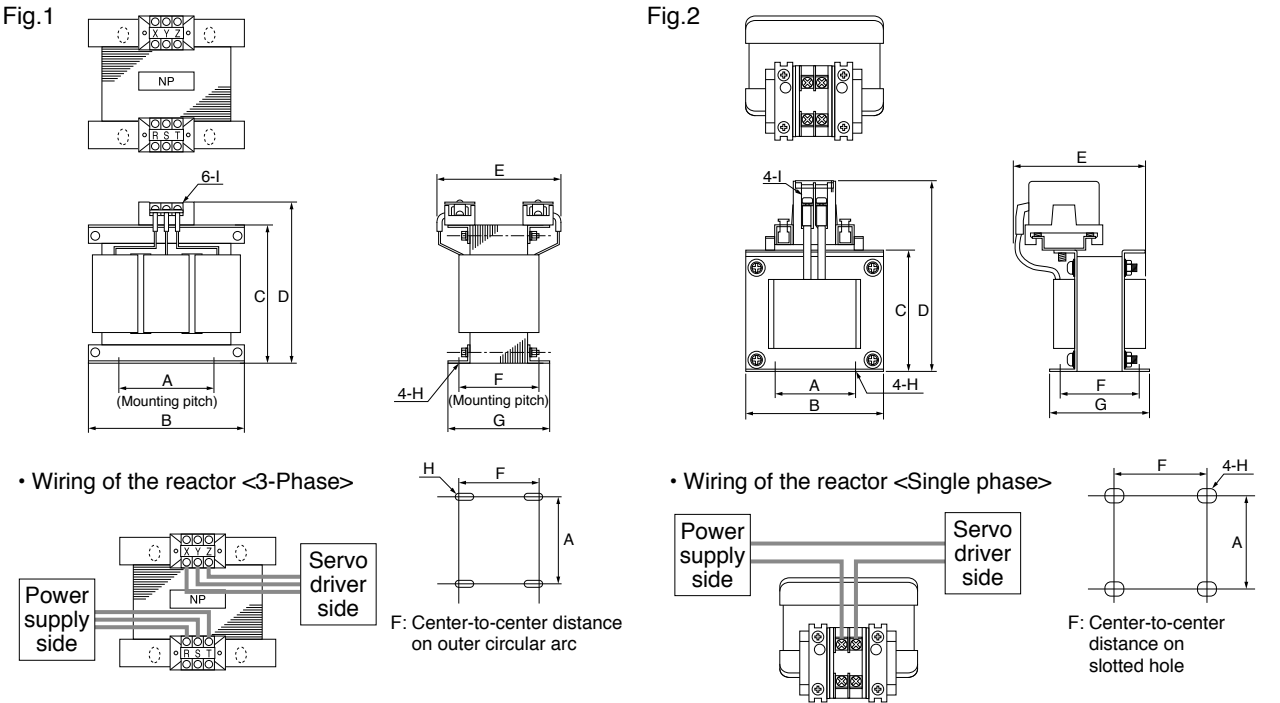
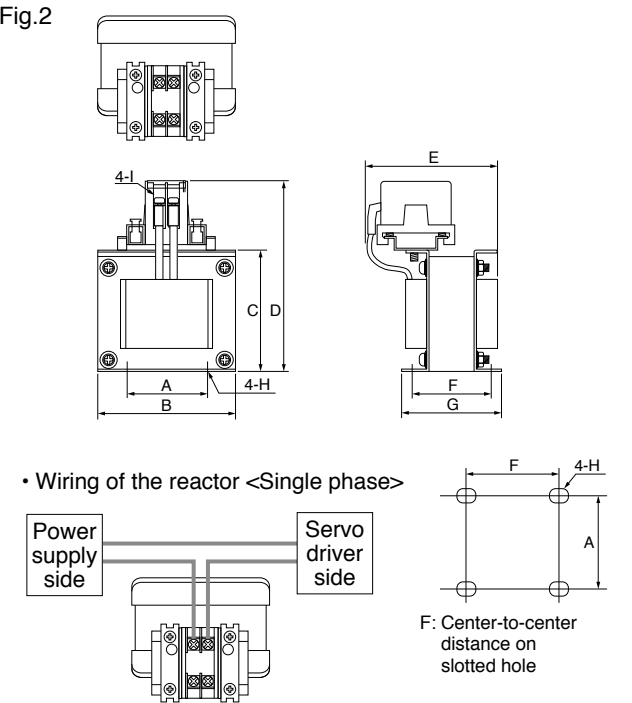


Fig.2



[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 _{Max}	155	70+3/-0	85±2	4-7φ×12	M4	6.81	3
	DV0P221	60±1	150±1	(113)	155 _{Max}	130	60+3/-0	75±2	4-7φ×12	M4	4.02	5
	DV0P222	60±1	150±1	(113)	155 _{Max}	140	70+3/-0	85±2	4-7φ×12	M4	2	8
	DV0P223	60±1	150±1	(113)	155 _{Max}	150	79+3/-0	95±2	4-7φ×12	M4	1.39	11
	DV0P224	60±1	150±1	(113)	160 _{Max}	155	84+3/-0	100±2	4-7φ×12	M5	0.848	16
	DV0P225	60±1	150±1	(113)	160 _{Max}	170	100+3/-0	115±2	4-7φ×12	M5	0.557	25
Fig.2	DV0P227	55±0.7	80±1	66.5±1	110 _{Max}	90	41±2	55±2	4-5φ×10	M4	4.02	5
	DV0P228	55±0.7	80±1	66.5±1	110 _{Max}	95	46±2	60±2	4-5φ×10	M4	2	8
	DV0PM20047	55±0.7	80±1	66.5±1	110 _{Max}	105	56±2	70±2	4-5φ×10	M4	1.39	11

* For application, refer to P.21 to P.28 and P.153 to P.154 “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.

With products for Japan, on September, 1994, “Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system” and “Guidelines for harmonic restraint on household electrical appliances and general-purpose articles” established by the Agency for Natural Resources and Energy of the Ministry of Economy, Trade and Industry (the ex-Ministry of International Trade and Industry). According to those guidelines, the Japan Electrical Manufacturers’ Association (JEMA) have prepared technical documents (procedure to execute harmonic restraint: JEM-TR 198, JEM-TR 199 and JEM-TR 201) and have been requesting the users to understand the restraint and to cooperate with us. On January, 2004, it has been decided to exclude the general-purpose inverter and servo driver from the “Guidelines for harmonic restraint on household electrical appliances and general-purpose articles”. After that, the “Guidelines for harmonic restraint on household electrical appliances and general-purpose articles” was abolished on September 6, 2004.

We are pleased to inform you that the procedure to execute the harmonic restraint on general-purpose inverter and servo driver was modified as follows.

- All types of the general-purpose inverters and servo drivers used by specific users are under the control of the “Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system”. The users who are required to apply the guidelines must calculate the equivalent capacity and harmonic current according to the guidelines and must take appropriate countermeasures if the harmonic current exceeds a limit value specified in a contract demand. (Refer to JEM-TR 210 and JEM-TR 225.)
- The “Guidelines for harmonic restraint on household electrical appliances and general-purpose articles” was abolished on September 6, 2004. However, based on conventional guidelines, JEMA applies the technical documents JEM-TR 226 and JEM-TR 227 to any users who do not fit into the “Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system” from a perspective on enlightenment on general harmonic restraint. The purpose of these guidelines is the execution of harmonic restraint at every device by a user as usual to the utmost extent.

<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) *1		
					Free air	with fan 1 m/s	
		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	
DV0PM20048	RF240	120		0.5	35	80	
DV0PM20049	RH450F	80		1.2	65	190	
DV0PM20058	RH450F × 6	3.3	— *2	16	— *3	780	
DV0PM20059	RH450F × 6	13.3	— *2	16	— *3	1140	

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.

Attach the regenerative resistor to a nonflammable material such as metal.

Cover the regenerative resistor with a nonflammable material so that it cannot be directly touched.

Temperatures of parts that may be directly touched by people should be kept below 70 °C.

*2 Terminal block with screw tightening torque as shown below.

T1, T2, 24 V, 0 V, E : M4 : 1.2 N·m to 1.4 N·m

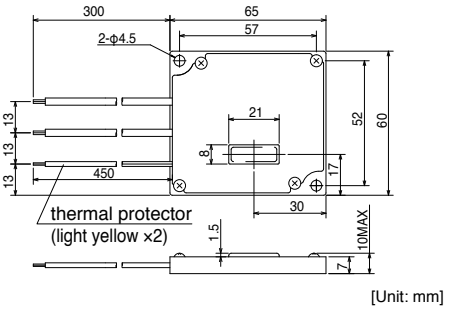
R1, R2 : M5 : 2.0 N·m to 2.4 N·m

Use the cable with the same diameter as the main circuit cable. (Refer to P.19).

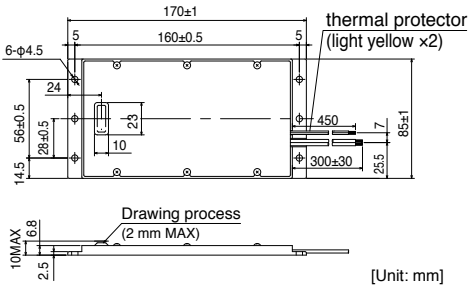
*3 With built-in fan which should always be operated with the power supply connected across 24 V and 0 V.

Frame	Power supply		
	Single phase, 100 V	Single phase, 200 V 3-phase, 200 V	3-phase, 400 V
A	DV0P4280	DV0P4281 (50 W, 100 W) DV0P4283 (200 W)	—
B	DV0P4283	DV0P4283	—
C	DV0P4282		
D	—	DV0P4284	DV0PM20048
E		DV0P4284 × 2 in parallel or DV0P4285	DV0PM20049
F		DV0P4285 × 2 in parallel	DV0PM20049 × 2 in parallel
G		DV0P4285 × 3 in parallel	DV0PM20049 × 3 in parallel
H		DV0P4285 × 6 in parallel or DV0PM20058	DV0PM20049 × 6 in parallel or DV0PM20059

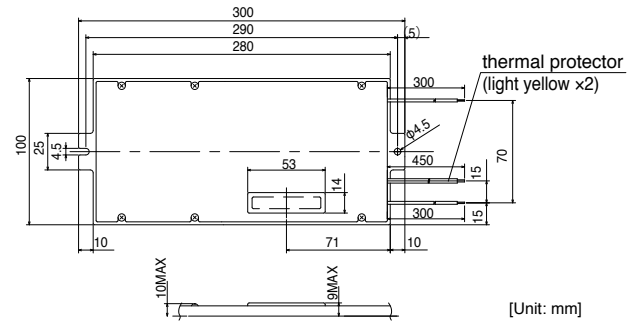
DV0P4280, DV0P4281



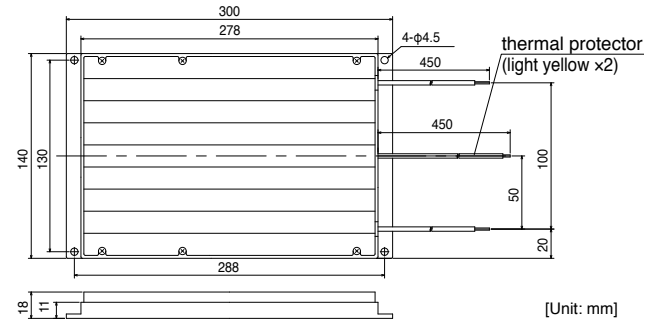
DV0P4282, DV0P4283



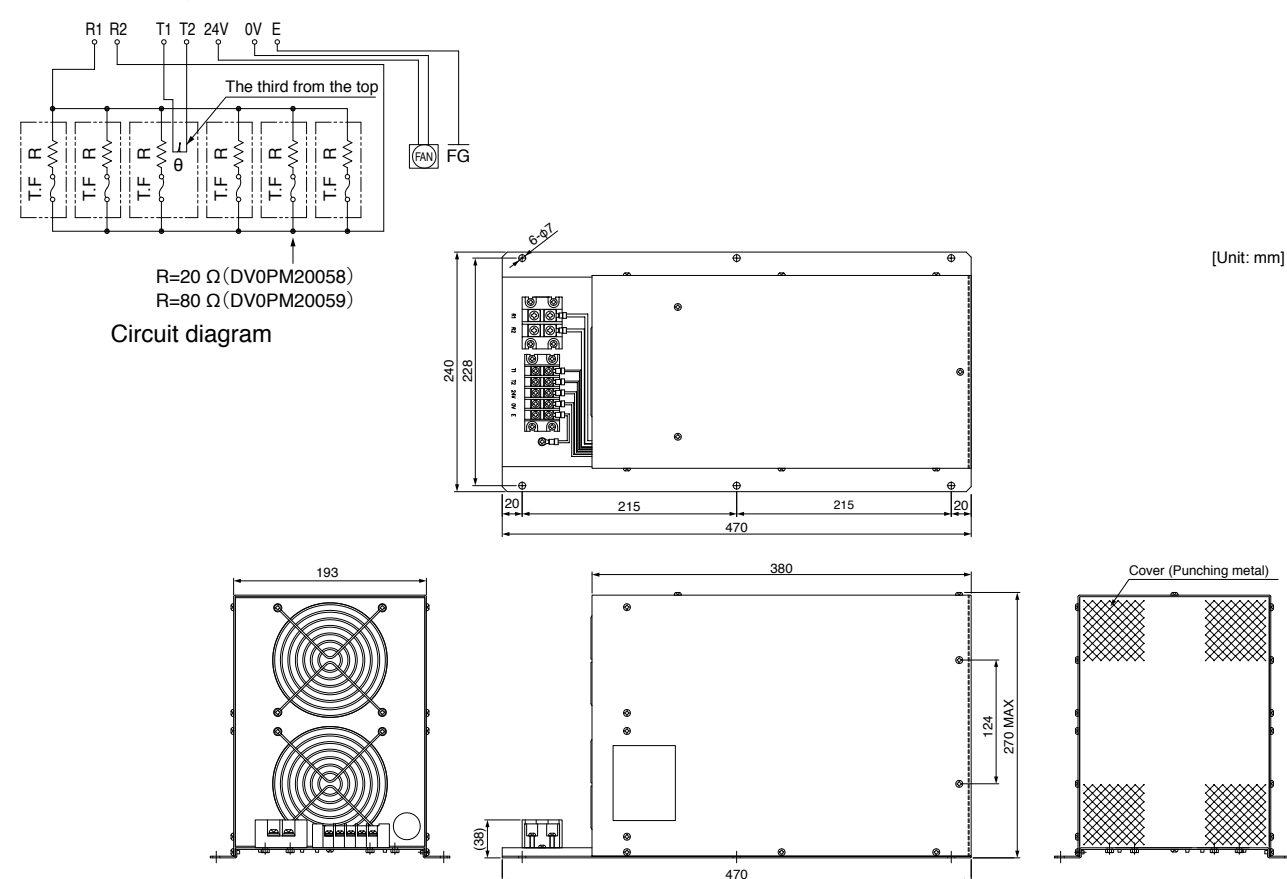
DV0P4284, DV0PM20048



DV0P4285, DV0PM20049



DV0PM20058, DV0PM20059



<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.

Surge Absorber for Motor Brake

Motor		Part No.	Manufacturer
MSMD	50 W to 750 W	Z15D271 or TNR15G271K	SEMITEC Corporation or NIPPON CHEMI-CON CORPORATION
MSMJ	200 W to 750 W		
MSME	50 W to 750 W		
	750 W (400 V) 1.0 kW to 5.0 kW	Z15D151	SEMITEC Corporation
MDME	400 W (400 V), 600 W (400 V)		
	1.0 kW to 3.0 kW	NVD07SCD082	KOA Corporation
	4.0 kW to 7.5 kW	Z15D151	SEMITEC Corporation
	11 kW, 15 kW	NVD07SCD082	KOA Corporation
MFME	1.5 kW		
	2.5 kW, 4.5 kW		
MGME	0.9 kW to 6.0 kW	Z15D151	SEMITEC Corporation
MHMD MHMJ	200 W to 750 W	Z15D271 or TNR15G271K	SEMITEC Corporation or NIPPON CHEMI-CON CORPORATION
MHME	1.0 kW, 1.5 kW	NVD07SCD082	KOA Corporation
	2.0 kW to 7.5 kW	Z15D151	SEMITEC Corporation

List of Peripheral Equipments

Manufacturer	Tel No. / Home Page	Peripheral components
Panasonic Corporation Eco Solutions Company	http://panasonic.net/es/	Circuit breaker
Panasonic Corporation Automotive & Industrial Systems Company	http://panasonic.net/id/	Surge absorber Switch, Relay
Iwaki Musen Kenkyusho Co., Ltd.	+81-44-833-4311 http://www.iwakimusen.co.jp/	Regenerative resistor
KOA Corporation	+81-42-336-5300 http://www.koanet.co.jp/en/index.htm	Surge absorber for holding brake
NIPPON CHEMI-CON CORPORATION	+81-3-5436-7711 http://www.chemi-con.co.jp/e/index.html	
SEMITEC Corporation	+81-3-3621-2703 http://www.semitec.co.jp/english2/	
KK-CORP.CO.JP	+81-184-53-2307 http://www.kk-corp.co.jp/	Noise filter for signal lines
MICROMETALS (Nisshin Electric Co., Ltd.)	+81-4-2934-4151 http://www.nisshin-electric.com/	
TDK Corporation	+81-3-5201-7229 http://www.global.tdk.com/	
Okaya Electric Industries Co. Ltd.	+81-3-4544-7040 http://www.okayaelec.co.jp/english/index.html	Surge absorber Noise filter
Japan Aviation Electronics Industry, Ltd.	+81-3-3780-2717 http://www.jae.co.jp/e-top/index.html	Connector
Japan Molex Inc.	+81-462-65-2313 http://www.molex.co.jp	
J.S.T. Mfg. Co., Ltd.	+81-45-543-1271 http://www.jst-mfg.com/index_e.php	
Sumitomo 3M	+81-3-5716-7290 http://solutions.3m.com/wps/portal/3M/ja_JP/WW2/Country/	
Tyco Electronics	+81-44-844-8052 http://www.te.com/ja/home.html	
DYDEN CORPORATION	+81-3-5805-5880 http://www.dyden.co.jp/english/index.htm	Cable
DR. JOHANNES HEIDENHAIN GmbH	+81-3-3234-7781 http://www.heidenhain.de/de_EN/company/contact/	External scale
Fagor Automation S.Coop.	+34-943-719-200 http://www.fagorautomation.com	
Magnescale Co., Ltd.	+81-463-92-7971 http://www.mgscale.com/mgs/language/english/	
Mitutoyo Corporation	+81-44-813-8234 http://www.mitutoyo.co.jp/eng/	
Nidec Sankyo Corporation	+81-3-5740-3006 http://www.nidec-sankyo.co.jp/	
Renishaw plc	+44 1453 524524 www.renishaw.com	
Schaffner EMC, Inc.	+81-3-5712-3650 http://www.schaffner.jp/	Noise filter
TDK-Lambda Corporation	+81-3-5201-7140 http://www.tdk-lambda.com/	

* The above list is for reference only. We may change the manufacturer without notice.

Compact Servo Only for Position Control.

Ultra compact
position control type

MINAS E Series



1 Best Fit to Small Drives

- Further evolution in down-sizing, by 47 % in size. (Note)
 - 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.

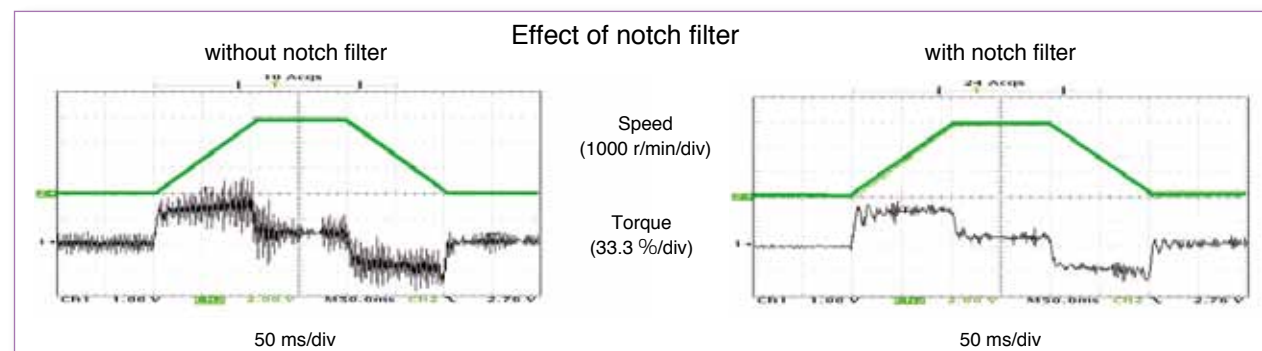
2. Further Reduction of Vibration

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.

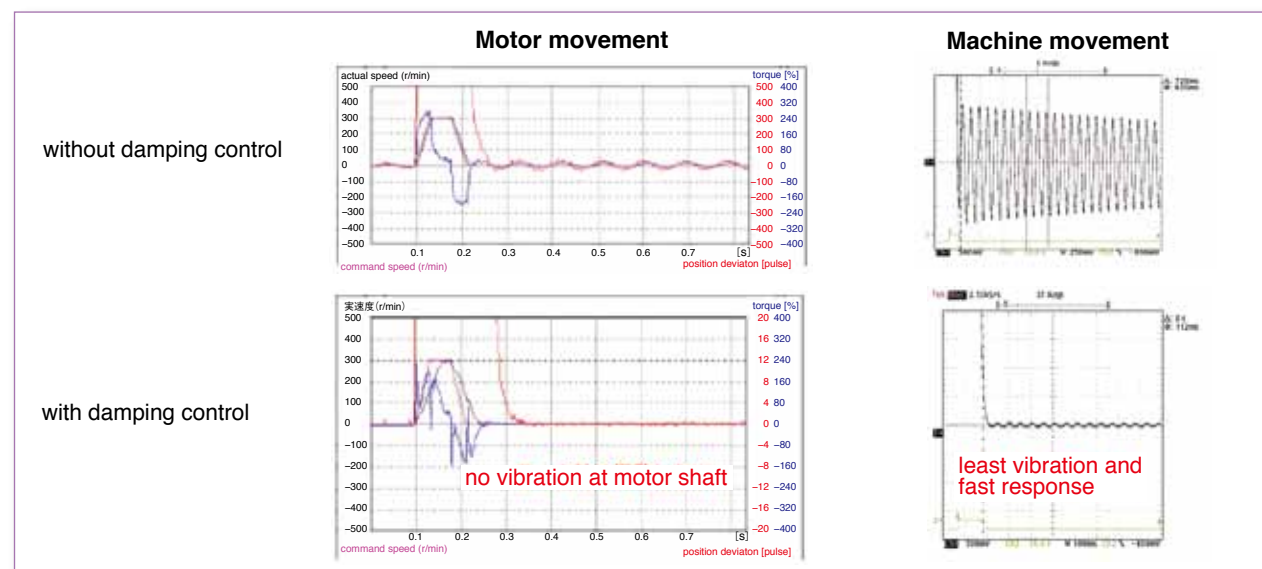
Notch filter (Note1)

- 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.241, 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.236 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.236 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.236 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 Low-Voltage Directives
Motor and driver	EN50178	UL508C	CSA22.2 No.14	Conforms to references by EMC Directives
	EN55011	Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment		
	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 : Europäischen Normen
 EMC : Electromagnetic Compatibility
 UL : Underwriters Laboratories
 CSA : Canadian Standards Association

Pursuant to at the directive 2004/108/EC, article 9(2)

Panasonic Testing Centre
 Panasonic Service Europe,
 a division of Panasonic Marketing Europe GmbH
 Winsbergring 15, 22525 Hamburg, F.R. Germany

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

MINAS E Series

Motor Line-up

Motor series	Rated output (kW)	Rated rotational speed (Max. speed) (r/min)	Rotary encoder		Brake Holding	Gear High precision	UL/ CSA	Enclosure	Features	Applications
			2500 P/r incremental	17bit absolute/ incremental						
Ultra low inertia	0.05 to 0.4	3000 (5000)	○	—	○	○	○	IP65 Except shaft throughhole and connector	Small capacity Ultra low inertia	SMT machines Inserters High repetitive positioning application

MINAS E Series

Model Designation

■ Servo Motor

M U M A 5 A Z P 1 S * *

Symbol	Type
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
1	100 V
2	200 V
Z	100 V/200 V common (50 W only)

Symbol	Specifications
1	Standard

Symbol	Shaft	Holding brake		Oil seal	
	Key-way, center tap	without	with	without	with*
S	●	●		●	
T	●		●	●	

* Motor with oil seal is manufactured by order.

Symbol	Specifications
1	Standard

Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500 P/r	10000	5

Special specifications

Motor structure

Design order

See P.227 for motor specifications

■ Motor with gear reducer

M U M A 0 1 1 P 3 1 N

Symbol	Type
MUMA	Ultra low inertia (100 W to 400 W)

Symbol	Rated output
01	100 W
02	200 W
04	400 W

Symbol	Specifications
1	100 V
2	200 V

Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500 P/r	10000	5

Symbol	Gear reduction ratio	Motor output (W)			Gear type
		100	200	400	
1N	1/5	●	●	●	
2N	1/9	●	●	●	
4N	1/25	●	●	●	For high accuracy

Symbol	Shaft	Holding brake	
	Key-way	without	with
3	●	●	
4	●		●

Motor rated output

Voltage specifications

Rotary encoder specifications

Gear reduction ration, gear type

Motor structure

See P.232 for motor with gear reducer specifications

■ Servo Driver

M K D E T 1 3 1 0 P * *

Symbol	Frame
MKDE	E series, K-frame
MLDE	E series, L-frame

Symbol	Current rating
T1	10 A
T2	15 A

Symbol	Specifications
1	Single phase, 100 V
2	Single phase, 200 V
3	3-phase, 200 V
5	Single/3-phase, 200 V

Symbol	Specifications
P	Pulse train

Symbol	Current rating
05	5 A
10	10 A

Special specifications

Control mode

Current detector current rating

Supply voltage specifications

Frame symbol

Power device Max. current rating

See P.223 for driver specifications

Overall Wiring/ Driver and List of Applicable Peripheral Equipments

• 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.

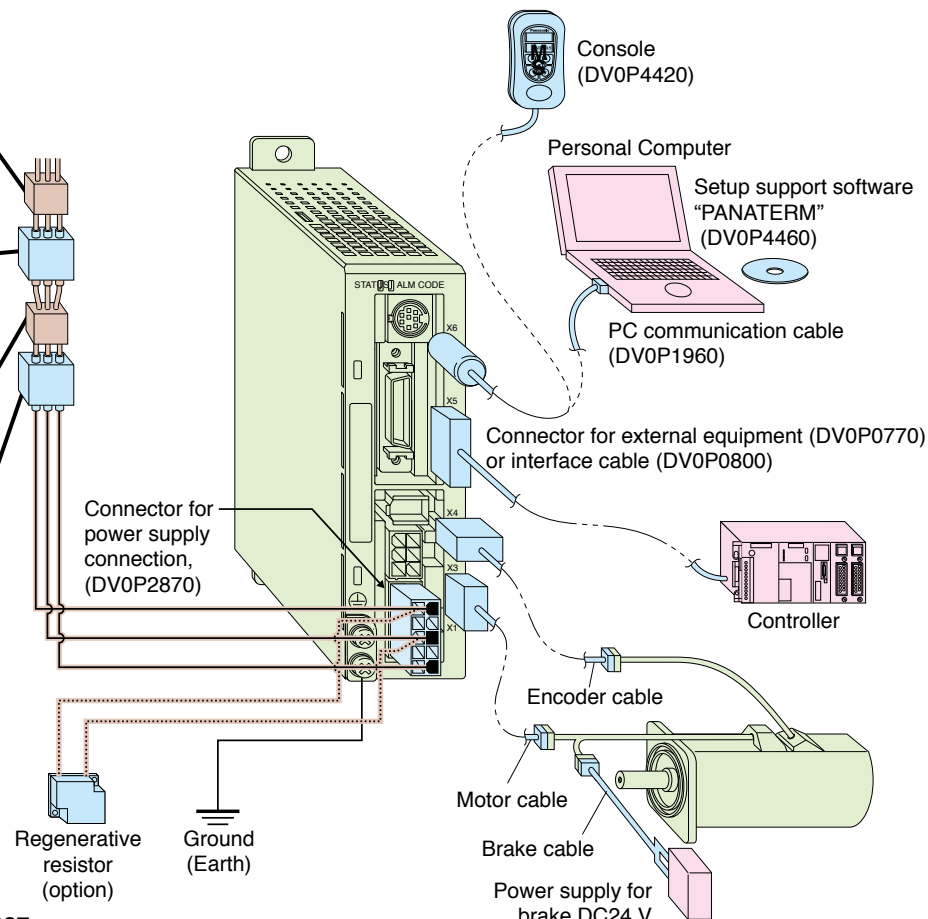
Reactor (L)

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.242 for regenerative
resistor.)

Motor	to P.227
Driver	to P.223
Option	to P.236
Recommended equipments	
Parts customer to prepare	



■ List of recommended peripheral equipments

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 ² to 0.85 mm ² AWG18	
		100 W	0.4 kVA					
		200 W	0.5 kVA					
Single phase, 200 V		50 W	0.3 kVA	(5 A)				
		100 W						
		200 W				0.5 kVA		(10 A)
		400 W						
3-phase 200 V		50 W	0.3 kVA	(5 A)				
		100 W						
		200 W				0.5 kVA		(10 A)
		400 W						

* Select the single and 3-phase common specifications corresponding to the power supplies.

● To conform to EC Directives, 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 P.256.

<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 mm² (AWG14) or larger.

■ Carrying page

Options		Part No.	Carrying page
Console		DV0P4420	241
Setup Support Software, PANATERM	Japanese	DV0P4460	236
	English		
RS232 Communication Cable (for Connection with PC)		DV0P1960	241
Interface Cable		DV0P0800	241
Connector Kit for External Equipment		DV0P0770	240
Connector Kit for Motor and Encoder		DV0P3670	239
Connector Kit for Driver Power Supply		DV0P2870	239
Encoder Cable	MFECA0 * * 0EAM		238
Motor Cable	MFMCA0 * * 0AEB		238
Brake Cable	MFMCB0 * * 0GET		238
Cable Set (3 m) (Note 3)	DV0P37300		238
Cable Set (5 m) (Note 3)	DV0P39200		238
DIN Rail Mount Unit		DV0P3811	242
External Regenerative Resistor	100 V	50 Ω 10 W	242
	200 V	100 Ω 10 W	
Reactor	100 V	DV0P227	243
		DV0P228	
	200 V	DV0P220	
Noise Filter		DV0P4160	256
Surge Absorber	Single phase 100 V, 200 V	DV0P4190	256
	3-phase 200 V	DV0P1450	
Noise Filter for Signal Wire		DV0P1460	256

(Note 3) 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 ^{Note) 1}	Rating/Spec. (page)	Driver	Dimensions (Frame symbol)	Encoder Cable ^{Note) 2}	Motor Cable ^{Note) 2}		Brake Cable ^{Note) 2}	External Regenerative Resistor	Reactor	Noise Filter	
Single phase 100 V	50	MUMA5AZP1 □	227	MKDET1105P	226 (K)	MFECA0 * * 0EAM	MFMCA0 * * 0AEB		MFMCB0 * * 0GET	DV0P2890	DV0P227	DV0P4160	
	100	MUMA011P1 □	227	MKDET1110P	226 (K)						DV0P228		
	200	MUMA021P1 □	227	MLDET2110P	226 (L)								
Single phase 200 V	50	MUMA5AZP1 □	229	MKDET1505P	226 (K)					DV0P228			
	100	MUMA012P1 □	229	MKDET1505P	226 (K)								
	200	MUMA022P1 □	229	MLDET2210P	226 (L)								
	400	MUMA042P1 □	229	MLDET2510P	226 (L)								
3-phase 200 V	50	MUMA5AZP1 □	229	MKDET1505P	226 (K)					DV0P2891	DV0P220		
	100	MUMA012P1 □	229	MKDET1505P	226 (K)								
	200	MUMA022P1 □	229	MKDET1310P	226 (K)								
	400	MUMA042P1 □	229	MLDET2510P	226 (L)								
				MLDET2310P									

Note) 1 Motor model number suffix: □

S : Key way with center tap, without brake

T : Kew way with center tap, with brake

Note) 2 * * represents cable length. For details, refer to P.237.

E Series

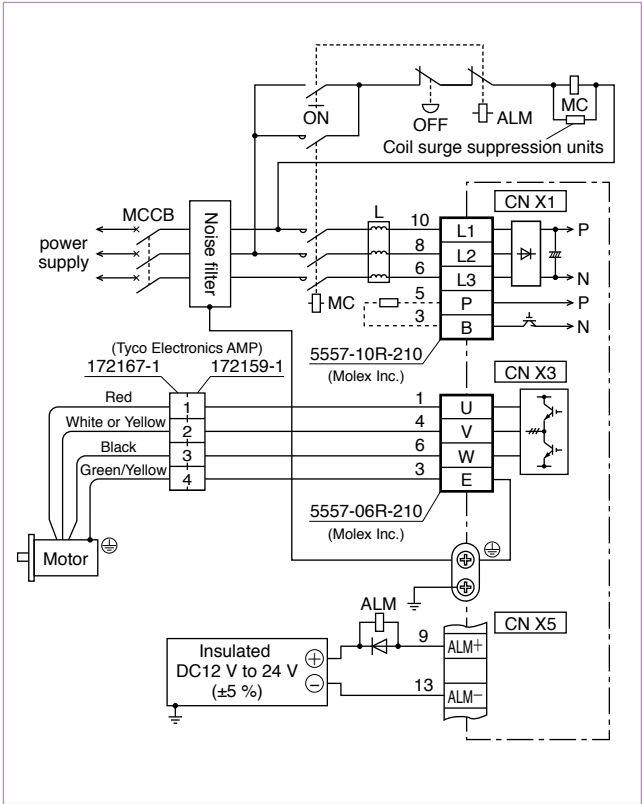
Driver Specifications

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 <Nomal temperature>)
		Humidity	Both operating and storage : 90 %RH or less (free from condensation)
		Altitude	1000 m or lower
		Vibration	5.88 m/s² 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.
Functions	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)
	Internal speed control	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.
		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.
	Common	Zero-speed clamp	0-clamp of internal speed command with speed zero clamp input is enabled.
		Auto-gain tuning	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.
		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)

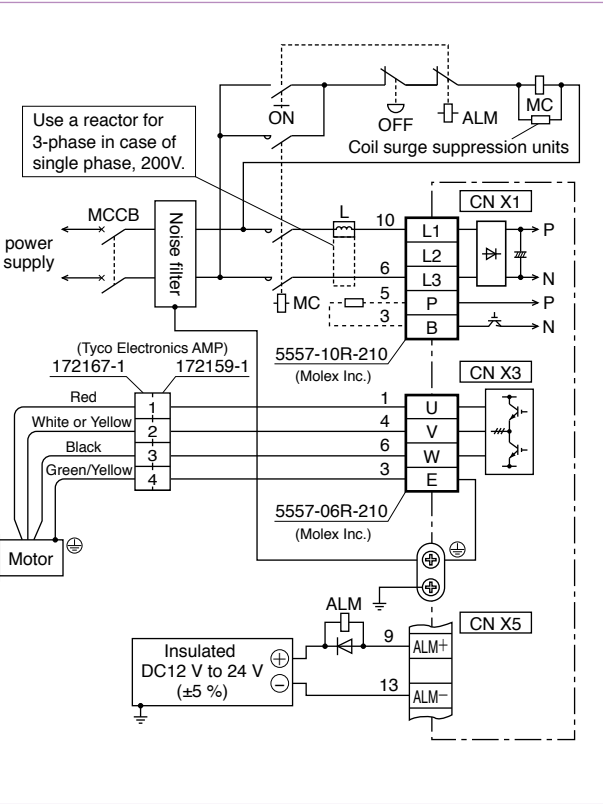
Standard Wiring Example of Main Circuit/
Encoder Wiring Diagram

Standard Wiring Example of Main Circuit

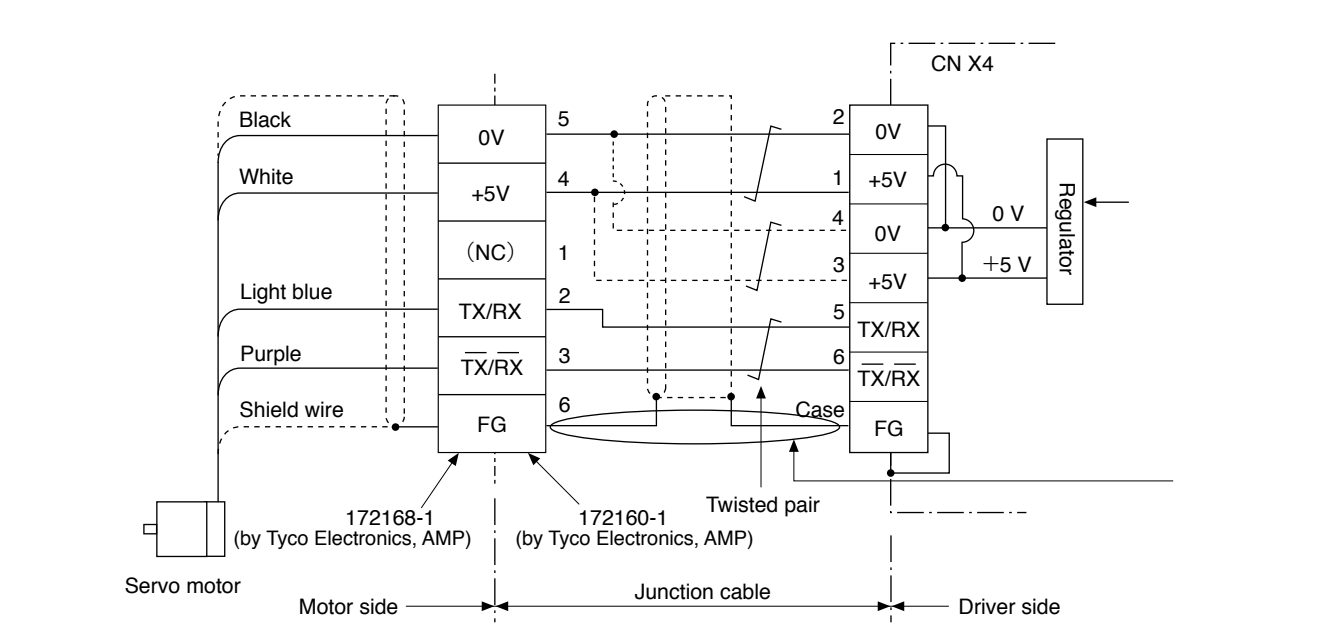
3-Phase, 200 V



Single Phase, 100 V / 200 V



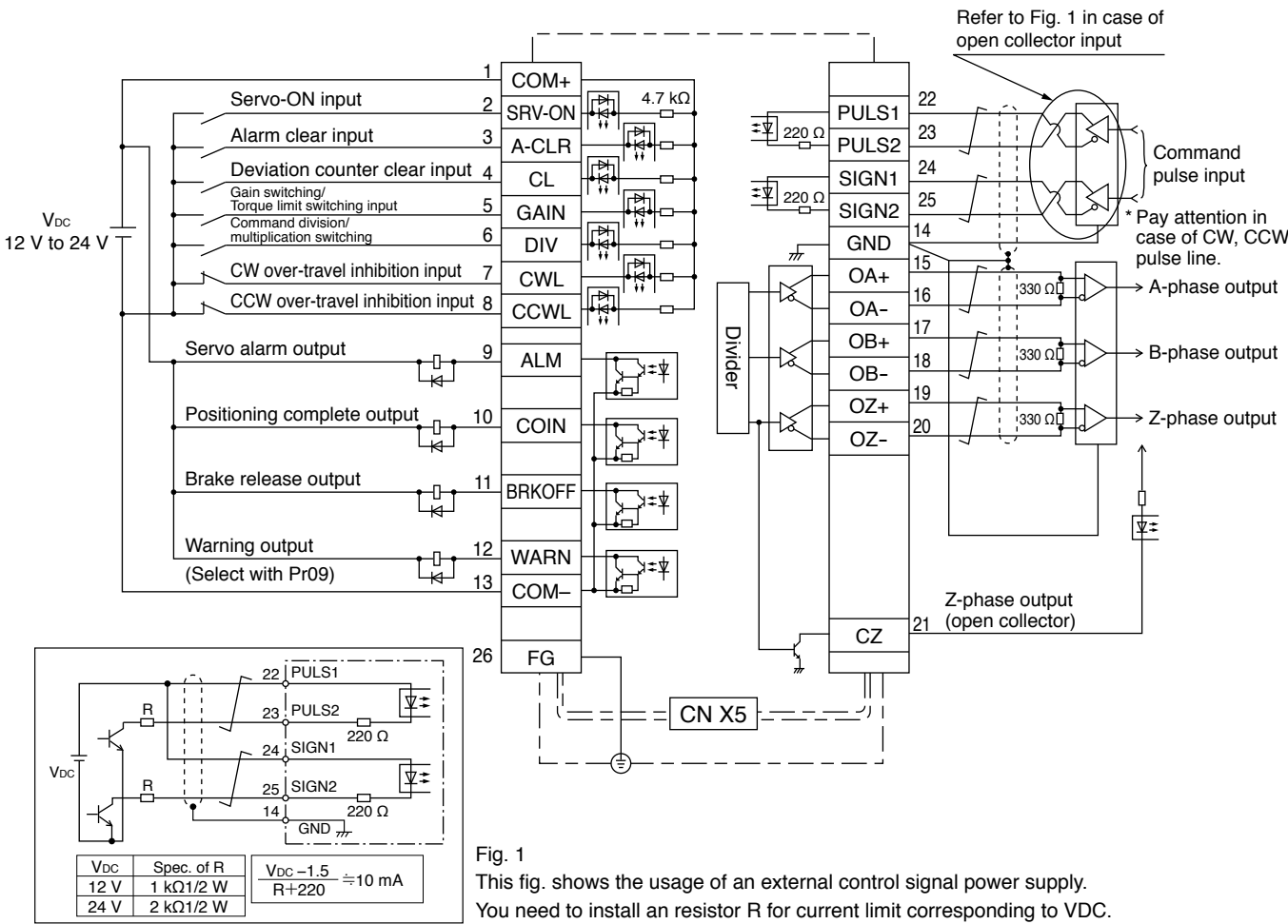
Encoder Wiring Diagram



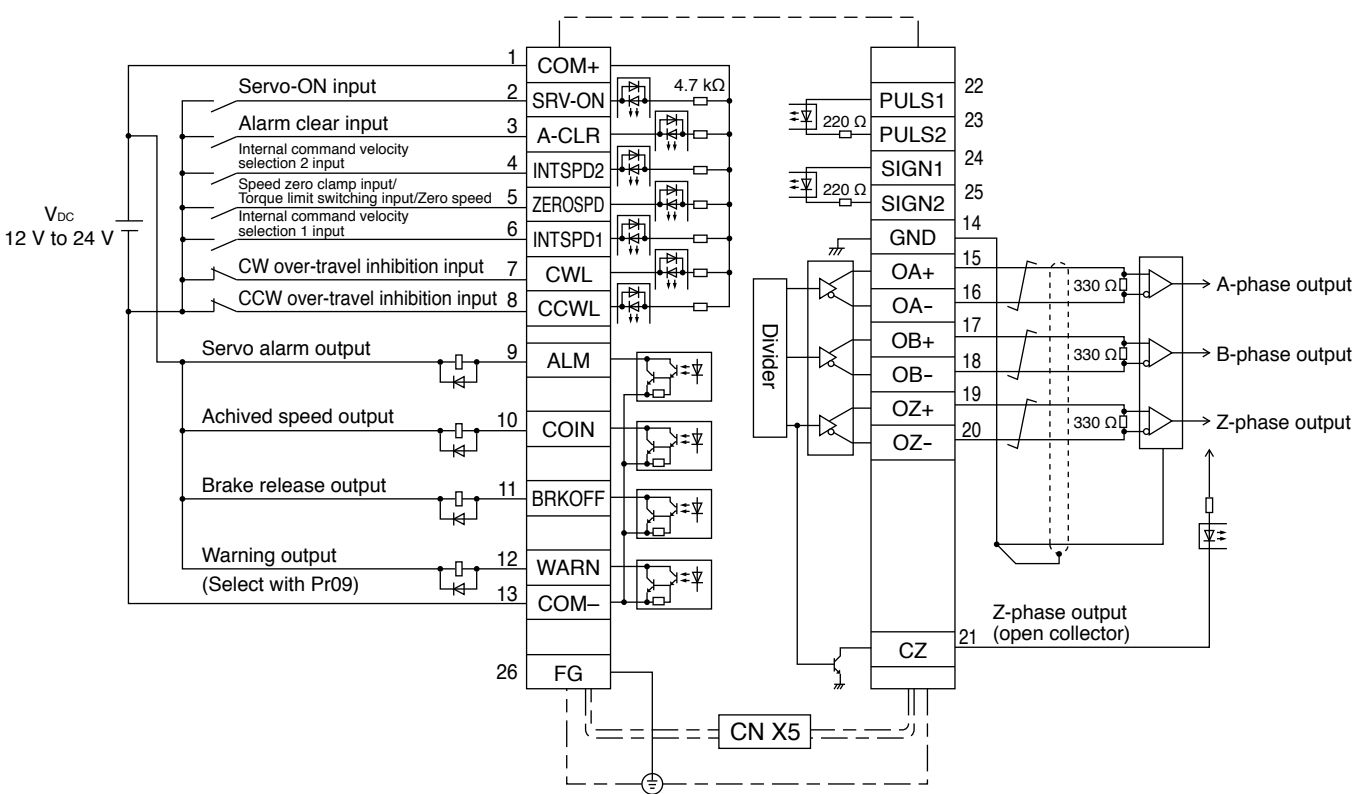
When you make your own junction cable for encoder (Refer to P.239, P.240 "Options" for connector.)

- 1) Refer the wiring diagram.
- 2) Use the twisted pair wire with shield, with core diameter of 0.18 mm² (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.

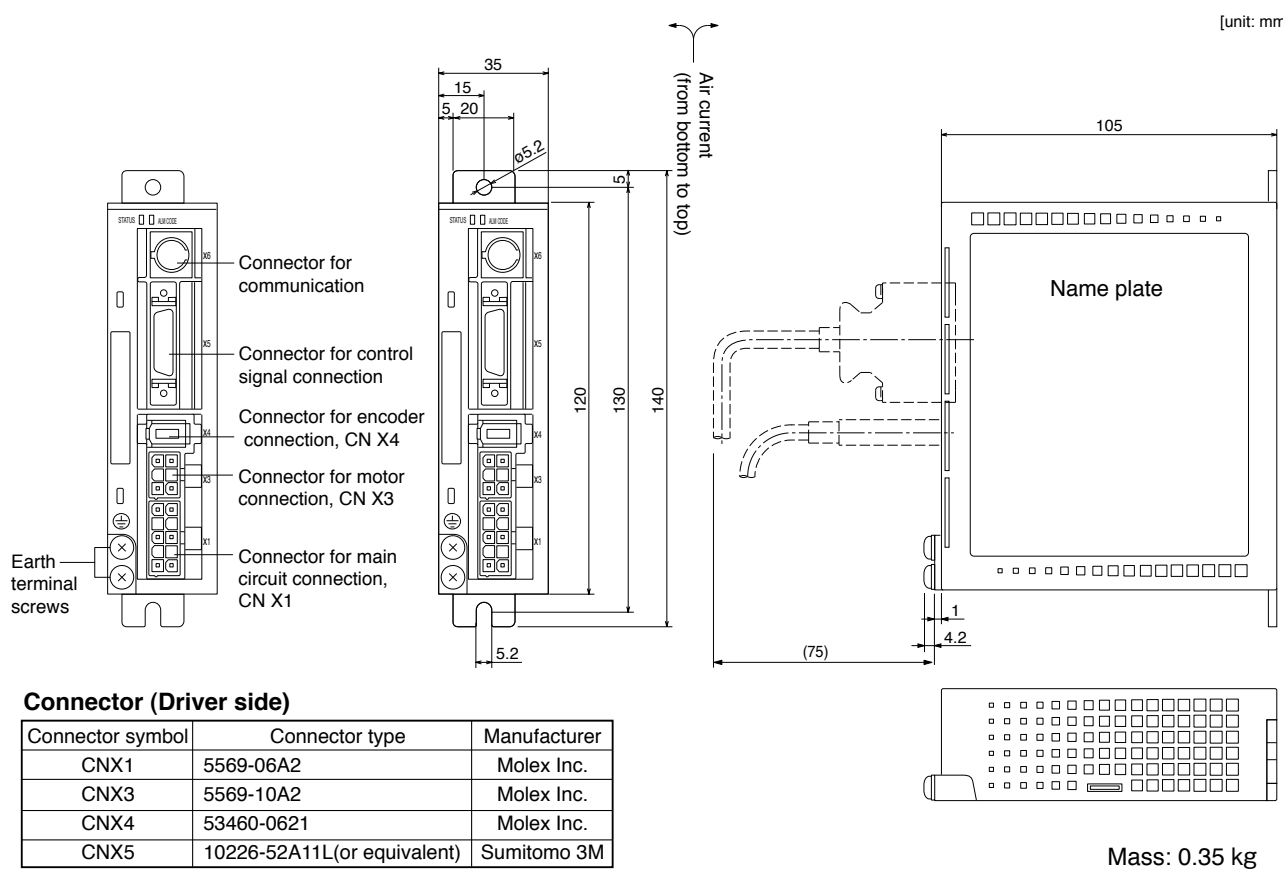
CN X 5 Wiring Example at Position Control Mode



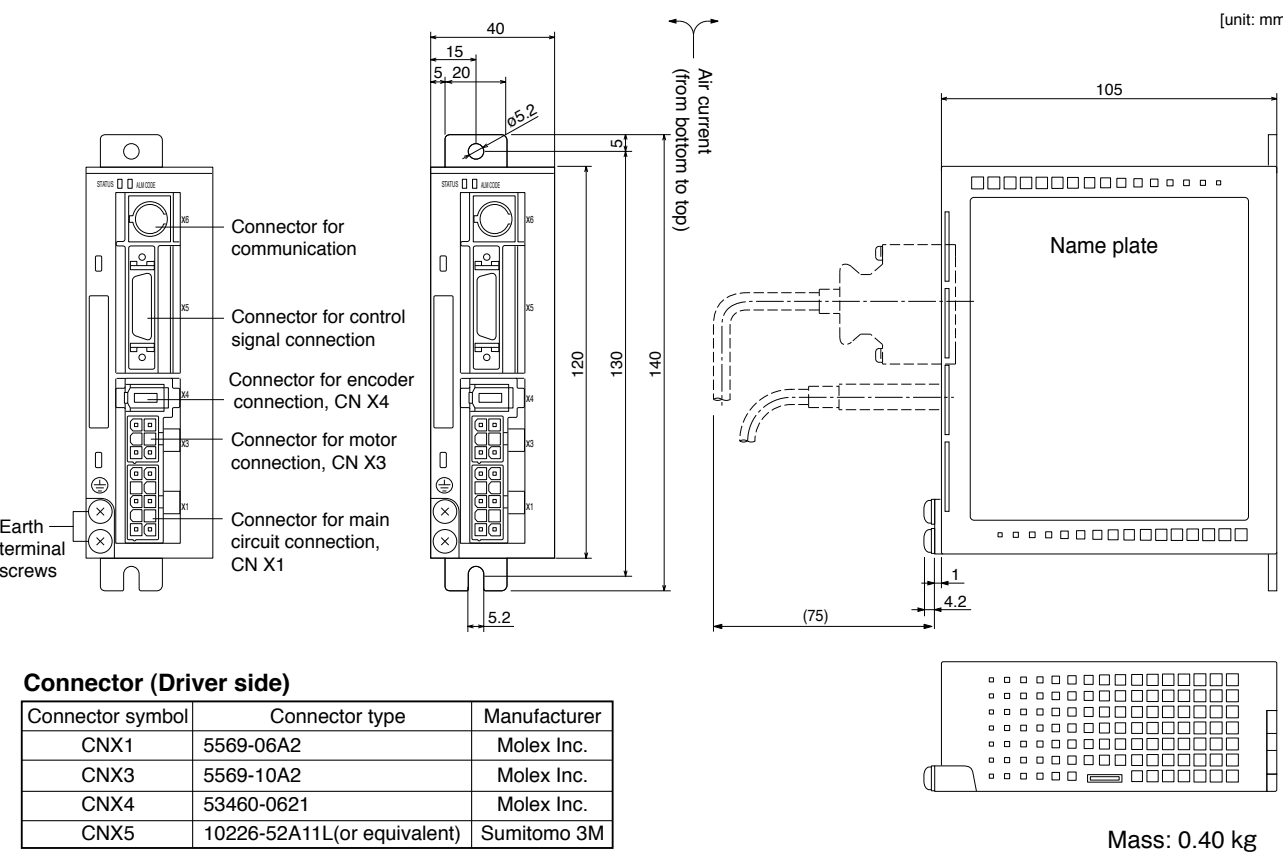
CN X 5 Wiring Example at Internal Velocity Control Mode



Frame K



Frame L



E Series

Motor Specifications

Motor Specifications **100 V** **MUMA** 50 W to 200 W **Low inertia**
Small drives

			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 ⁻⁴ kg·m²)		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					
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)					
Environment			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 temperature					
			Ambient humidity					
			85 %RH or lower (free from condensing)					
			Installation location					
Altitude			Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
Vibration resistance			1000 m or lower					
Mass (kg), () represents holding brake type			49 m/s² or less		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.231, and for the diver, refer to P.226.

Model Designation

e.g.) M U M A 5 A Z P 1 S

Symbol	Type
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)

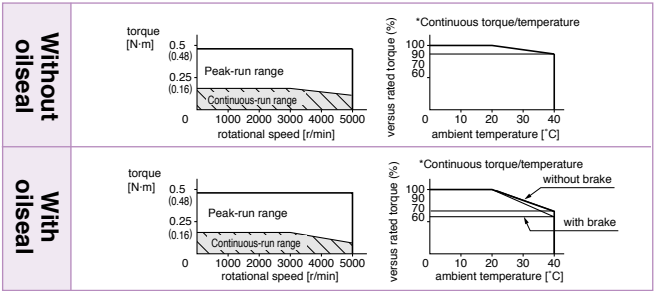
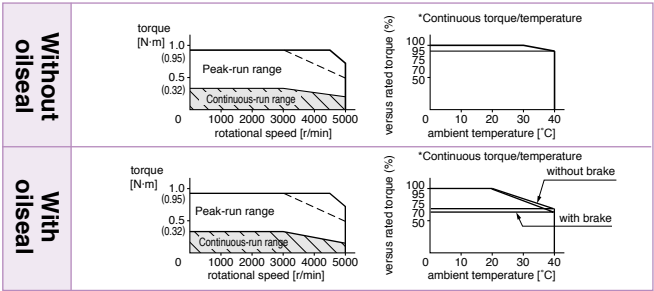
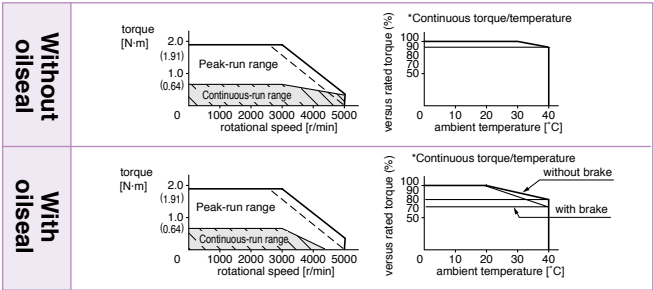
Design order
1 : Standard

Motor structure					
Symbol	Shaft	Holding brake		Oil seal	
	Key-way, center tap	without	with	without	with
S	●	●		●	
T	●		●	●	

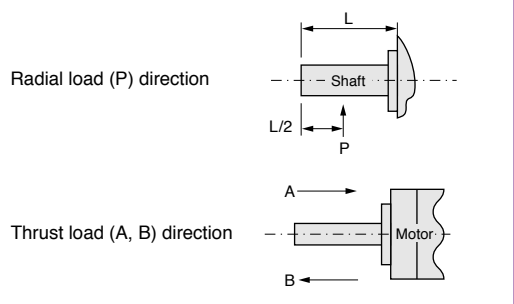
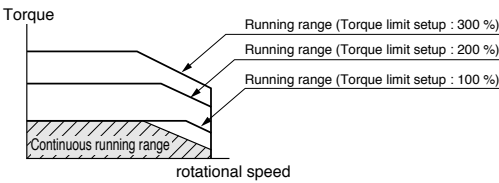
Rotary encoder specifications

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.



Notes) 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		5AZP1□	012P1□	022P1□	042P1□
Applicable driver	Model No.	MKDET1505P		MKDET1310P	MLDET2310P
	Frame symbol	Frame K		MKDET2210P	MLDET2510P
				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 (Ao-p)		4.3	4.3	7.5	11.7
Regenerative brake frequency (times/min) Note)1	Without option	No limit Note)2			
	DV0P2891	No limit Note)2			
Rated rotational speed (r/min)		3000			
Max. rotational speed (r/min)		5000			
Moment of inertia of rotor (×10 ⁻⁴ kg·m²)	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 <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/s² 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.231, and for the driver, refer to P.226.

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	Type
MUMA	Ultra low inertia (50 W to 400 W)

Symbol	Rated output
5A	50 W
01	100 W
02	200 W
04	400 W

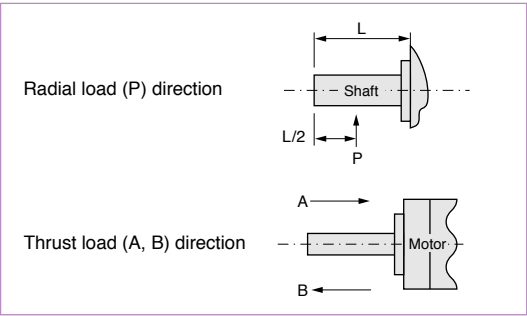
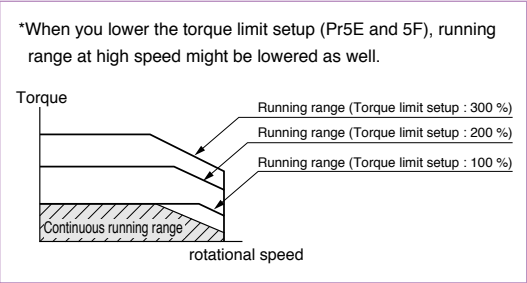
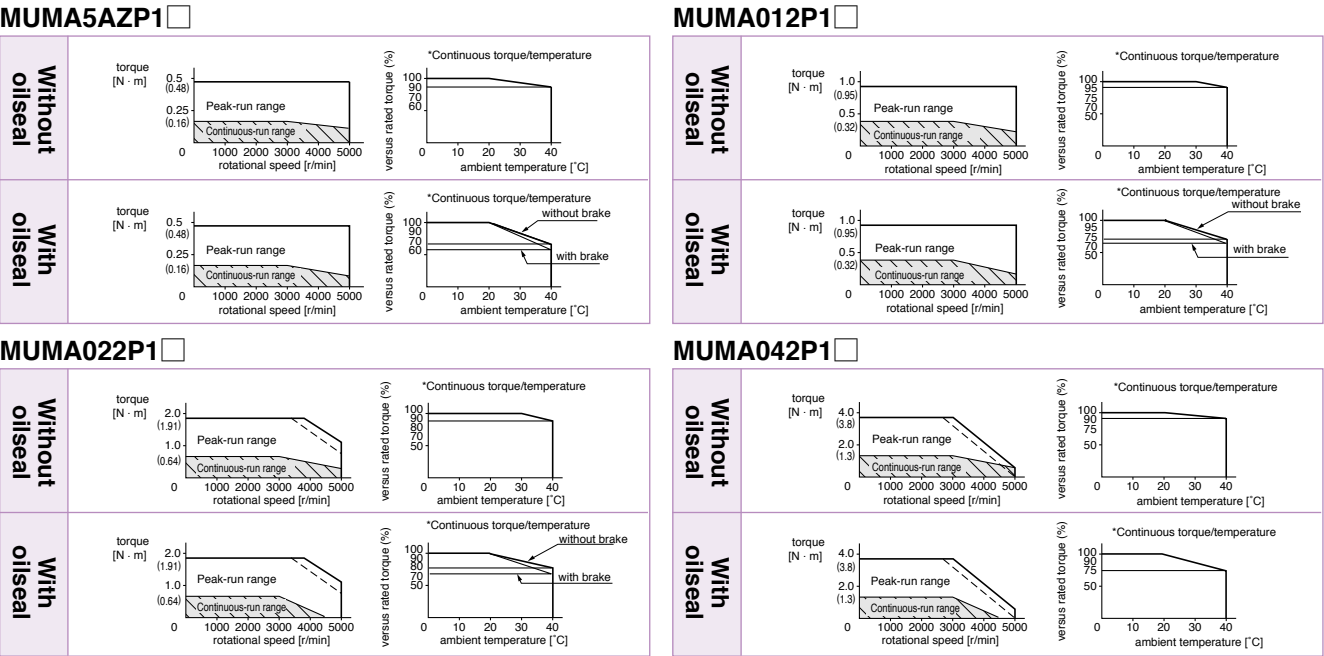
Symbol	Specifications
2	200 V
Z	100/200 V (50 W only)

Motor structure					
Symbol	Shaft Key-way, center tap	Holding brake		Oil seal	
S	●	●		●	
T	●		●	●	

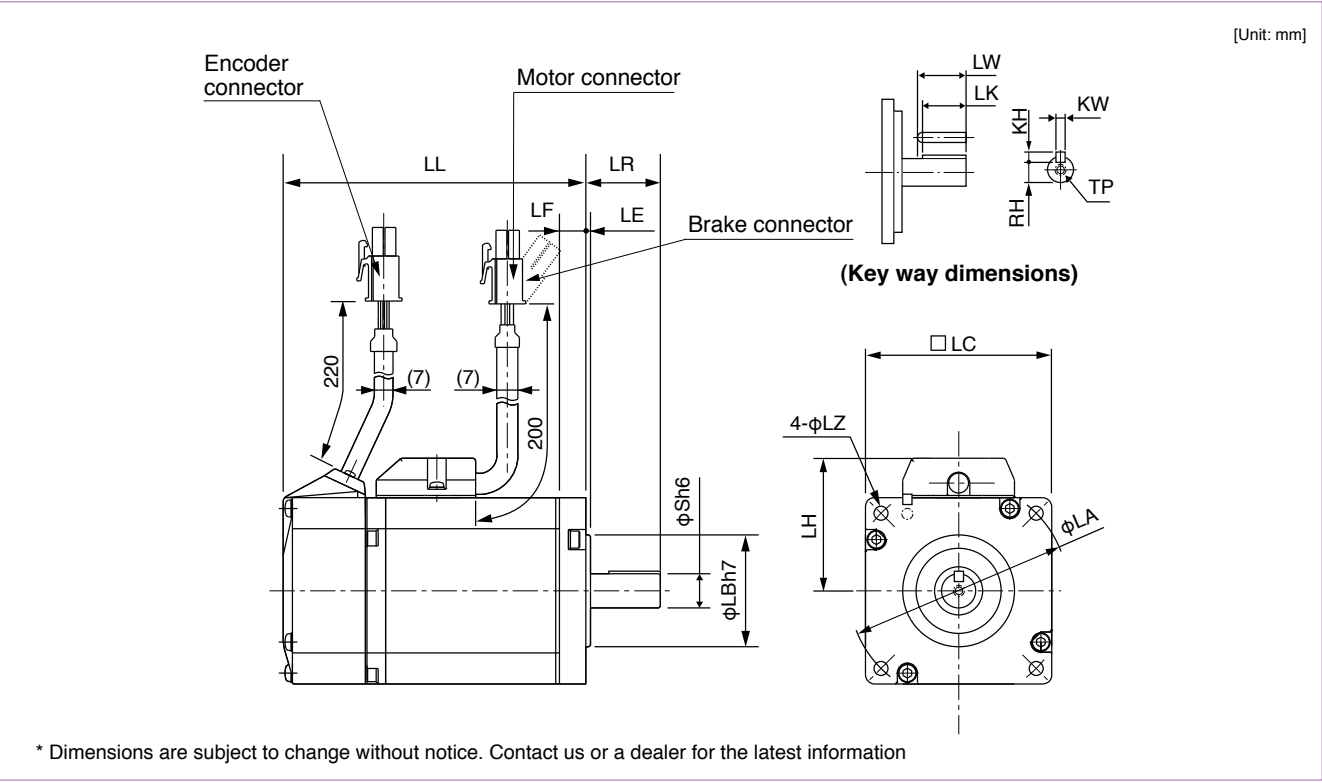
Rotary encoder specifications				
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500 P/r	10000	5

Design order
1 : Standard

Torque Characteristics [at AC200 V of power voltage (Dotted line represents the torque at 10 % less supply voltage.)]



- 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 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)



MUMA series (Ultra low inertia)					
Motor output		50 W	100 W	200 W	400 W
Motor model		5A□P1□	01□P1□	02□P1□	04□P1□
Rotary encoder specifications		2500 P/r Incremental	2500 P/r Incremental	2500 P/r Incremental	2500 P/r Incremental
L L	Without brake	75.5	92.5	96	123.5
	With brake	107	124	129	156.5
L R		24	24	30	30
S		8	8	11	14
L A		48	48	70	70
L B		22	22	50	50
L C		42	42	60	60
L E		2	2	3	3
L F		7	7	7	7
L H		34	34	43	43
L Z		3.4	3.4	4.5	4.5
Key way	L W	14	14	20	25
	L K	12.5	12.5	18	22.5
	K W	3h9	3h9	4h9	5h9
	K H	3	3	4	5
	R H	6.2	6.2	8.5	11
	T P	M3 × 6 (depth)	M3 × 6 (depth)	M4 × 8 (depth)	M5 × 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.239, P.240.			

<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.

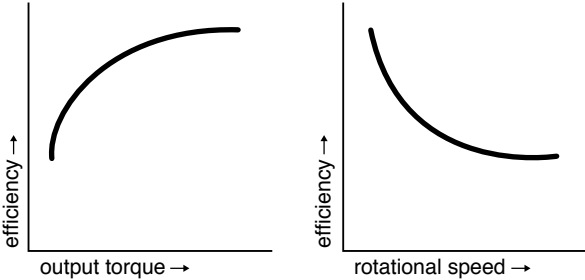
MINAS E Series

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	Type
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

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 Key-way	Holding brake	
3	●	without	with
4	●		●

Specifications of Motor with Gear Reducer

Gear reducer	Motor type	MUMA
	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
	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
Environment	Ambient humidity	85 %RH (free from condensation) or less
	Vibration resistance	49 m/s ² or less (at motor frame)
	Impact resistance	98 m/s ² or less

Table of Motor with Gear Reducer Specifications

Model	Motor	MUMA with gear reducer											
	Output	Reduction ratio	Output	Rated speed	Max. speed	Rated torque	Peak max. torque	Moment of inertia (motor + reducer/converted to motor shaft)		Mass		Permissible radial load	Permissible thrust load
								w/o brake	w/ brake	w/o brake	w/ brake		
(W)	(W)	(r/min)	(r/min)	(N·m)	(N·m)	J (× 10 ⁻⁴ kg·m ²)	(kg)		(N)	(N)			
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.235.

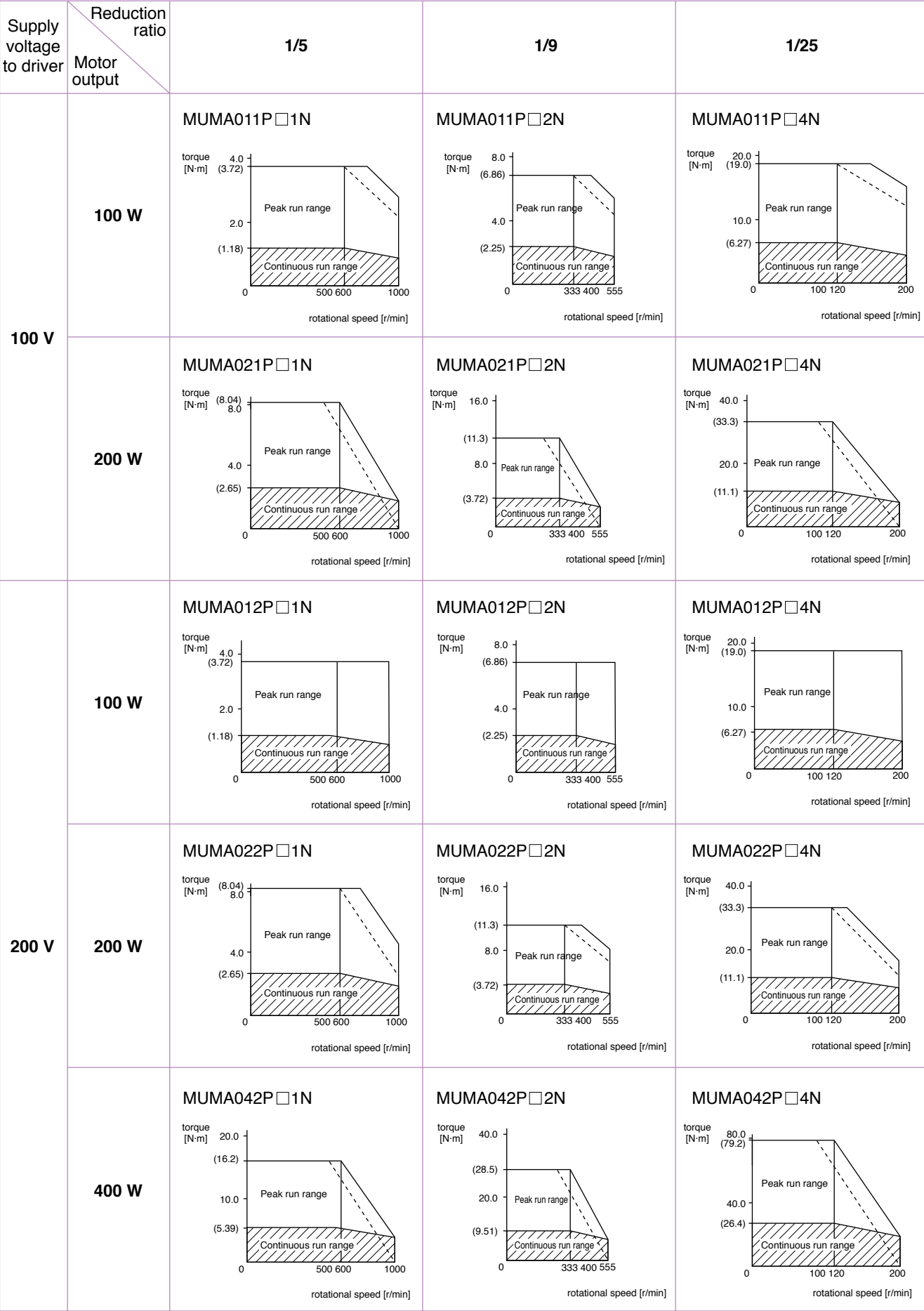
The Combination of the Driver and the Motor with Gear Reducer

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, refer to P.235.

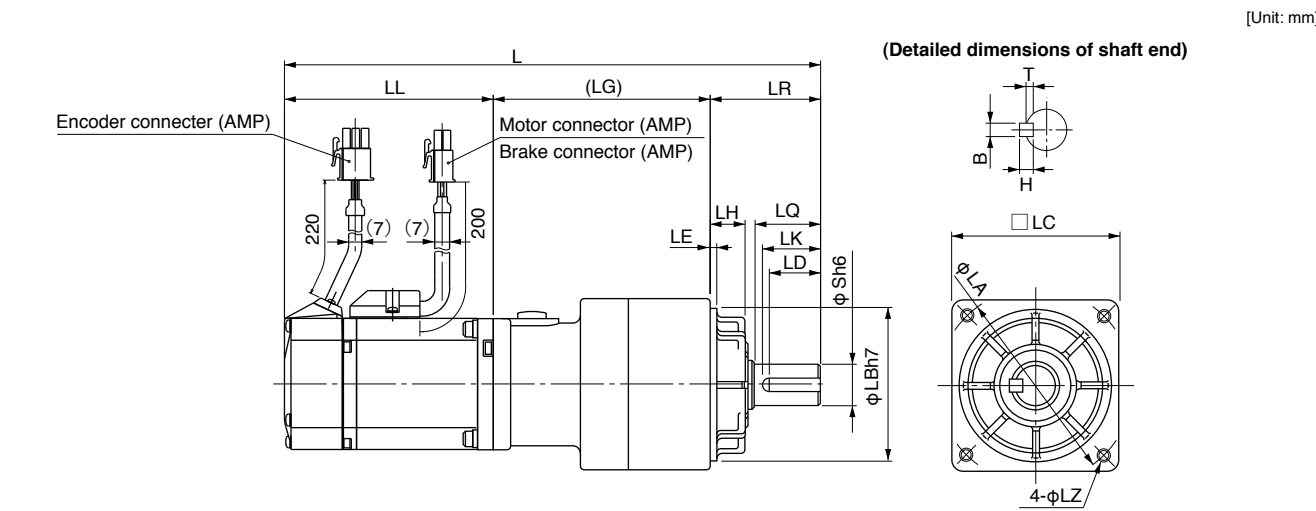
Torque Characteristics

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



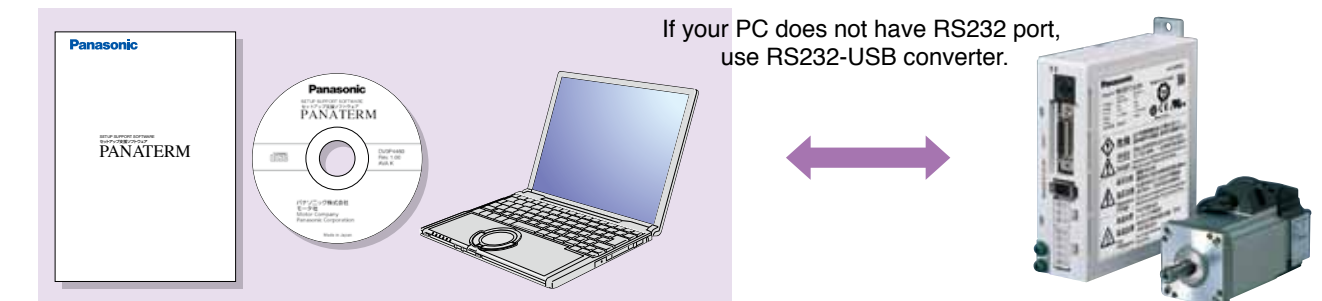
2500 P/r Encoder																	
Model	Motor output	Reduction ratio	L	LL	LR	LQ	LC	LB	LA	S	LH	LZ	LK	(LG)	LE	Key way B×H×LD	T
MUMA01□P□1N	100 W	1 / 5	192	92.5	32	20	52	50	60	12	10	M5 (Depth: 12)	18	67.5		4×4×16	2.5
MUMA01□P□2N			223.5	124													
MUMA01□P□4N		1/25	234.5	92.5													
MUMA02□P□1N	200 W	1 / 5	200.5	96	32	20	52	50	60	12	10	M5 (Depth: 12)	18	72.5	3	6×6×22	3.5
MUMA02□P□2N			233.5	124													
MUMA02□P□4N		1/25	234.5	92.5													
MUMA042P□1N	400 W	1 / 5	263	123.5	50	30	78	70	90	19	17	M6 (Depth: 20)	26	100		6×6×22	3.5
MUMA042P□2N			263	123.5													
MUMA042P□4N		1/25	288.5	123.5													

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.



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.

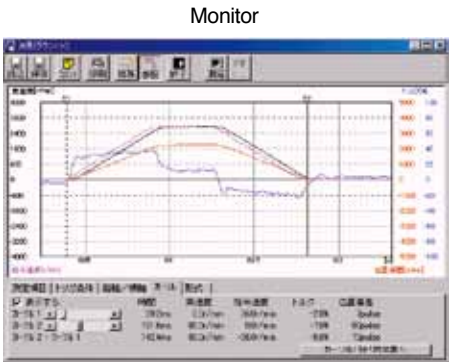
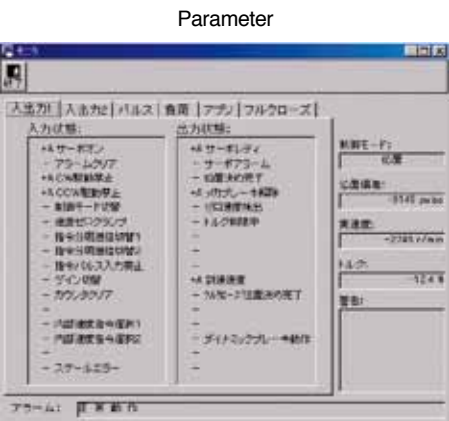
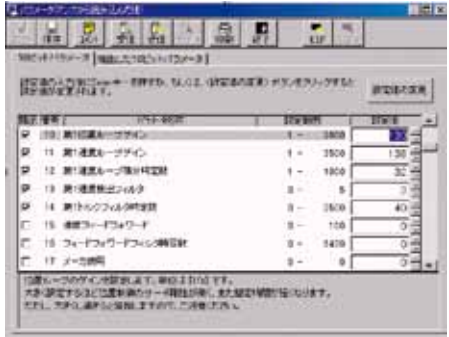
- Absolute encoder setup
 - Clears absolute encoder at the origin.
 - Displays single revolution/multi-revolution data.
 - Displays absolute encoder status.

Analysis of Mechanical Operation Data

- Frequency analysis
 - Measures frequency characteristics of the machine, and displays Bode diagram.

■ Can not use with A5 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



Graphic waveform display

Encoder Cable

1

2

3

4

5

6

7

8

9

10

11

12

M

F

E

C

A

0

0

5

0

E

A

M

Cable end (Driver side)

M

Connector (MUMA)

Cable end (Encoder side)

A

Tyco Electronics, AMP connector

Cable type

E

PVC cable with shield by Oki Electric Cable Co., 0.20 mm² × 3P

Cable length

0030

3 m

0050

5 m

0100

10 m

0200

20 m

Type classification

MFECA: Encoder cable

Motor Cable, Brake Cable

1

2

3

4

5

6

7

8

9

10

11

12

M

F

M

C

A

0

0

5

0

A

E

B

Cable end at driver side

B

Molex Inc.

T

Clamp terminal

Cable end at motor side

E

Tyco Electronics, AMP connector

Cable type

A

ROBO-TOP[®] 4-wire (DYDEN CORPORATION)

G

ROBO-TOP[®] 2-wire (DYDEN CORPORATION)

Cross section of cable core

0

0.75 mm²

1

1.25 mm²

2

2.0 mm²

3

3.5 mm²

Type classification

A

Standard

B

Special

:

Design Oder

Cable length

003

3 m

005

5 m

010

10 m

020

20 m

AC servo motor cable

ROBO-TOP[®] is a trade mark of DYDEN CORPORATION

Cable Set (3 m)

Part No.

DV0P37300

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)

Part No.

DV0P39200

1) Interface cable : DV0P0800

2) Encoder cable (5 m) : MFECA0050EAM

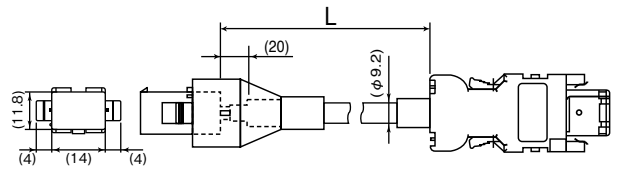
3) Motor cable (5 m) : MFMCA0050AEB

4) Connector kit for driver power supply connection : DV0P2870

Encoder Cable

Part No.

MFECA0 * * 0EAM



[Unit: mm]

Title	Part No.	Manufacturer
Connector (Driver side)	3E206-0100KV	Sumitomo 3M
Shell kit	3E306-3200-008	or equivalent
Connector	172160-1	Tyco Electronics
Connector Pin	170365-1	
Cable	0.20 mm ² × 3P	Oki Electric Cable Co., Ltd.

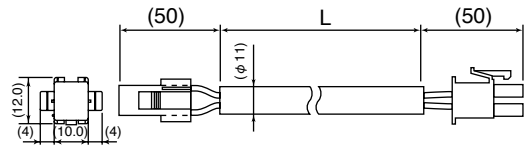
L (m)	Part No.
3	MFECA0030EAM
5	MFECA0050EAM
10	MFECA0100EAM
20	MFECA0200EAM

Motor Cable (ROBO-TOP[®] 105 °C 600 V . DP)

ROBO-TOP[®] is a trade mark of DYDEN CORPORATION

Part No.

MFMCA0 * * 0AEB



[Unit: mm]

Title	Part No.	Manufacturer
Connector	172159-1	Tyco Electronics
Connector Pin	170362-1, 170366-1	
Connector	5557-06R-210	Molex Inc
Connector Pin	5556T	
Cable	ROBO-TOP 600 V 0.75 mm ²	Daiden Co.,Ltd.

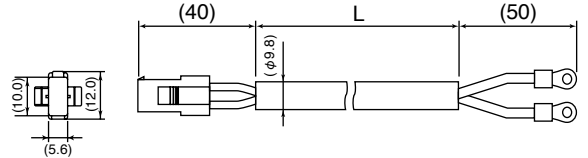
L (m)	Part No.
3	MFMCA0030AEB
5	MFMCA0050AEB
10	MFMCA0100AEB
20	MFMCA0200AEB

Brake Cable (ROBO-TOP[®] 105 °C 600V . DP)

ROBO-TOP[®] is a trade mark of DYDEN CORPORATION

Part No.

MFMCB0 * * 0GET



[Unit: mm]

Title	Part No.	Manufacturer
Connector	172157-1	Tyco Electronics
Connector Pin	170362-1, 170366-1	
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.
Cable	ROBO-TOP 600 V 0.75 mm ²	Daiden Co.,Ltd.

L (m)	Part No.
3	MFMCB0030GET
5	MFMCB0050GET
10	MFMCB0100GET
20	MFMCB0200GET

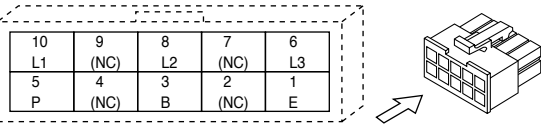
Connector Kit for Power Supply Connection

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

<Cautions>

1. 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.
2. Refer to P.224 for wiring and connection.
3. 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.)

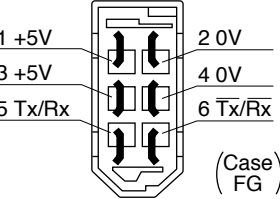
● Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M or equivalent	For connector, CN X4 (6 pins)
Shell kit	3E306-3200-008	1		
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		

<Remarks>

We may use parts equivalent to the above for shell and connector cover.

● Pin configuration of connector CN X4 plug



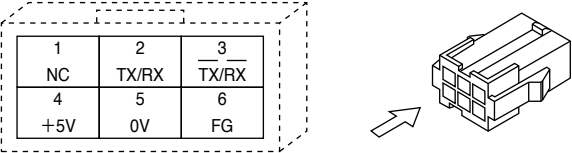
● Recommended manual crimping tool (to be prepared by customer)

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

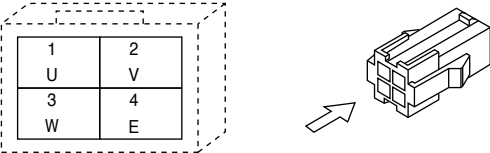
<Remarks>

1. 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.
2. Connect the shield of the wire to the case (FG) without fail.
3. For wiring and connection, refer to P.224.

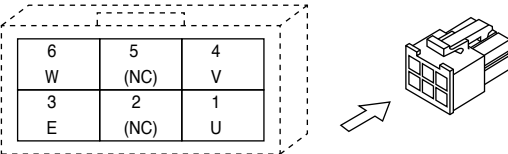
● Pin configuration of encoder cable junction



● Pin configuration of motor power cable junction



● Pin configuration of mating connector to CN X3 connector



<Cautions>

1. 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.
2. Refer to P.224 for wiring and connection.

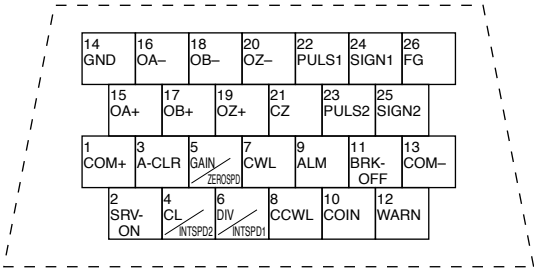
Connector Kit for External Peripheral Equipment

Part No.	DV0P0770
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● Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector	10126-3000PE	1	Sumitomo 3M or equivalent	For connector, CN X5 (26 pins)
Connector cover	10326-52A0-008	1		

● Pin configuration of connector CN X5 (26 pins) (viewed from the soldering side)

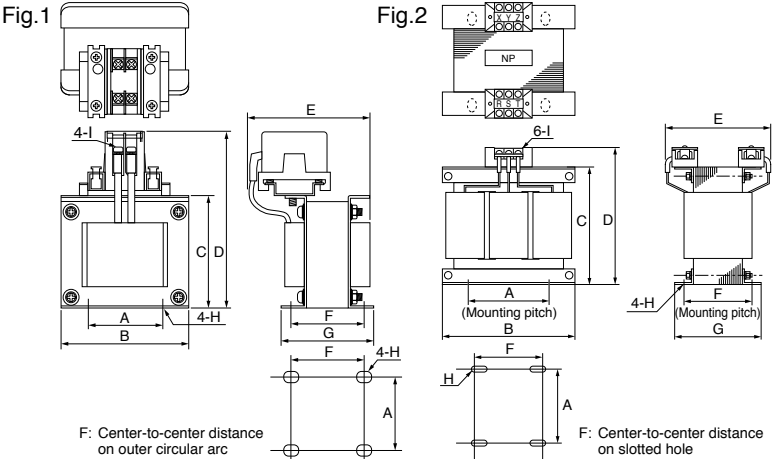


<Cautions>

1. Make a correct wiring by checking the stamped pin numbers on the connector itself.
2. Refer to P.225 for symbols and functions of the above signals.

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		



[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	80±1	66.5±1	110 Max	90	41±2	55±2	4-5φ×10	M4	4.02	5
	DV0P228	55±0.7	80±1	66.5±1	110 Max	95	46±2	60±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 on general-purpose inverter and servo driver

On September, 1994, Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system and Guidelines for harmonic restraint on household electrical appliances and general-purpose articles established by the Agency for Natural Resources and Energy of the Ministry of Economy, Trade and Industry (the ex-Ministry of International Trade and Industry). According to those guidelines, the Japan Electrical Manufacturers Association (JEMA) have prepared technical documents (procedure to execute harmonic restraint: JEM-TR 198, JEM-TR 199 and JEM-TR 201) and have been requesting the users to understand the restraint and to cooperate with us. On January, 2004, it has been decided to exclude the general-purpose inverter and servo driver from the Guidelines for harmonic restraint on household electrical appliances and general-purpose articles". After that, the Guidelines for harmonic restraint on household electrical appliances and general-purpose articles was abolished on September 6, 2004.

We inform you that the procedure to execute the harmonic restraint on general-purpose inverter and servo driver will be modified as follows.

1. All types of the general-purpose inverters and servo drivers used by specific users are under the control of the Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system". The users who are required to apply the guidelines must calculate the equivalent capacity and harmonic current according to the guidelines and must take appropriate countermeasures if the harmonic current exceeds a limit value specified in a contract demand. (Refer to JEM-TR 210 and JEM-TR 225.)
2. The Guidelines for harmonic restraint on household electrical appliances and general-purpose articles was abolished on September 6, 2004. However, based on conventional guidelines, JEMA applies the technical documents JEM-TR 226 and JEM-TR 227 to any users who do not fit into the Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system from a perspective on enlightenment on general harmonic restraint. The purpose of these guidelines is the execution of harmonic restraint at every device by a user as usual to the utmost extent.

<Remarks>

When using a reactor, be sure to install one reactor to one servo driver.

Recommended components

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 Components

Manufacturer	Tel No. / Home Page	Peripheral components
Panasonic Corporation Eco Solutions Company	http://panasonic.net/es/	Circuit breaker
Panasonic Corporation Automotive & Industrial Systems Company	http://panasonic.net/id/	Surge absorber Switch, Relay
Iwaki Musen Kenkyusho Co., Ltd.	+81-44-833-4311 http://www.iwakimusen.co.jp/	Regenerative resistor
SEMITEC Corporation	+81-3-3621-2703 http://www.semitec.co.jp/english2/	Surge absorber for motor brake
TDK Corporation	+81-3-5201-7229 http://www.global.tdk.com/	Noise filter for signal lines
Okaya Electric Industries Co. Ltd.	+81-3-4544-7040 http://www.okayaelec.co.jp/english/index.html	Surge absorber Noise filter
Sumitomo 3M	+81-3-5716-7290 http://solutions.3m.com/wps/portal/3M/ja_JP/WW2/Country/	Connector
Tyco Electronics	+81-44-844-8052 http://www.te.com/ja/home.html	
Japan Molex Inc.	+81-462-65-2313 http://www.molex.co.jp	
DYDEN CORPORATION	+81-3-5805-5880 http://www.dyden.co.jp/english/index.htm	Cable

* The above list is for reference only. We may change the manufacturer without notice.

MEMO

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EC Directives

The EC Directives 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 EC Directives for Low Voltage Equipment so that the machine or equipment comprising our AC servos can meet EC Directives.

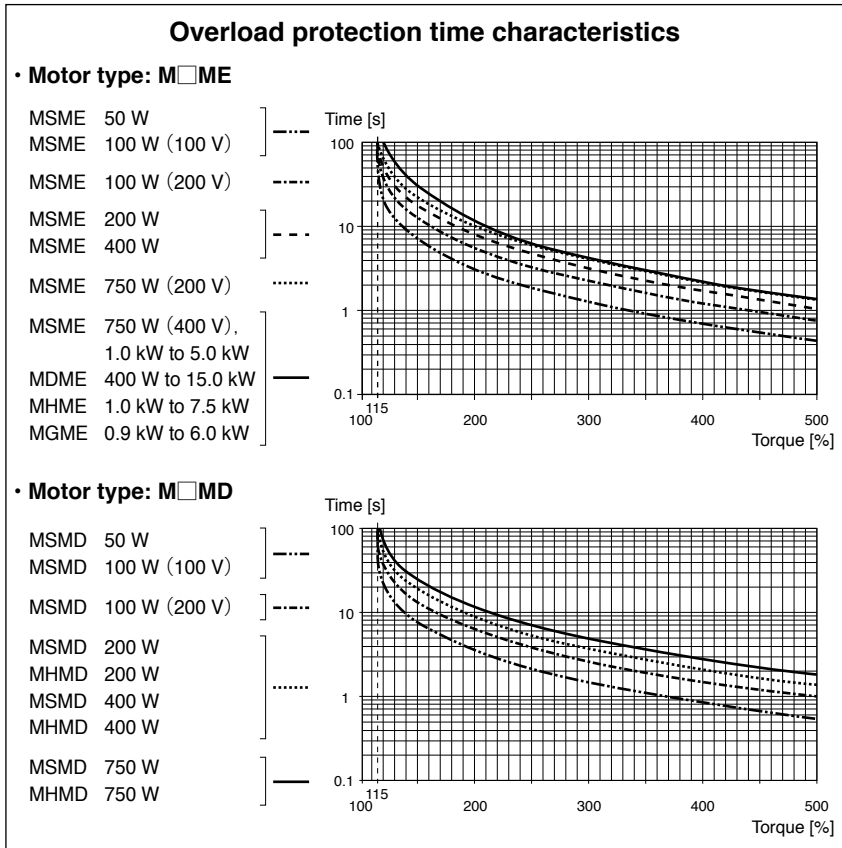
EMC Directives

MINAS Servo System conforms to relevant standard under EMC Directives 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 EMC Directives, 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).
- (1) 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.)
- (2) Make sure to install a circuit breaker or fuse which are UL recognized (Listed  marked) between the power supply and the noise filter.
- For rated current of circuit breaker and fuse, refer to P.19 “Driver and List of Applicable Peripheral Equipments”.
- Use a copper cable with temperature rating of 75 °C or higher.
- (3) 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).



Conformed Standards

		Driver	Motor
EC Directives	EMC Directives	EN55011 EN61000-6-2 EN61800-3	—
	Low-Voltage Directives	EN61800-5-1	EN60034-1 EN60034-5
	Machinery Directives Functional safety ^{*1}	ISO13849-1(PL d)(Cat.3) EN61508(SIL2) EN62061(SILCL 2) EN61800-5-2(STO) IEC61326-3-1	—
UL Standards		UL508C (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)
Panasonic Testing Centre
Panasonic Service Europe, a division of
Panasonic Marketing Europe GmbH
Winsbergring 15, 22525 Hamburg, F.R. Germany

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

*1 A5IIE and A5E series doesn't correspond to the functional safety standard.

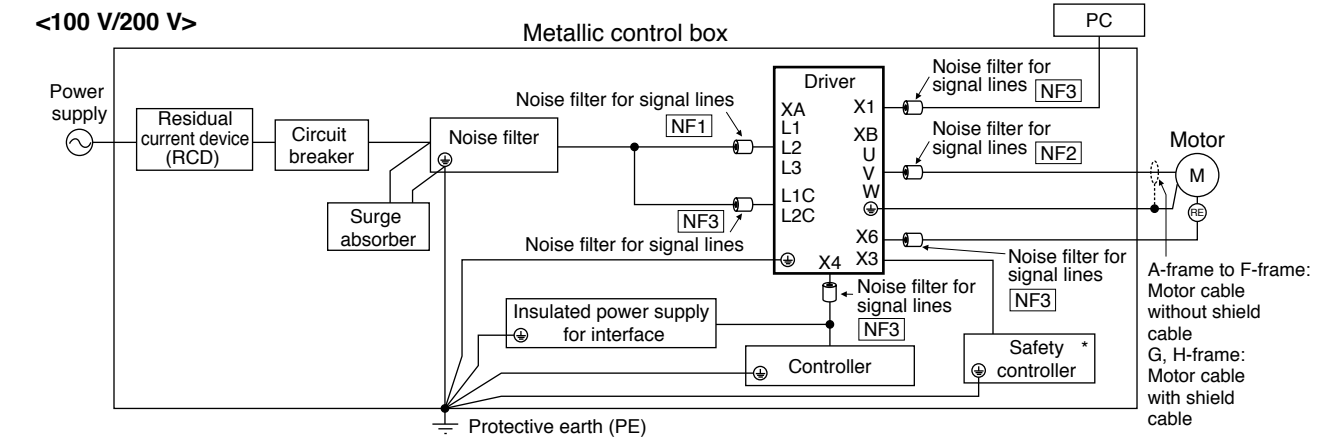
*2 Information related to the Korea Radio Law
This servo driver is a Class A commercial broadcasting radio wave generator not designed for home use. The user and dealer should be aware of this fact.

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

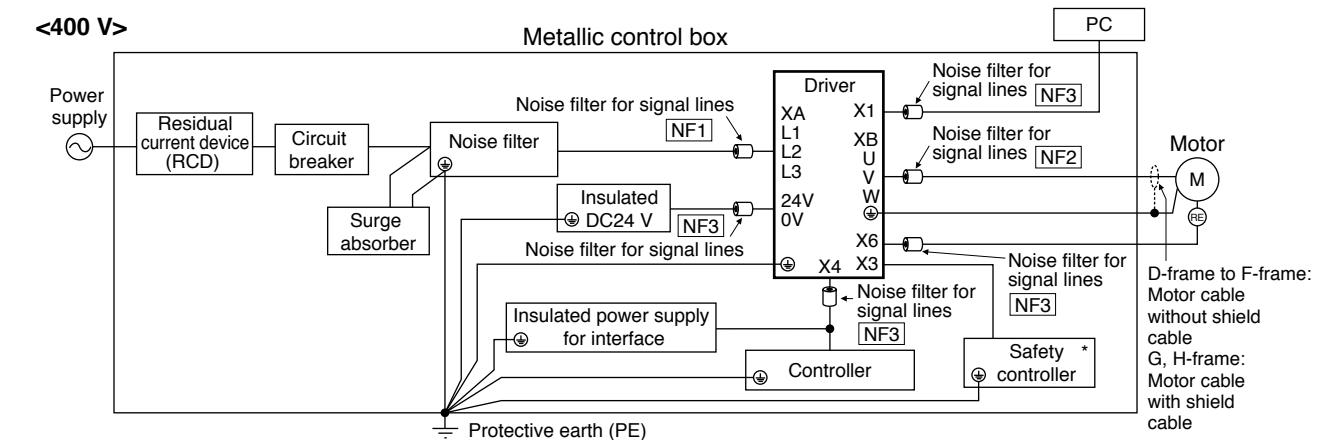
(대상기종 : Servo Driver)

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 [NF3], refer to the Table “Noise Filter for Signal Line” (P.254).
* A5IE, A5E is not provided with X3 terminal.



For [NF1] to [NF3], refer to the Table “Noise Filter for Signal Line” (P.254).
* A5IE, A5E 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	$+10\%$ to -15%	50 Hz/60 Hz
200 V type (A-frame to D-frame)	Single/3-phase, 200 V	$+10\%$ to -15%	50 Hz/60 Hz
200 V type (E-frame to H-frame)	3-phase, 200 V	$+10\%$ to -15%	50 Hz/60 Hz
400 V type [Main power supply] (D-frame to H-frame)	3-phase, 380 V	$+10\%$ to -15%	50 Hz/60 Hz
400 V type [Control power supply] (D-frame to H-frame)	DC 24 V	$\pm 15\%$	

(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.

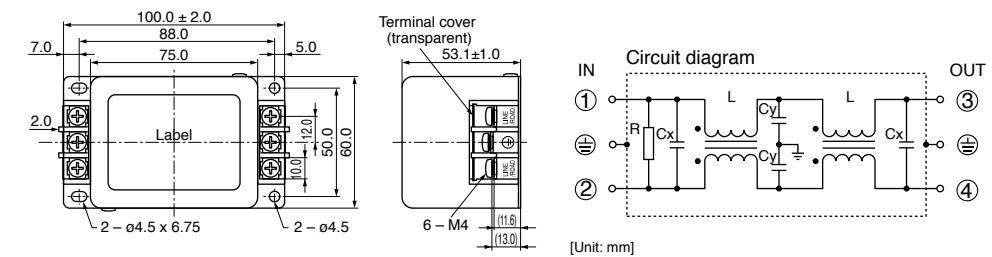
Circuit Breaker

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.

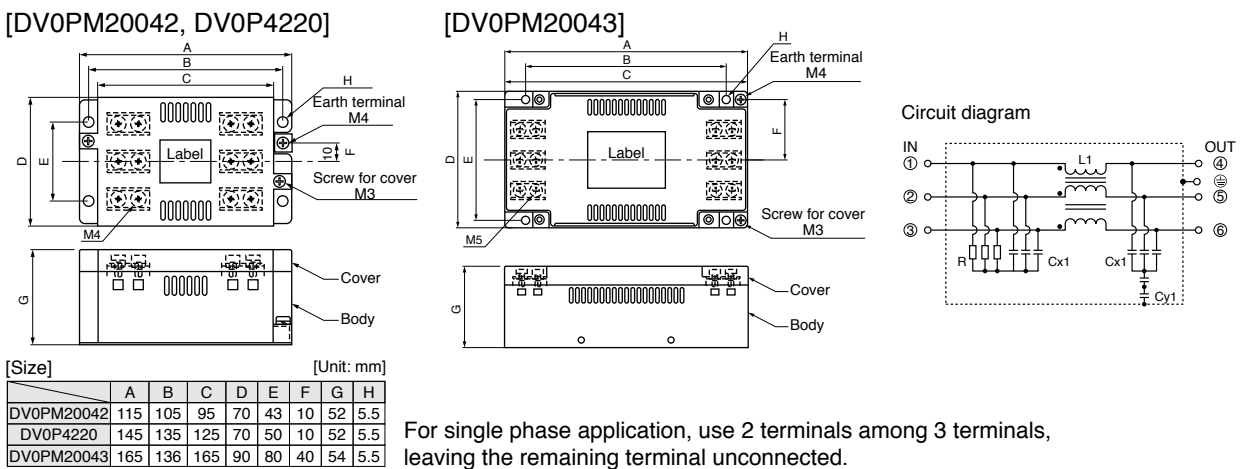
Noise Filter

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.

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.



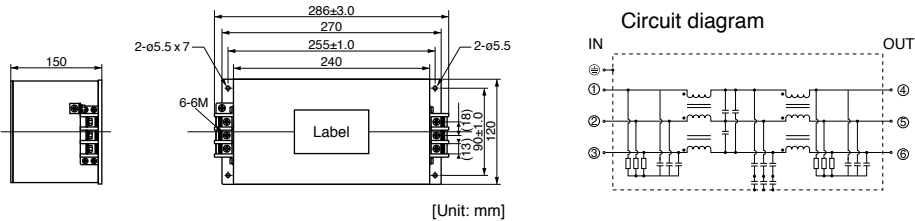
Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
DV0PM20042	3-phase 200 V	3SUP-HU10-ER-6	A-frame and B-frame	Okaya Electric Ind.
	Single phase 100 V, 200 V		C-frame	
DV0P4220	Single/3-phase 200 V	3SUP-HU30-ER-6	D-frame	
DV0PM20043	3-phase 200 V	3SUP-HU50-ER-6	E-frame	



For single phase application, use 2 terminals among 3 terminals, leaving the remaining terminal unconnected.

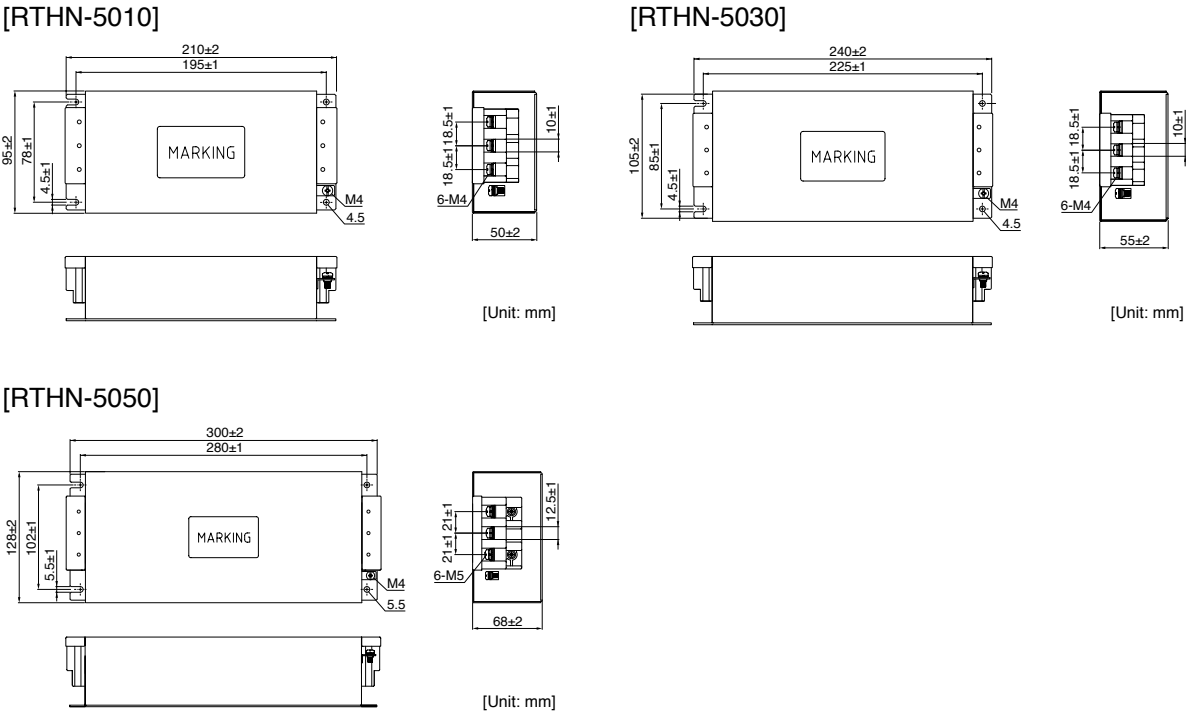
Composition of Peripheral Equipments

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.



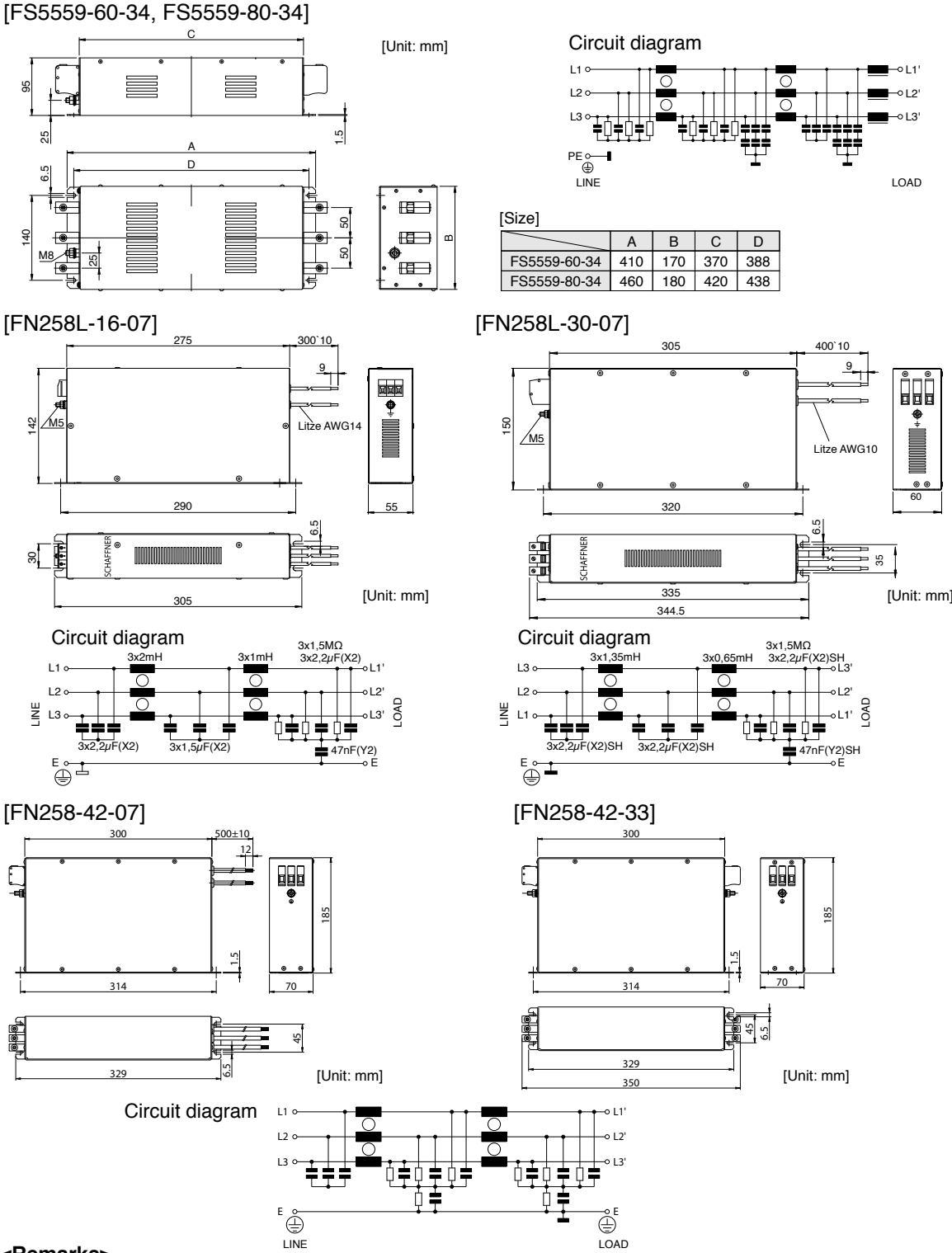
• Recommended components

Part No.	Voltage specifications for driver	Current rating (A)	Applicable driver (frame)	Manufacturer
RTHN-5010	3-phase 200 V	10	A-frame to C-frame	TDK-Lambda Corp.
RTHN-5030		30	D-frame	
RTHN-5050		50	E-frame and F-frame	



- <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 two or more servo drivers are used with a single noise filter at the common power source, consult with the noise filter manufacturer.

Part No.	Voltage specifications for driver	Current rating (A)	Applicable driver (frame)	Manufacturer
FS5559-60-34	3-phase 200 V	60	G-frame	Schaffner EMC, Inc.
FS5559-80-34		80	H-frame	
FN258L-16-07	3-phase 400 V	16	D-frame and E-frame	
FN258L-30-07		30	F-frame	
FN258-42-07		42	G-frame and H-frame	
FN258-42-33		42		

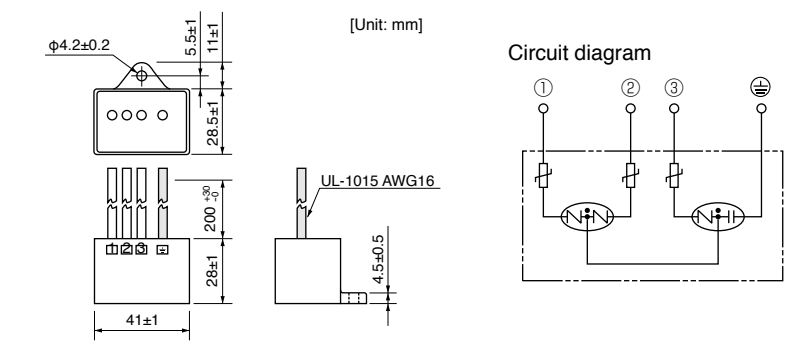


- <Remarks>
- Select a noise filter of capacity that exceeds the capacity of the power source (also check for load condition).
 - For detailed specification of the filter, contact the manufacturer.
 - When two or more servo drivers are used with a single noise filter at the common power source, consult with the noise filter manufacturer.

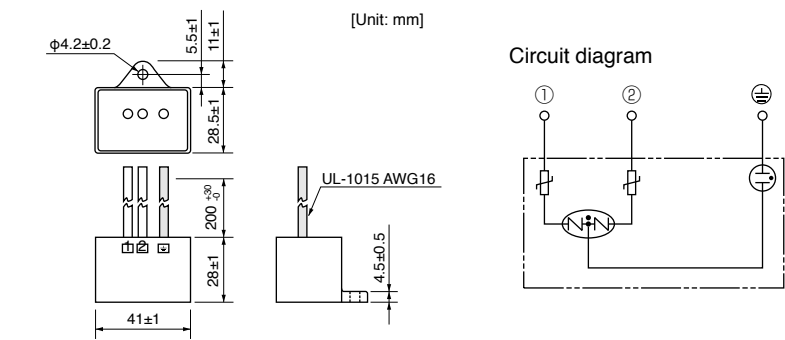
Surge Absorber

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.
DV0PM20050	3-phase 400 V	R·A·V-801BXZ-4	



Option part No.	Voltage specifications for driver	Manufacturer's part No.	Manufacturer
DV0P4190	Single phase 100 V, 200 V	R·A·V-781BWZ-4	Okaya Electric Ind.



Noise Filter for Signal Lines

Install noise filters for signal lines to all cables (power cable, motor cable, encoder cable and interface cable)

Symbol*1	Cable Name	100 V/200 V Amp. frame symbol	400 V Amp. frame symbol	Option part No.	Manufacturer's part No.	Manufacturer	Qty.
NF1	Power cable	A, B, C, D	D, E, F	DV0P1460	ZCAT3035-1330	TDK Corp.	4
		E, F	—	Recommended components	RJ8035	KK-CORP.CO.JP	1
		G, H	G, H	Recommended components	RJ8095	KK-CORP.CO.JP	1
NF2	Motor cable	A, B, C, D, E, F	D, E, F	DV0P1460	ZCAT3035-1330	TDK Corp.	4
		G, H	G, H	Recommended components	T400-61D	MICROMETALS	1
NF3	24 V Power cable - Encoder cable - Interface cable - USB cable - Control power cable	Common (to all frames)		DV0P1460	ZCAT3035-1330	TDK Corp.	4

*1 For symbols, refer to the Block Diagram “Installation Environment” (P.249).

<Remarks>

To connect the noise filter to the connector XB connection cable, adjust the sheath length at the tip of the cable, as required.

<Caution>

Fix the signal line noise filter in order to prevent excessive stress to the cables.

<Fig.2: Dimensions>

Part No.	Current	100 kHz (μH)	Size [Unit: mm]							
			A	B	C	D1	D2	Core thickness	E	F
RJ8035	35 A	9.9±3	170	150	23	80	53	24	R3.5	7
RJ8095	95 A	7.9±3	200	180	34	130	107	35	R3.5	7

Fig.1: DV0P1460(Option)

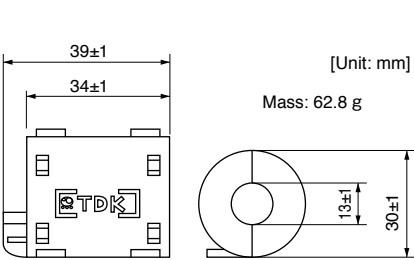


Fig.2: RJ8035, RJ8095 (Recommended components)

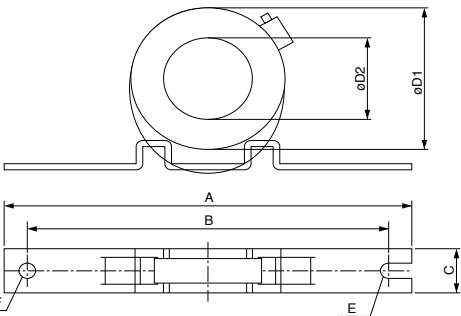
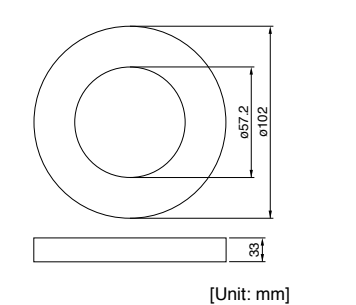


Fig.3: T400-61D (Recommended components)



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 equipments, refer to P.19 "Driver and List of Applicable Peripheral Equipments".

Compliance to EC and EMC Directives

EC Directives

The EC Directives 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 EC Directives for Low Voltage Equipment so that the machine incorporating our servos has an easy access to the conformity to relevant EC Directives for the machine.

EMC Directives

MINAS Servo System conform to relevant standard under EMC Directives 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 EMC Directives, 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	Conforms to Low- Voltage Directives
	EN50178	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 EMC Directives
	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		
				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) Panasonic Testing Centre Panasonic Service Europe, a division of Panasonic Marketing Europe GmbH Winsbergring 15,22525 Hamburg,F.R.Germany

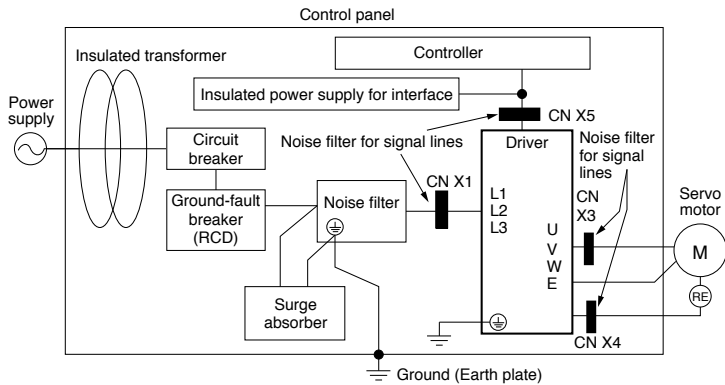
Composition of Peripheral Components

<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 De-
gree 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

- (1) Use the power supply under an environment of Overvoltage Category II specified in IEC60664-1.
- (2) 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.

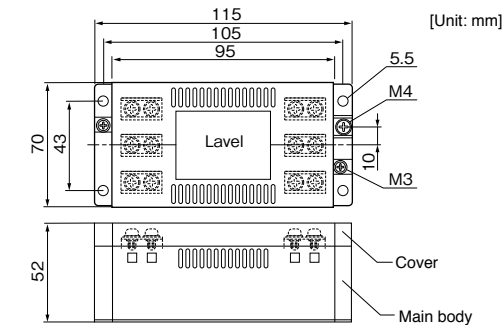
Composition of Peripheral Components

Conformity to UL Standards

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.

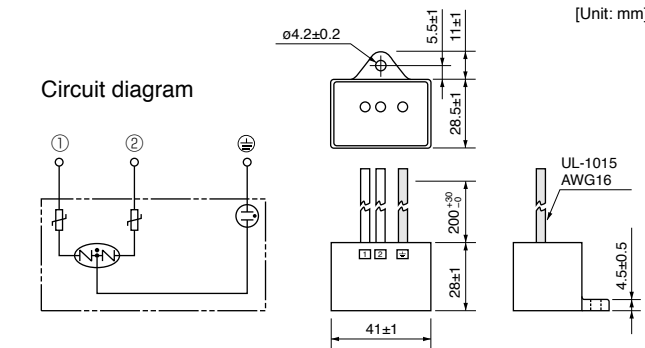
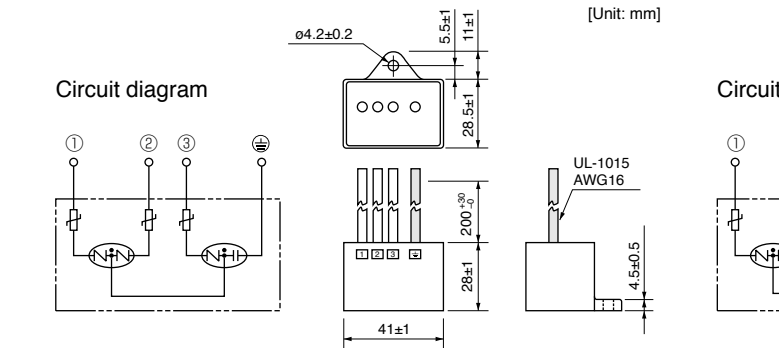


Surge Absorber

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.

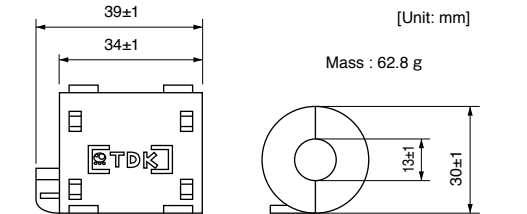
Noise Filter for Signal Lines

Install noise filters for signal lines to all cables (Power line, motor cable, encoder cable, interface cable)

<Caution>

- Please fix a line noise filter 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 line noise filters between driver and motor wires (U, V, W but grounding).
(Please refer to P.255 "peripheral equipment configuration".)

Option part No.	Part No.	Qty.	Manufacturer
DV0P1460	ZCAT3035-1330	4	TDK Corp.



Grounding

- (1) Connect the protective earth terminal of the driver () and protective earth terminal of the control panel (PE) without fail to prevent electrical shocks.
- (2) Do not co-clamp to the ground terminals (). Two ground terminals are provided.

Ground-Fault Braker

Install a ground fault curcuit braker (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.

Conformity to UL Standards

- Observe the following conditions of (1) and (2) to make the system conform to UL508C (File No. E164620).
- (1) 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.)
 - (2) Install a circuit breaker or fuse which are UL recognized (LISTED ) marked) between the power supply and the noise filter without fail.

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.



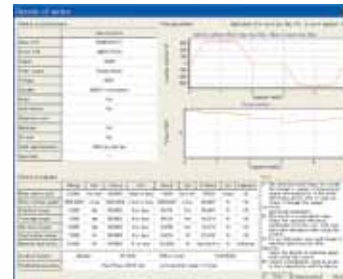
3. Select the motor

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 amplifier, 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

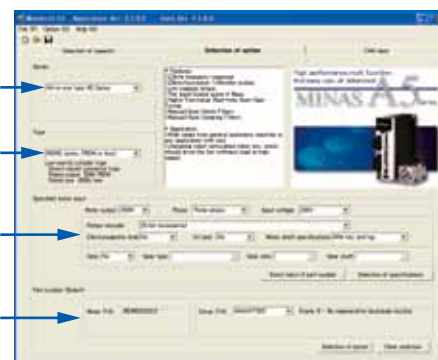
Suitable option can be selected by selecting driver series, motor type and motor specification through pulldown menu.

Driver series

Motor type

Motor specification

Model number input area



2. Entry of model number

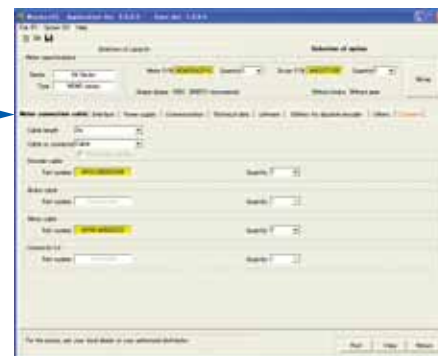
If you know the model number based on the servo motor and driver currently used, enter the model number.

➔ Result of selection

Tab sheet specific to each of option model numbers is used for easier identification of the desired option.

* When you are using the motor capacity selection software, simply press [Option Selection] tab and the screen as shown right will appear.

Tab



Please download from our web site and use after install to the PC.
<http://industrial.panasonic.com/ww/products/motors-compressors/fa-motors>

Organization of the System of Units

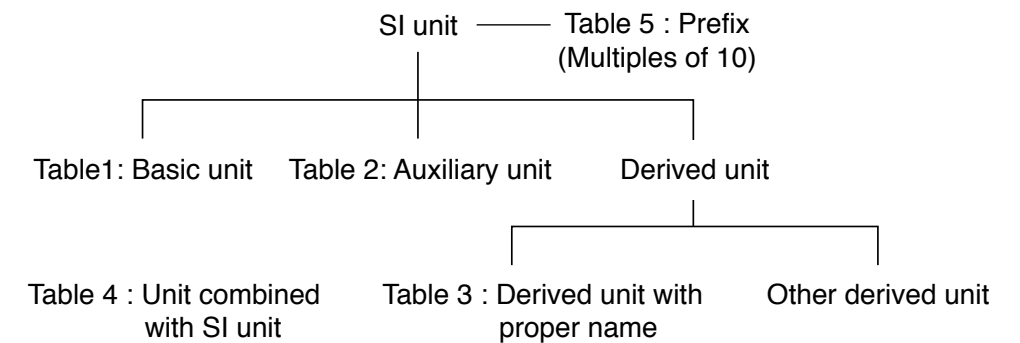


Table 1: Basic unit

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 ⁻¹
Force	newton	N	1 N = 1 kg·m/s ²
Pressure, Stress	pascal	Pa	1 Pa = 1 N/m ²
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 ⁻¹
Magnetic flux	weber	Wb	1 Wb = 1 V·s
Magnetic flux density, Magnetic induction	tesla	T	1 T = 1 Wb/m ²
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 ²

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 ¹⁸	exa	E
10 ¹⁵	peta	P
10 ¹²	tera	T
10 ⁹	giga	G
10 ⁶	mega	M
10 ³	kilo	k
10 ²	hecto	h
10	deca	da
10 ⁻¹	deci	d
10 ⁻²	centi	c
10 ⁻³	milli	m
10 ⁻⁶	micro	μ
10 ⁻⁹	nano	n
10 ⁻¹²	pico	p
10 ⁻¹⁵	femto	f
10 ⁻¹⁸	atto	a

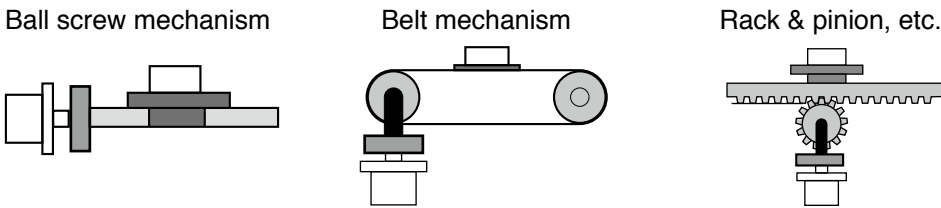
Quantity	Symbol of conventional unit	Symbol of SI unit and compatible unit	Conversion value
Length	μ (micron)	μm	1 μ = 1 μm (micrometer)
Acceleration	Gal G	m/s ² m/s ²	1 Gal = 10 ⁻² m/s ² 1 G = 9.80665 m/s ²
Frequency	c/s, c	Hz	1 c/s = Hz
Revolving speed, Number of revolutions	rpm	s ⁻¹ or min ⁻¹ , r/min	1 rpm = 1 min ⁻¹
Weight	kgf	—	} Same value
Mass	—	kg	
Weight flow rate	kgf/s	—	} Same value
Mass flow rate	—	kg/s	
Specific weight	kgf/m ³	—	} Same value
Density	—	kg/m ³	
Specific volume	m ³ /kgf	m ³ /kg	Same value
Load	kgf	N	1 kgf = 9.80665 N
Force	kgf dyn	N N	1 kgf = 9.80665 N 1 dyn = 10 ⁻⁵ N
Moment of force	kgf·m	N·m	1 kgf·m = 9.806 N·m
Pressure	kgf/cm ² at (Engineering atmospheric pressure) atm (Atmospheric pressure) mH ₂ O, mAq mmHg Torr	Pa, bar ⁽¹⁾ or kgf/cm ² Pa Pa Pa Pa or mmHg ⁽²⁾ Pa	1 kgf/cm ² = 9.80665 x 10 ⁴ Pa = 0.980665 bar 1 at = 9.80665 x 10 ⁴ Pa 1 atm = 1.01325 x 10 ⁵ Pa 1 mH ₂ O = 9.80665 x 10 ³ Pa 1 mmHg = 133.322 Pa
Stress	kgf/mm ²	Pa or N/m ²	1 kgf/mm ² = 9.80665 x 10 ⁶ Pa =9.80665 x 10 ⁶ N/m ²
Elastic modulus	kgf/cm ²	Pa or N/m ²	1 kgf/cm ² = 9.80665 x 10 ⁴ Pa = 9.80665 x 10 ⁴ N/m ²
	kgf/m ²	Pa or N/m ²	1 kgf/m ² = 9.80665 Pa = 9.80665 N/m ² 1 kgf/cm ² = 9.80665 x 10 ⁴ N/m ²
Energy, Work	kgf·m erg	J (joule) J	1 kgf·m = 9.80665 J 1 erg = 10 ⁻⁷ J
Work efficiency, Power	kgf·m/s PS	W (watt) W	1 kgf·m/s = 9.80665 W 1 PS = 0.7355 kW
Viscosity	PP	Pa·s	1 P = 0.1 Pa·s
Kinetic viscosity	St	mm ² /s	10 ⁻² St = 1 mm ² /s
Thermodynamic temperature	K	K (kelvin)	1 K = 1 K
Temperature interval	deg	K ⁽³⁾	1 deg = 1 K
Amount of heat	cal	J	1 cal = 4.18605 J
Heat capacity	cal/°C	J/K ⁽³⁾	1 cal/°C = 4.18605 J/K
Specific heat, Specific heat capacity	cal/ (kgf·°C)	cal/ (kgf·K) ⁽³⁾	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 ²)	W/m ²	1 kcal/ (h·m ²) = 1.16279 W/m ²
Thermal conductivity	cal/ (h·m·°C)	W/ (m·K) ⁽³⁾	1 kcal/ (h·m·°C) = 1.16279 W/ (m·K)
Coefficient of thermal conductivity	cal/ (h·m ² ·°C)	W/ (m ² ·K) ⁽³⁾	1 kcal/ (h·m ² ·°C) = 1.16279 W/ (m ² ·K)
Intensity of magnetic field	Oe	A/m	1 Oe = 10 ³ / (4π) A/m
Magnetic flux	Mx	Wb (weber)	1 Mx = 10 ⁻⁸ Wb
Magnetic flux density	Gs,G	T (tesla)	1 Gs = 10 ⁻⁴ 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”.

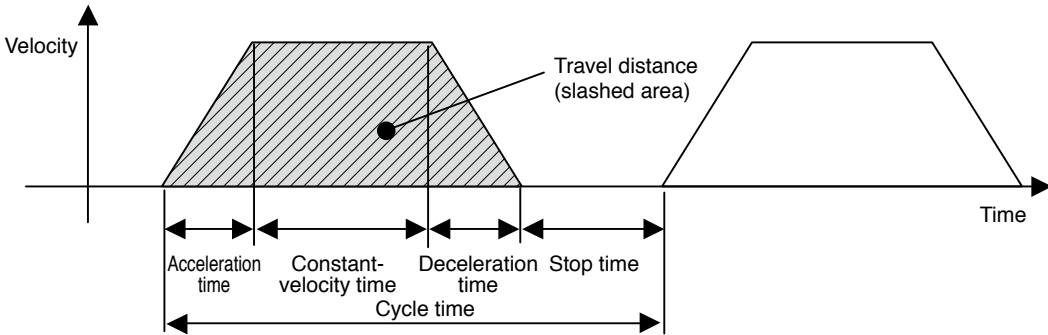
Flow of Motor Selection

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>



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 "x 10⁻⁴ kg·m²".

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

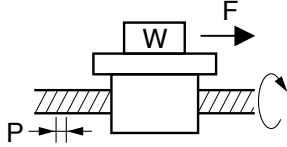
(1) Peak torque

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.

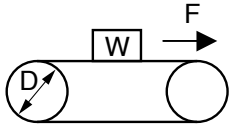
Traveling torque calculation formula for each mechanism

Ball screw mechanism


Traveling torque $T_f = \frac{P}{2\pi\eta} (\mu gW + F)$

W : Weight [kg]
P : Lead [m]
F : External force [N]

η : Mechanical efficiency
 μ : Coefficient of friction
g : Acceleration of gravity 9.8[m/s²]

Belt mechanism


Traveling torque $T_f = \frac{D}{2\pi\eta} (\mu gW + F)$

W : Weight [kg]
P : Pulley diameter [m]
F : External force [N]

η : Mechanical efficiency
 μ : Coefficient of friction
g : Acceleration of gravity 9.8[m/s²]

(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_a : Acceleration torque [N·m] t_a : Acceleration time [s] t_c : Cycle time [s]
T_f : Traveling torque [N·m] t_b : Constant-velocity time [s] (Run time + Stop time)
T_d : Deceleration torque [N·m] t_d : Deceleration time [s]

2. Motor velocity

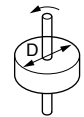
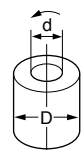
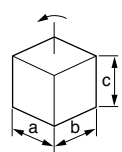
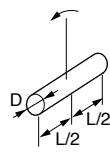
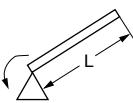
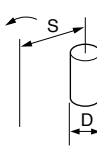
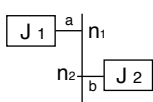
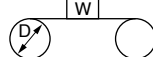
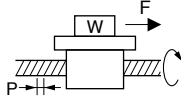
Maximum velocity

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

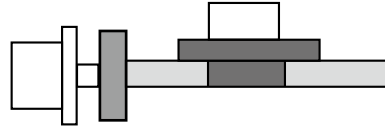
Shape	J calculation formula	Shape	J calculation formula
Disk 	$J = \frac{1}{8} WD^2$ [kg·m ²] W : Weight [kg] D : Outer diameter [m]	Hollow cylinder 	$J = \frac{1}{8} W(D^2 + d^2)$ [kg·m ²] W : Weight [kg] D : Outer diameter [m] d : Inner diameter [m]
Prism 	$J = \frac{1}{12} W(a^2 + b^2)$ [kg·m ²] W : Weight [kg] a, b, c : Side length [m]	Uniform rod 	$J = \frac{1}{48} W(3D^2 + 4L^2)$ [kg·m ²] W : Weight [kg] D : Outer diameter [m] L : Length [m]
Straight rod 	$J = \frac{1}{3} WL^2$ [kg·m ²] W : Weight [kg] L : Length [m]	Separated rod 	$J = \frac{1}{8} WD^2 + WS^2$ [kg·m ²] W : Weight [kg] D : Outer diameter [m] S : Distance [m]
Reduction gear 	Inertia on shaft "a" $J = J_1 + (\frac{n_2}{n_1})^2 J_2$ [kg·m ²] n ₁ : A rotational speed of a shaft [r/min] n ₂ : A rotational speed of b shaft [r/min]		
Conveyor 	$J = \frac{1}{4} WD^2$ [kg·m ²] W : Workpiece weight on conveyor [kg] D : Drum diameter [m] * Excluding drum J	Ball screw 	$J = J_B + \frac{W \cdot P^2}{4\pi^2}$ [kg·m ²] W : Weight [kg] P : Lead J _B : J of ball screw

If weight (W [kg]) is unknown, calculate it with the following formula:
Weight W[kg]=Density ρ [kg/m³] x Volume V[m³]
Density of each material
Iron ρ =7.9 x 10³ [kg/m³] Aluminum ρ =2.8 x 10³ [kg/m³]
Brass ρ =8.5 x 10³ [kg/m³]

To Drive Ball Screw Mechanism

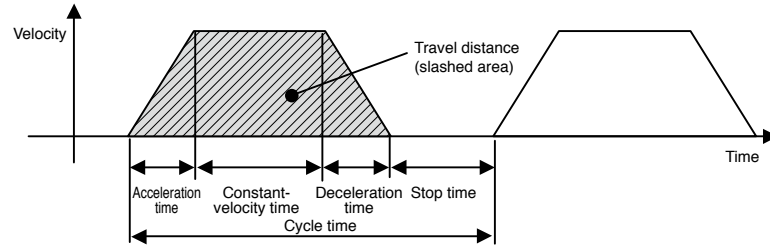
1. Example of motor selection for driving ball screw mechanism

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	B η = 0.9
Travel distance	0.3[m]
Coupling inertia	Jc = 10 × 10 ⁻⁶ [kg·m ²] (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 $BW = \rho \times \pi \times \left(\frac{BD}{2}\right)^2 \times BL = 7.9 \times 10^3 \times \pi \times \left(\frac{0.02}{2}\right)^2 \times 0.5 = 1.24 \text{ [kg]}$

4. Load inertia $JL = JC + JB = JC + \frac{1}{8}BW \times BD^2 + \frac{WA \cdot BP^2}{4\pi^2}$
 $= 0.00001 + (1.24 \times 0.02^2) / 8 + 10 \times 0.02^2 / 4\pi^2$
 $= 1.73 \times 10^{-4} \text{ [kg·m}^2\text{]}$

5. Provisional motor selection

In case of MSME 200 W motor : JM = 0.14 × 10⁻⁴ [kg·m²]

6. Calculation of inertia ratio

$JL / JM = 1.73 \times 10^{-4} / 0.14 \times 10^{-4}$ Therefore, the inertia ratio is "12.3" (less than "30")
(In case of MSME 100 W motor: JM = 0.051 × 10⁻⁴ Therefore, the inertia ratio is "33.9".)

7. Calculation of maximum velocity (Vmax)

$$\frac{1}{2} \times \text{Acceleration time} \times V_{\max} + \text{Constant-velocity time} \times V_{\max} + \frac{1}{2} \times \text{Deceleration time} \times V_{\max} = \text{Travel distance}$$

$$\frac{1}{2} \times 0.1 \times V_{\max} + 0.8 \times V_{\max} + \frac{1}{2} \times 0.1 \times V_{\max} = 0.3$$

$$0.9 \times V_{\max} = 0.3$$

$$V_{\max} = 0.3 / 0.9 = 0.334 \text{ [m/s]}$$

8. Calculation of motor velocity (N [r/min]) Ball screw lead per resolution: BP = 0.02 [m]

$$N = 0.334 / 0.02 = 16.7 \text{ [r/s]}$$

$$= 16.7 \times 60 = 1002 \text{ [r/min]} < 3000 \text{ [r/min]} \text{ (Rated velocity of MSME 200W motor)}$$

9. Calculation of torque

$$\text{Traveling torque } T_f = \frac{BP}{2\pi B\eta} (\mu g WA + F) = \frac{0.02}{2\pi \times 0.9} (0.1 \times 9.8 \times 10 + 0) = 0.035 \text{ [N·m]}$$

$$\text{Acceleration torque } T_a = \frac{(JL + JM) \times 2\pi N [\text{r/s}]}{\text{Acceleration time [s]}} + \text{Traveling torque}$$

$$= \frac{(1.73 \times 10^{-4} + 0.14 \times 10^{-4}) \times 2\pi \times 16.7}{0.1} + 0.035$$

$$= 0.196 + 0.035 = 0.231 \text{ [N·m]}$$

To Drive Ball Screw Mechanism
Example of Motor Selection

$$\text{Deceleration torque } T_d = \frac{(JL + JM) \times 2\pi N [\text{r/s}]}{\text{Deceleration time [s]}} - \text{Traveling torque}$$

$$= \frac{(1.73 \times 10^{-4} + 0.14 \times 10^{-4}) \times 2\pi \times 16.7}{0.1} - 0.035$$

$$= 0.196 - 0.035 = 0.161 \text{ [N·m]}$$

10. Verification of maximum torque

$$\text{Acceleration torque} = T_a = 0.231 \text{ [N·m]} < 1.91 \text{ [N·m]} \text{ (Maximum torque of MSME 200 W motor)}$$

11. Verification of effective torque

$$T_{\text{rms}} = \sqrt{\frac{T_a^2 \times t_a + T_f^2 \times t_b + T_d^2 \times t_d}{t_c}}$$

$$= \sqrt{\frac{0.231^2 \times 0.1 + 0.035^2 \times 0.8 + 0.161^2 \times 0.1}{2}}$$

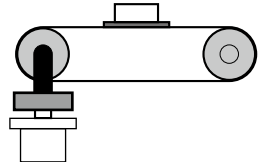
$$= 0.067 \text{ [N·m]} < 0.64 \text{ [N·m]} \text{ (Rated torque of MSME 200 W motor)}$$

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

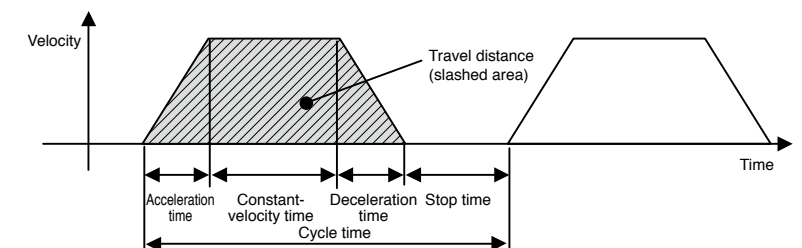
Example of motor selection for timing belt mechanism

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	B η = 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

$$= JC + \frac{1}{4}WA \times PD^2 + \frac{1}{8}WP \times PD^2 \times 2$$

$$= 0 + \frac{1}{4} \times 2 \times 0.05^2 + \frac{1}{8} \times 0.5 \times 0.05^2 \times 2$$

$$= 0.00156 = 15.6 \times 10^{-4} \text{ [kg·m}^2\text{]}$$

4. Provisional motor selection

In case of MSME 750 W motor : JM = 0.87 × 10⁻⁴ [kg·m²]

5. Calculation of inertia ratio

$JL / JM = 15.6 \times 10^{-4} / 0.87 \times 10^{-4}$ Therefore, the inertia ratio is "17.9" (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 : $\pi \times PD = 0.157 [\text{m}]$

$N = 1.111 / 0.157 = 7.08 [\text{r/s}]$

$= 7.08 \times 60 = 424.8 [\text{r/min}] < 3000 [\text{r/min}]$ (Rated velocity of MSME 750 W motor)

8. Calculation of torque

Traveling torque $T_f = \frac{PD}{2\eta} (\mu g W_A + F) = \frac{0.05}{2 \times 0.8} (0.1 \times 9.8 \times 3 + 0)$

$= 0.061 [\text{N}\cdot\text{m}]$

Acceleration torque $T_a = \frac{(J_L + J_M) \times 2\pi N [\text{r/s}]}{\text{Acceleration time} [\text{s}]} + \text{Traveling torque}$

$= \frac{(15.6 \times 10^{-4} + 0.87 \times 10^{-4}) \times 2\pi \times 7.08}{0.1} + 0.061$

$= 0.751 + 0.061 = 0.812 [\text{N}\cdot\text{m}]$

Deceleration torque $T_d = \frac{(J_L + J_M) \times 2\pi N [\text{r/s}]}{\text{Deceleration time} [\text{s}]} - \text{Traveling torque}$

$= \frac{(15.6 \times 10^{-4} + 0.87 \times 10^{-4}) \times 2\pi \times 7.08}{0.1} - 0.061$

$= 0.751 - 0.061 = 0.69 [\text{N}\cdot\text{m}]$

9. Verification of maximum torque

Acceleration torque $T_a = 0.812 [\text{N}\cdot\text{m}] < 7.1 [\text{N}\cdot\text{m}]$ (Maximum torque of MSME 750 W motor)

10. Verification of effective torque

$T_{\text{rms}} = \sqrt{\frac{T_a^2 \times t_a + T_f^2 \times t_b + T_d^2 \times t_d}{t_c}}$

$= \sqrt{\frac{0.812^2 \times 0.1 + 0.061^2 \times 0.8 + 0.69^2 \times 0.1}{2}}$

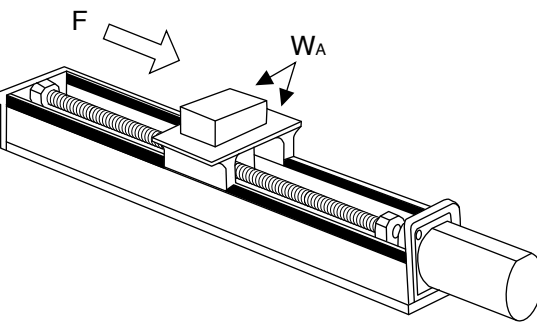
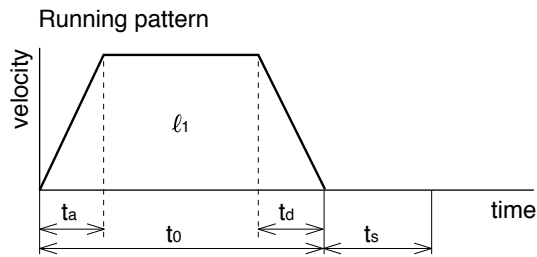
$= 0.241 [\text{N}\cdot\text{m}] < 2.4 [\text{N}\cdot\text{m}]$ (Rated torque of MSME 750 W motor)

11. Judging from the above calculation result, selection of MSME 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	ℓ<sub>1</sub>: mm
2) Cycle time	t<sub>o</sub>: s
(Fill in items 3) and 4) if required.)	
3) Acceleration time	t<sub>a</sub>: s
4) Deceleration time	t<sub>d</sub>: s
5) Stopping time	t<sub>s</sub>: s
6) Max. velocity	V: mm/s
7) External force	F: N
8) Positioning accuracy of the work load	± mm
9) Total weight of the work load and the table	W<sub>A</sub>: 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.)

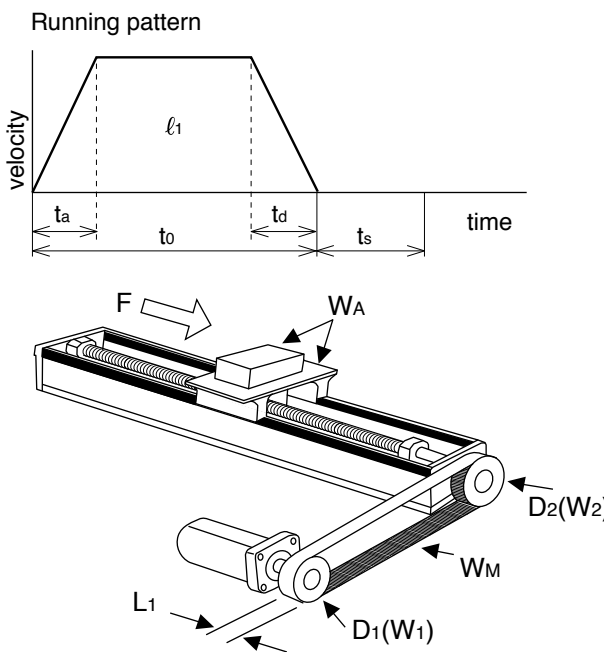
2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

	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

1) Travel distance of the work load per one cycle	ℓ_1 : mm	15) Diameter of the pulley	Motor side D1: mm	Ball screw side D2: mm
2) Cycle time	to: s	16) Weight of the pulley	W1: kg	W2: kg
(Fill in items 3) and 4) if required.)		(or item 17) and 18))		
3) Acceleration time	ta: s	17) Width of the pulley	L1: mm	
4) Deceleration time	td: s	18) Material of the pulley		
5) Stopping time	ts: s	19) Weight of the belt	WM: kg	
6) Max. velocity	V: mm/s			
7) External force	F: N			
8) Positioning accuracy of the work load	$\pm$ mm			
9) Total weight of the work load and the table	WA: kg			
10) Power supply voltage	V			
11) Diameter of the ball screw	mm			
12) Total length of the ball screw	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 :

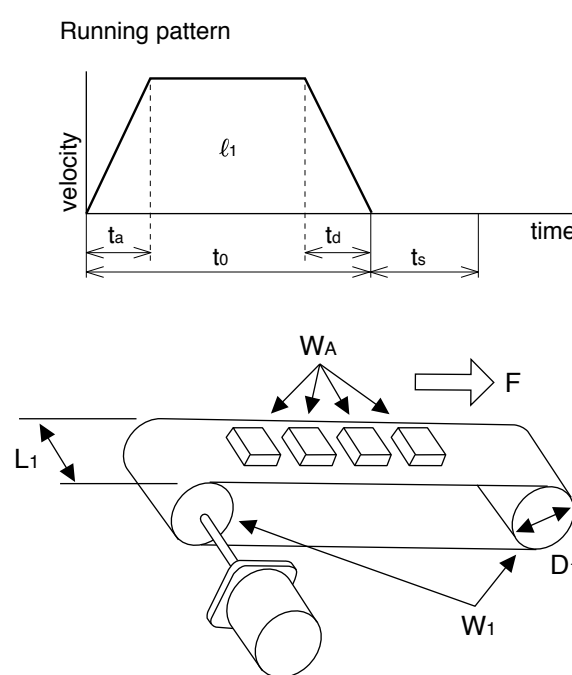
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E-mail address:

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 : mm		
2) Cycle time	to: s		
(Fill in items 3) and 4) if required.)			
3) Acceleration time	ta: s		
4) Deceleration time	td: s		
5) Stopping time	ts: s	(or item 14) and 15))	
6) Max. velocity	V: mm/s		
7) External force	F: N		
8) Positioning accuracy of the work load	$\pm$ mm		
9) Total weight of the work load	WA: kg		
10) Power supply voltage	V	14) Width of the pulley	L1: mm
11) Weight of the belt	WM: kg	15) Material of the pulley	
12) Diameter of the driving pulley	D1: mm	16) Traveling direction (horizontal, vertical etc.)	
13) Total weight of the pulley	W1: kg		

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :

Department/Section :

Name :

Address :

Tel :

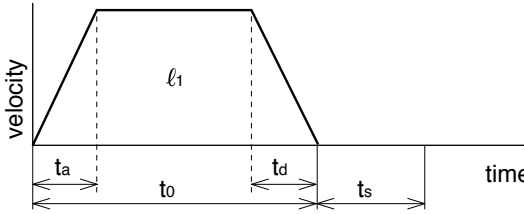
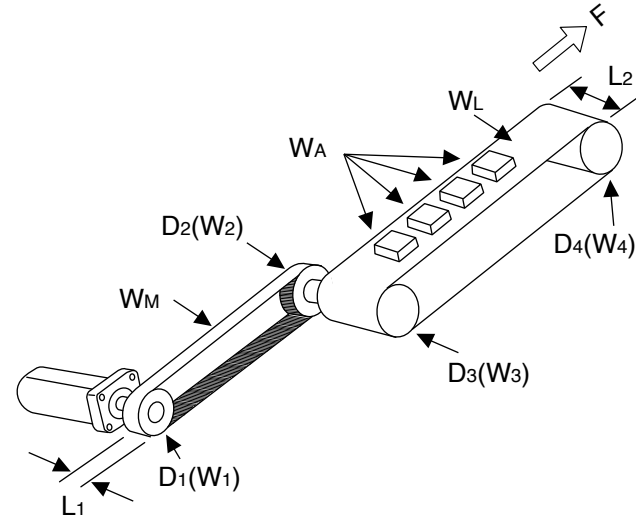
Fax :

E-mail address:

Request Sheet for Motor Selection

Request for motor selection IV : Timing pulley + Belt drive

1. Driven mechanism and running data

1) Travel distance of the work load per one cycle	ℓ_1 : mm	16) Diameter of the pulley	Motor side D3: mm	Belt side D4: mm
2) Cycle time	t_0 : s	17) Weight of the pulley	W3: kg	W4: 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	L2: mm	
4) Deceleration time	t_d : s	19) Material of the pulley		
5) Stopping time	t_s : s	20) Weight of the belt	W _L : kg	
6) Max. velocity	V: mm/s	21) Traveling direction (horizontal, vertical etc.)		
7) External force	F: N	Running pattern		
8) Positioning accuracy of the work load	$\pm$ mm			
9) Total weight of the work load	W _A : kg			
10) Power supply voltage	V			
11) Weight of motor side belt	W _M : kg			
Motor side		Belt side		
12) Diameter of the pulley	D1: mm	D2: mm		
13) Weight of the pulley	W1: kg	W2: kg		
(or item 14) and 15))				
14) Width of the belt	L1: mm			
15) Material of the pulley				

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :

Department/Section :

Name :

Address :

Tel :

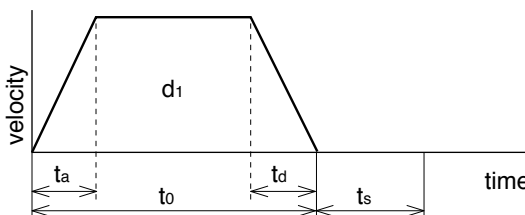
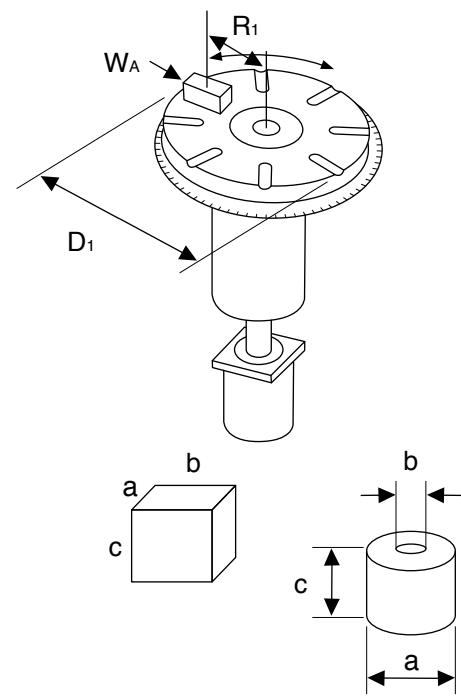
Fax :

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	d_1 : deg	14) Dimensions of the work load	Prism a: mm	Cylinder a: mm
2) Cycle time	t_0 : s		b: mm	b: mm
(Fill in items 3) and 4) if required.)			c: mm	c: mm
3) Acceleration time	t_a : s	15) Number of work loads	pcs	
4) Deceleration time	t_d : s	Running pattern		
5) Stopping time	t_s : s			
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			

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :

Department/Section :

Name :

Address :

Tel :

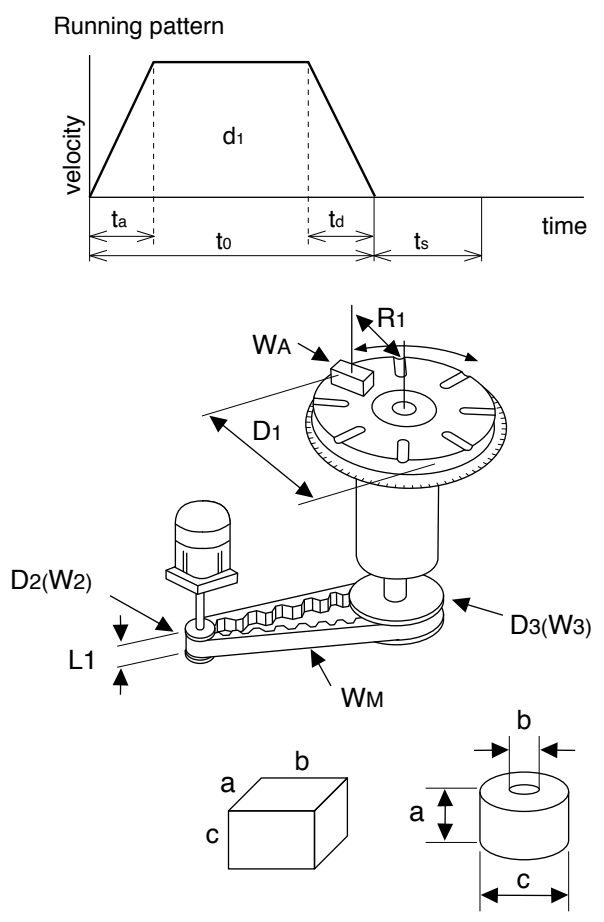
Fax :

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 ₀ : 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	± 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			

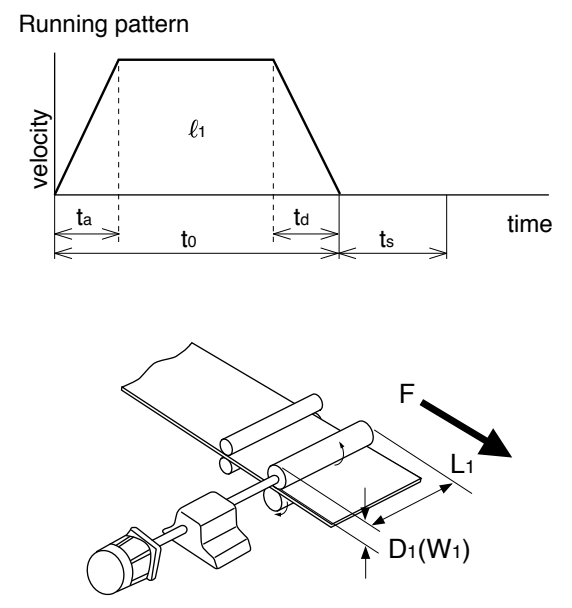
2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

	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 ₀ : s	
(Fill in items 3) and 4) if required.)		
3) Acceleration time	t _a : s	
4) Deceleration time	t _d : s	
5) Stopping time	t _s : s	
6) Max. velocity	v: mm/s	
7) External pulling force	F: N	
8) Positioning accuracy of the work load	± mm	
9) Number of rollers	pcs	
10) Power supply voltage	V	(or item 13) and 14))
11) Diameter of the roller	D ₁ : mm	13) Width of the roller L ₁ : mm
12) Mass of the roller	W ₁ : kg	14) Material of the roller

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 Ⅷ : Driving with Rack & Pinion

1. Driven mechanism and running data

1) Travel distance of the work load per one cycle

ℓ_1 :

mm

2) Cycle time

to:

s

(Fill in items 3) and 4) if required.)

3) Acceleration time

ta:

s

4) Deceleration time

td:

s

5) Stopping time

ts:

s

6) Max. velocity

V:

mm/s

7) External force

F:

N

8) Positioning accuracy of the work load

$\pm$

mm

9) Total weight of the work load

WA:

kg

10) Power supply voltage

V

11) Diameter of the pinion

D3:

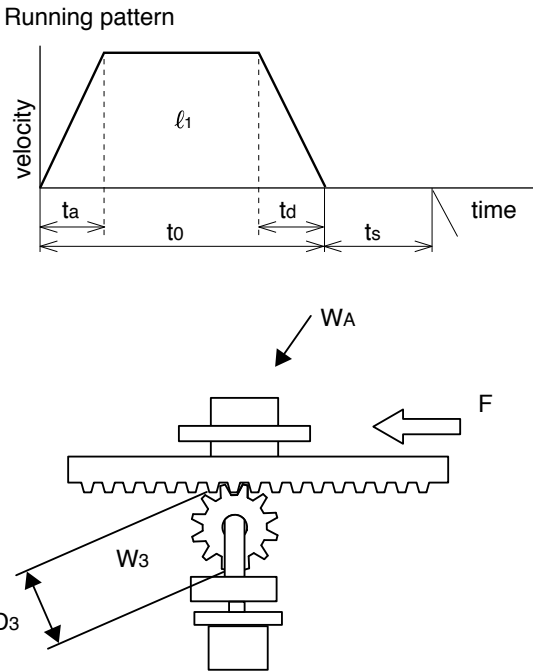
mm

12) Mass of the pinion

W3:

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 :

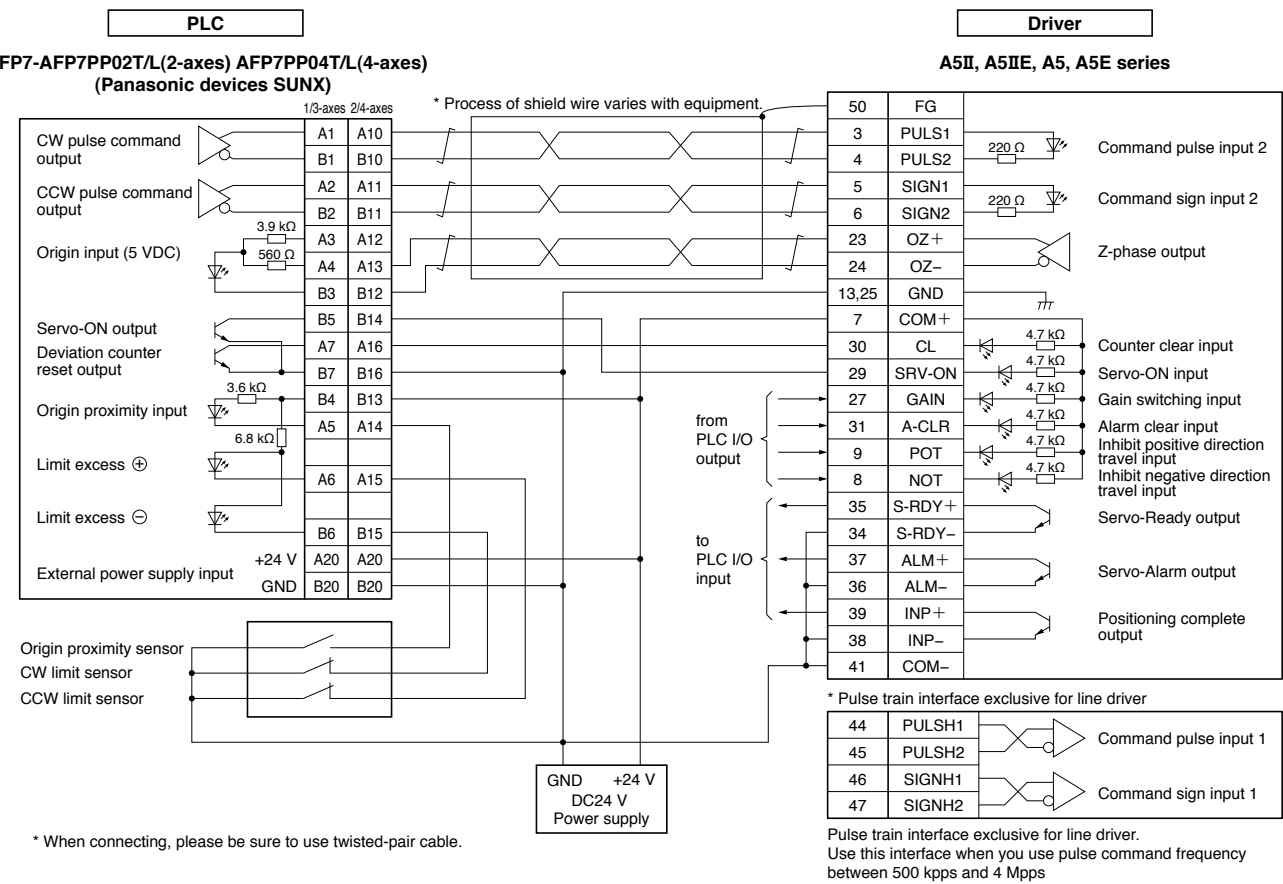
E-mail address:

Connection Between Driver and Controller

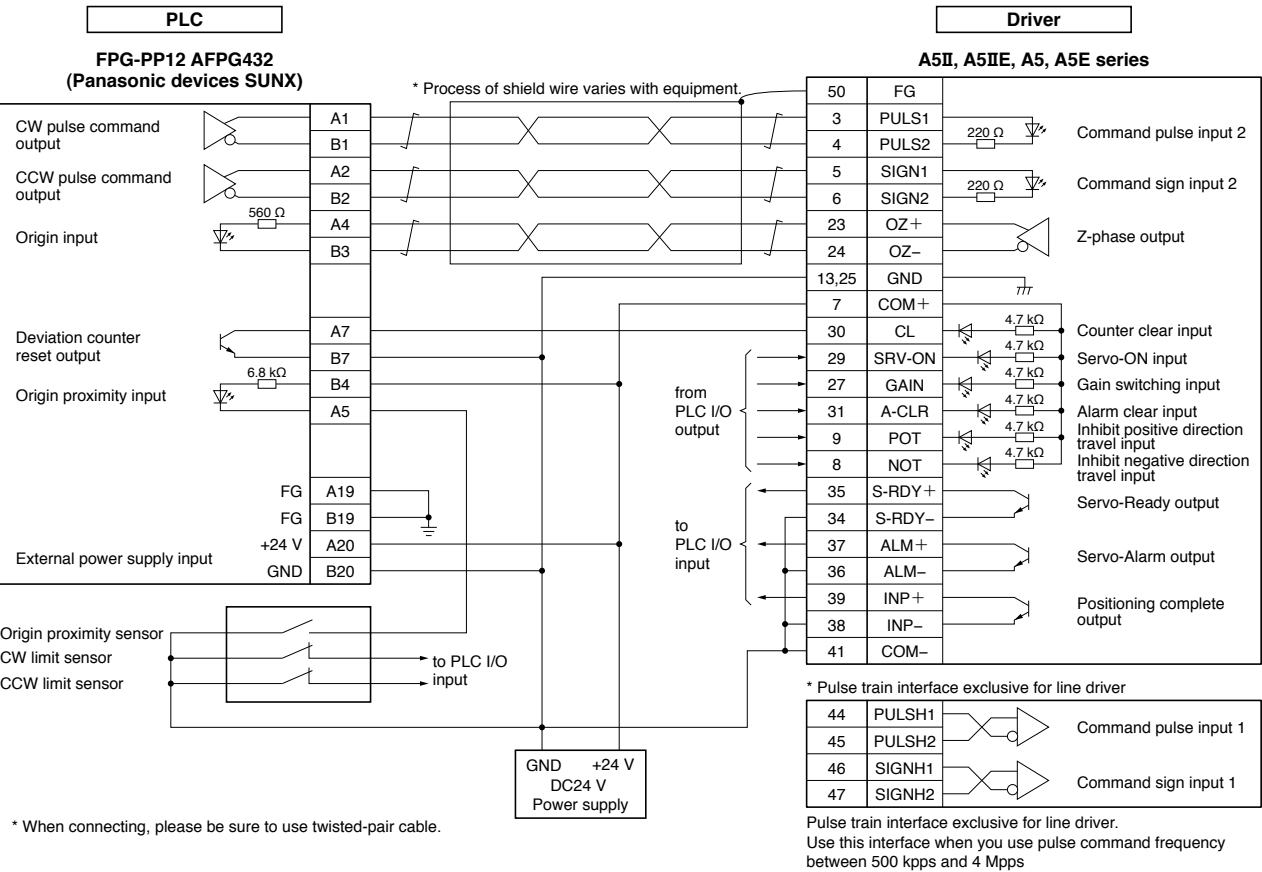
A5 Family

Connection Between Driver and Controller

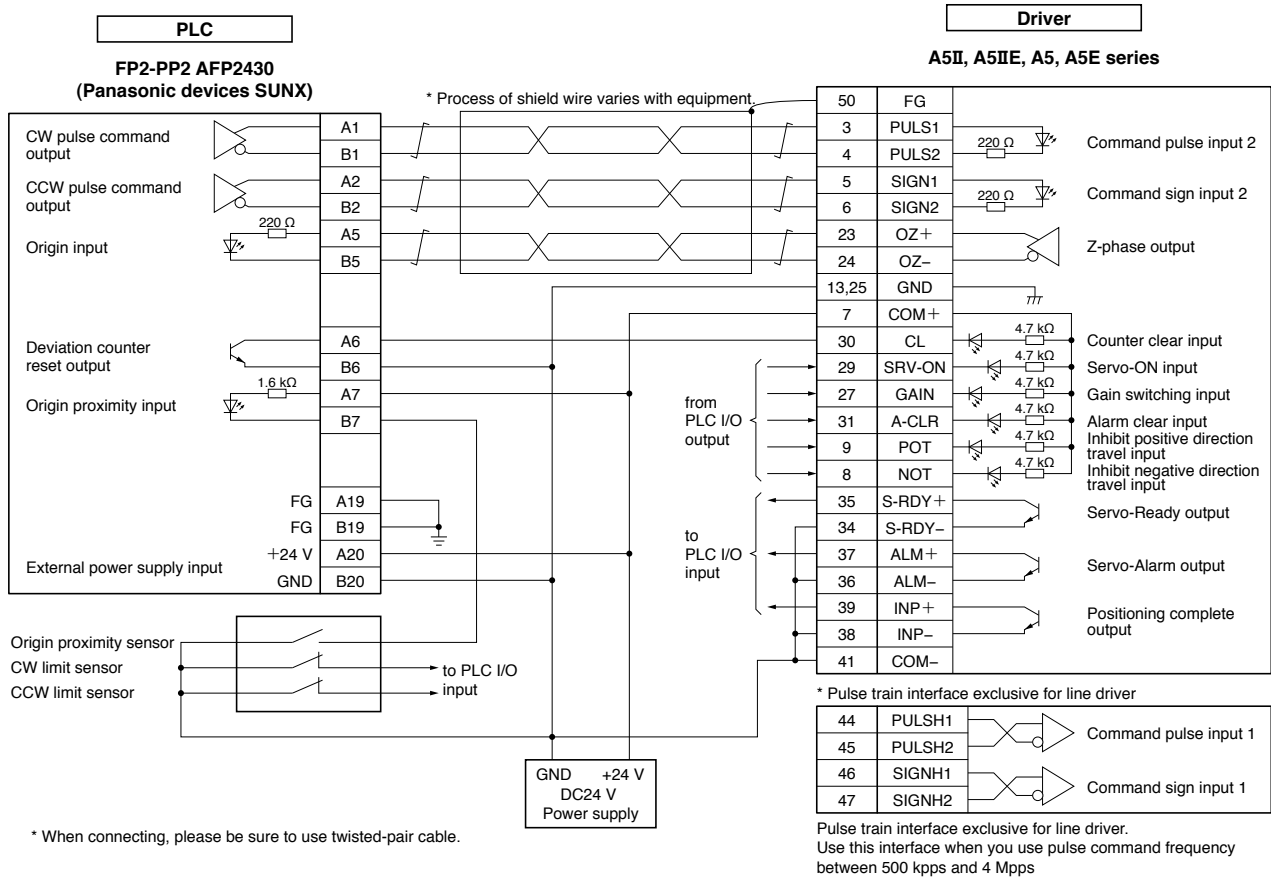
FP7-AFP7PP02T/L(2-axes) AFP7PP04T/L(4-axes) Connection with the Panasonic devices SUNX.



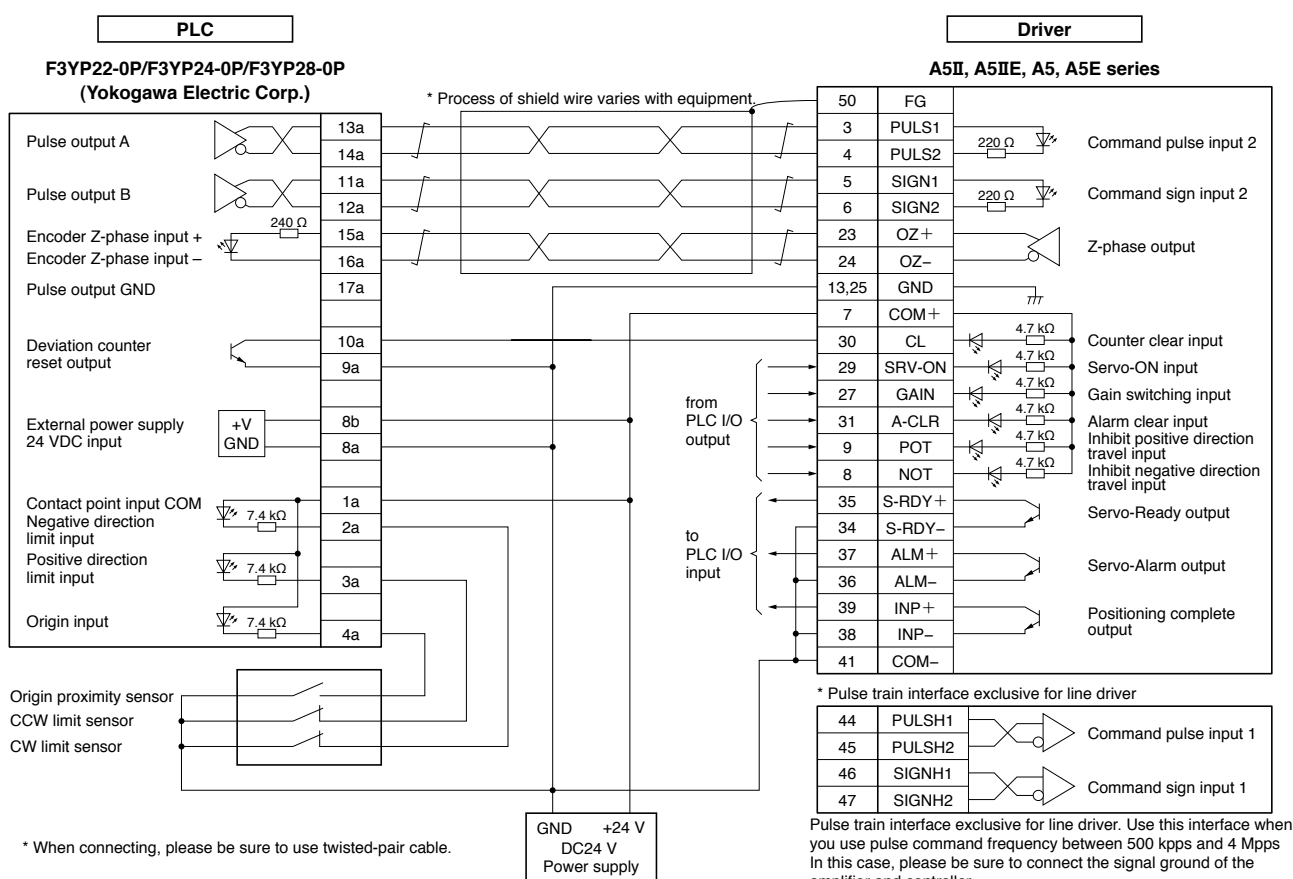
FPG-PP12 AFPG432 Connection with the Panasonic devices SUNX.



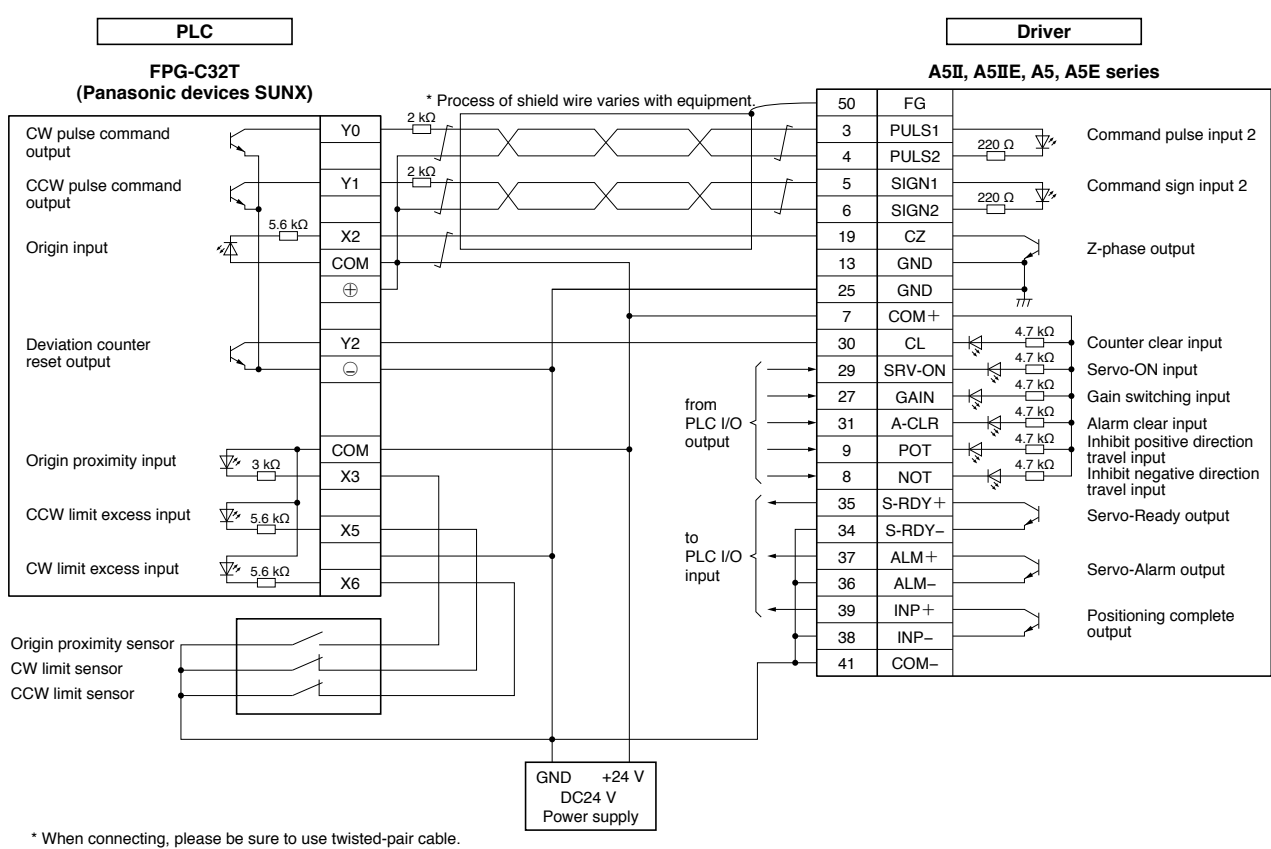
FP2-PP2 AFP2430 Connection with the Panasonic devices SUNX.



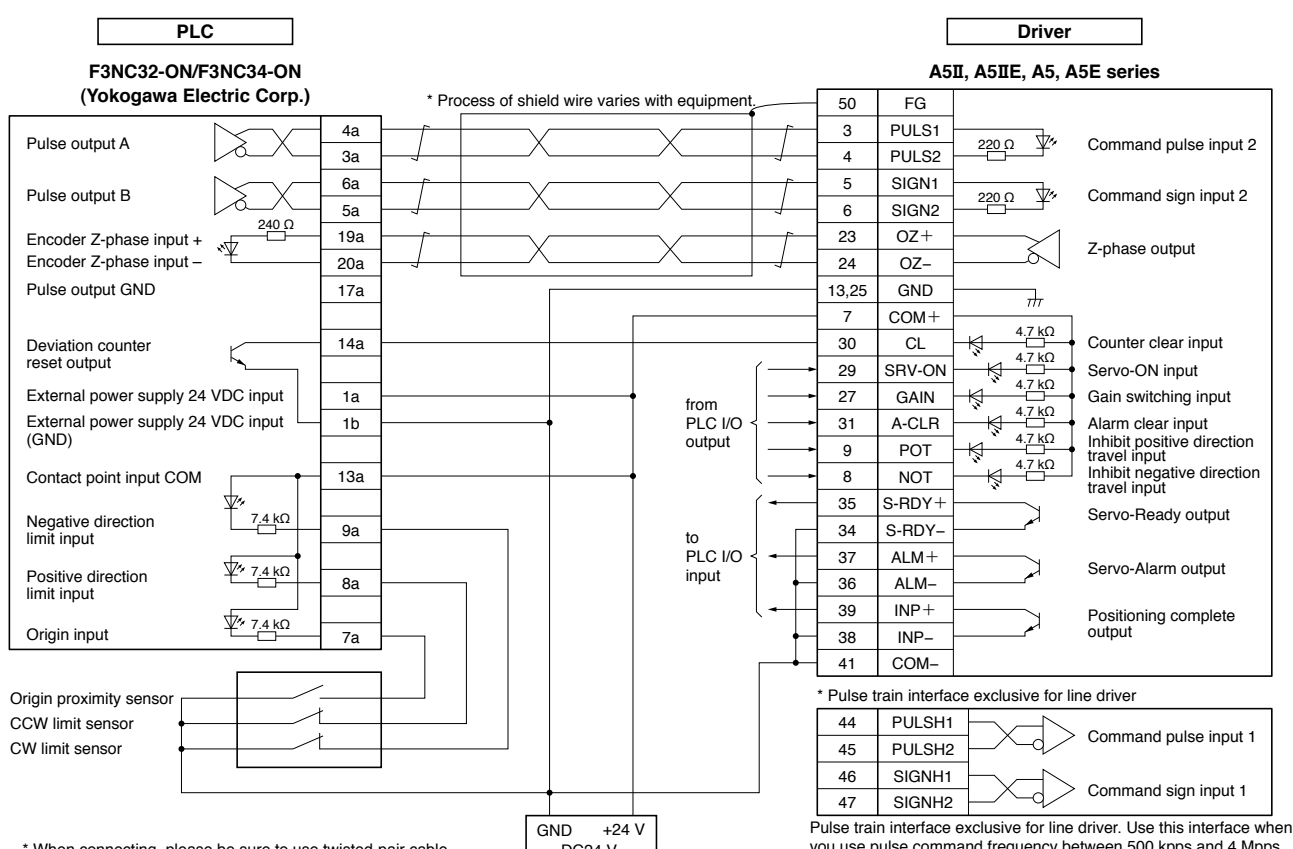
F3YP22-0P/F3YP24-0P/F3YP28-0P Connection with the Yokogawa Electric Corp.



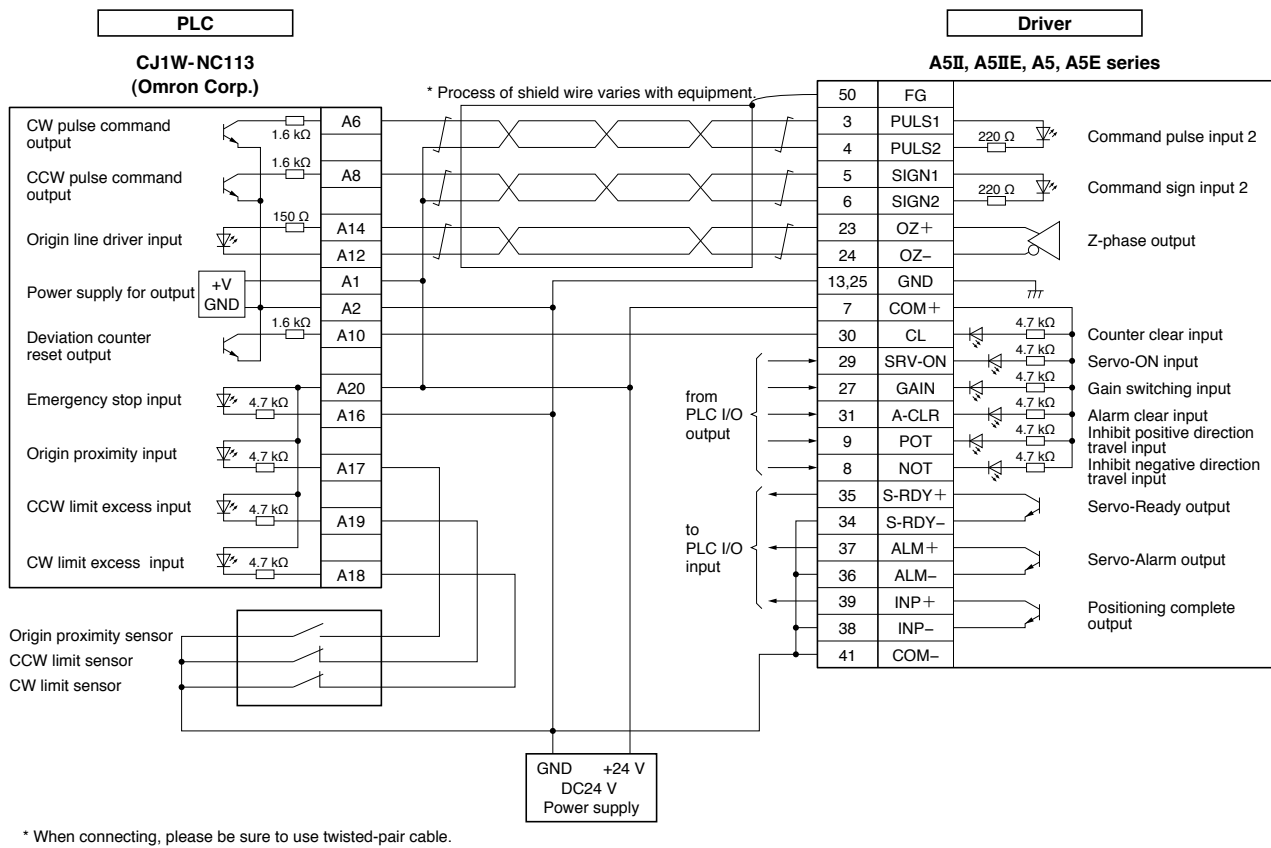
FPG-C32T Connection with the Panasonic devices SUNX.



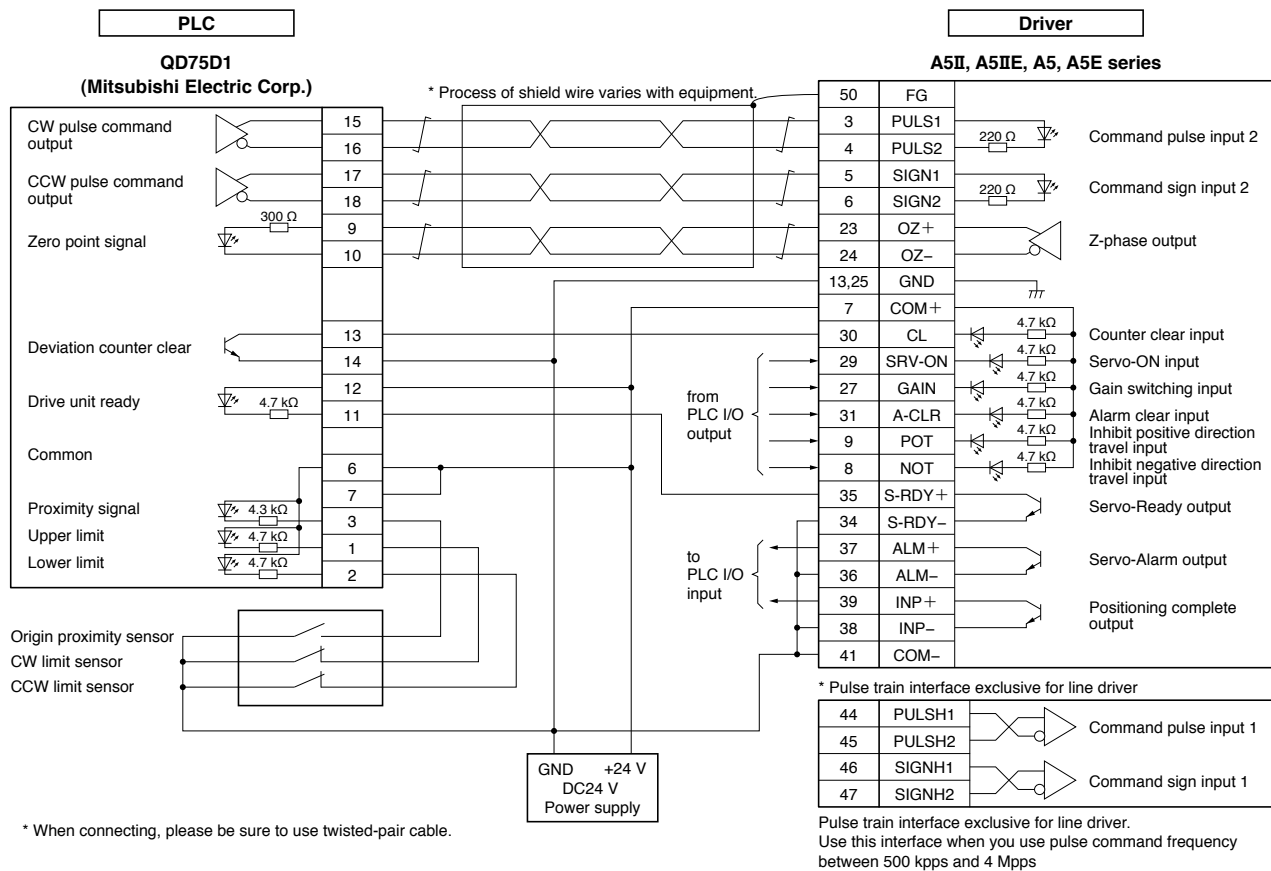
F3NC32-ON/F3NC34-ON Connection with the Yokogawa Electric Corp.



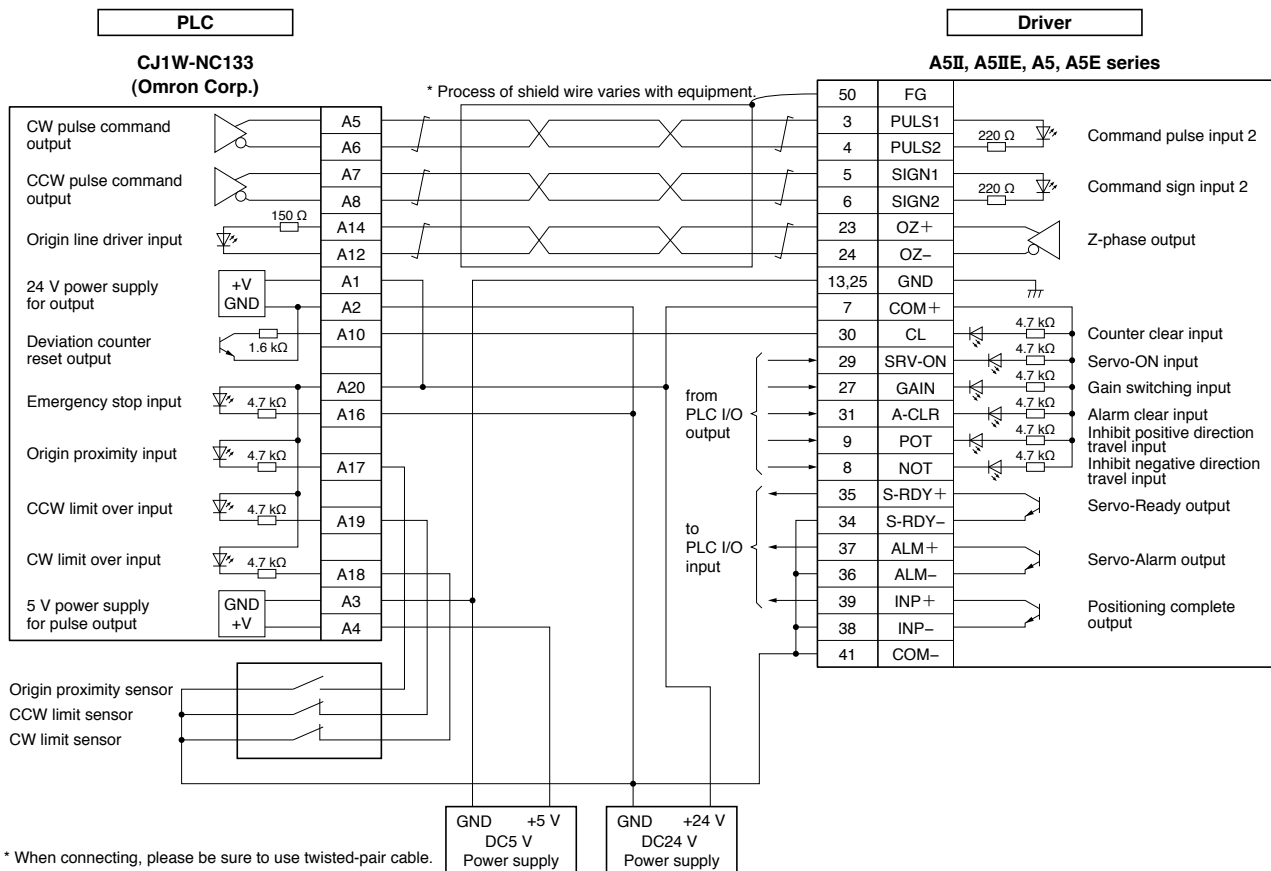
CJ1W-NC113 Connection with the Omron Corp.



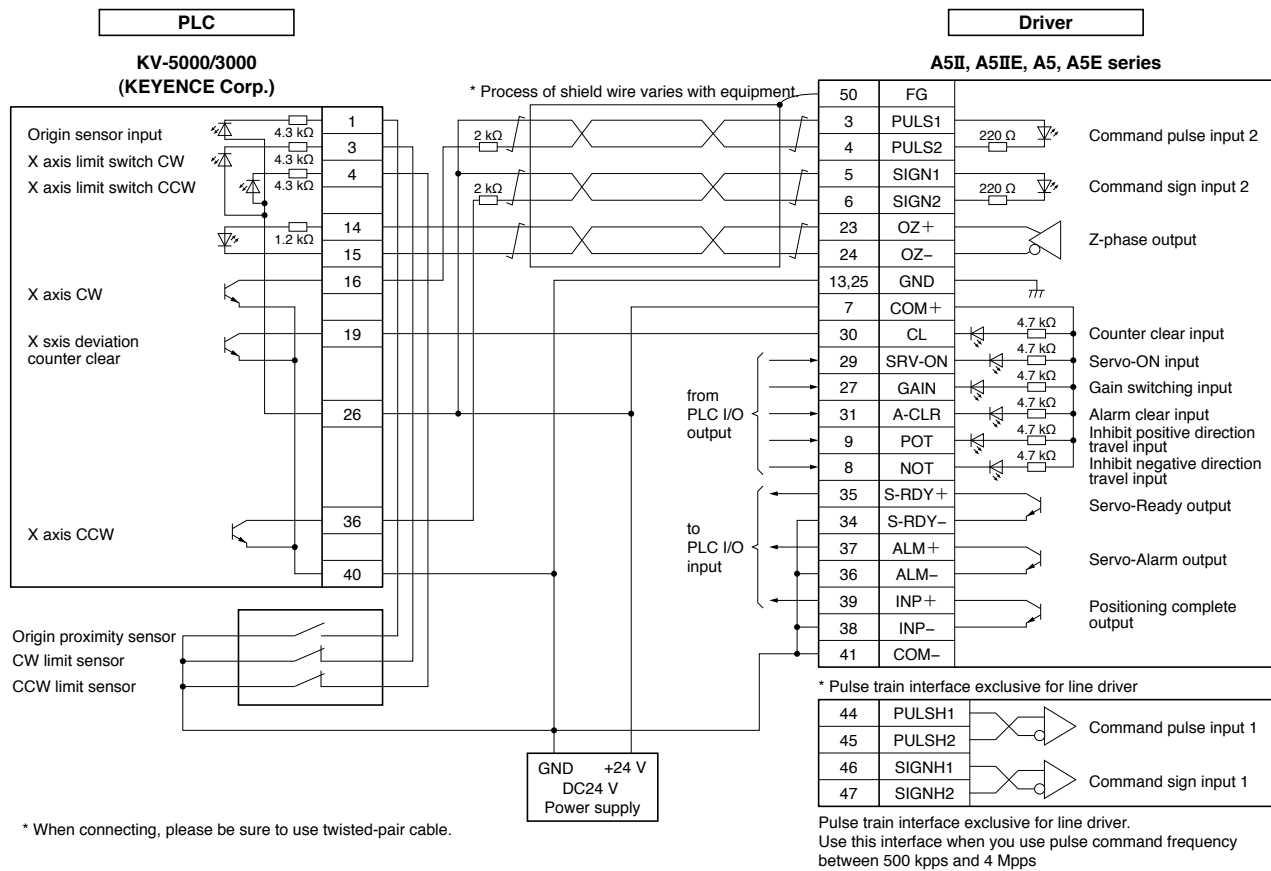
QD75D1 Connection with the Mitsubishi Electric Corp.



CJ1W-NC133 Connection with the Omron Corp.

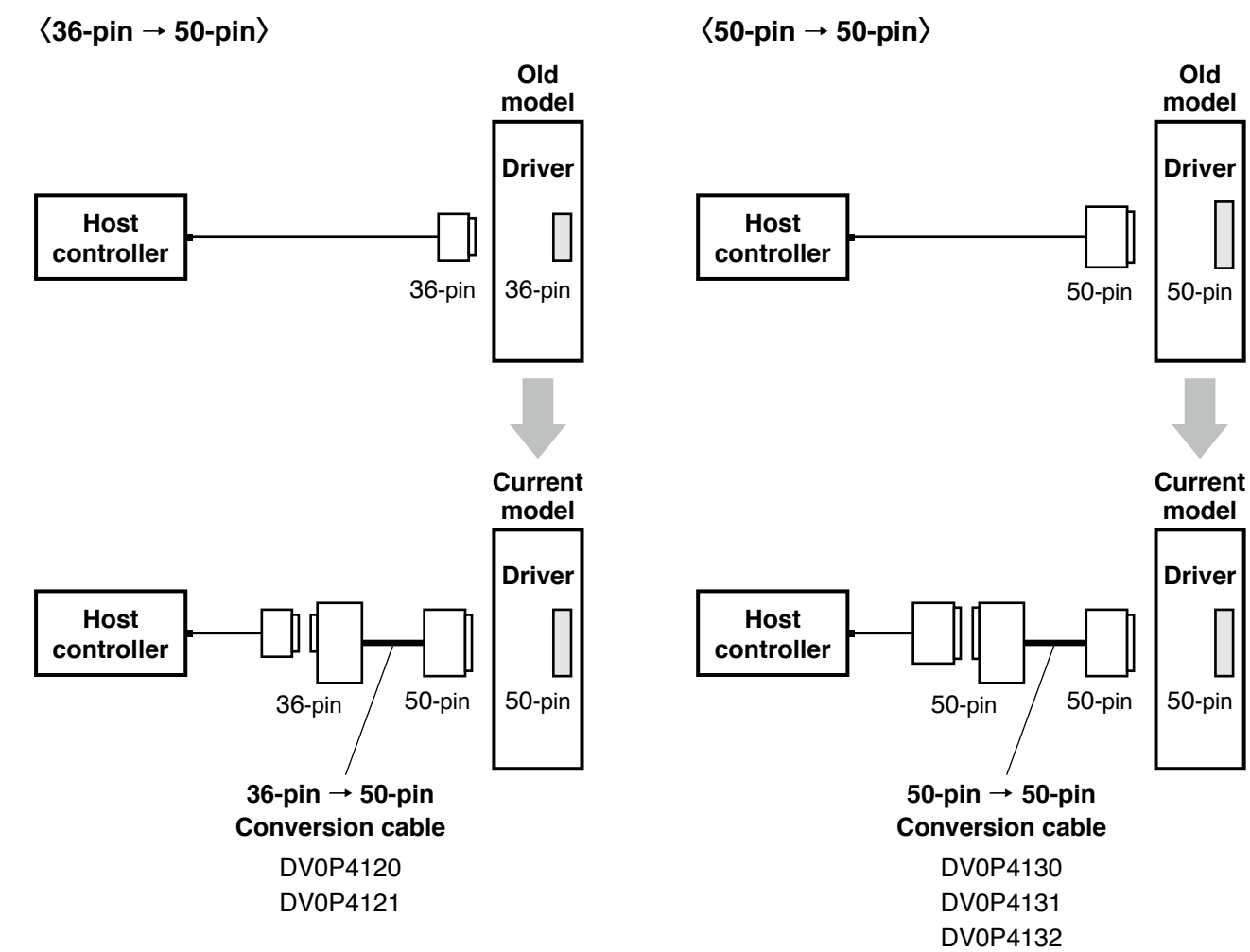


KV-5000/3000 Connection with the KEYENCE Corp.



Replacing Old Model Servo Driver with MINAS A5Ⅱ, A5 series

For easier replacement of old driver (MINAS X/XX/V series) with A5Ⅱ, A5 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.280
	Torque control	DV0P4121	
V series (50-pin)	Position control	DV0P4130	P.281
	Velocity control	DV0P4131	
	Torque control	DV0P4132	P.282

* For external dimensions, refer to P.197.

Conversion Wiring Table

Pin No. on Old Model	DV0P4120			Pin No. on Current Model	DV0P4121	
	Pin No. on Current Model	Signal Name	Symbol		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.

A5 Family

Connection Between Driver and Controller

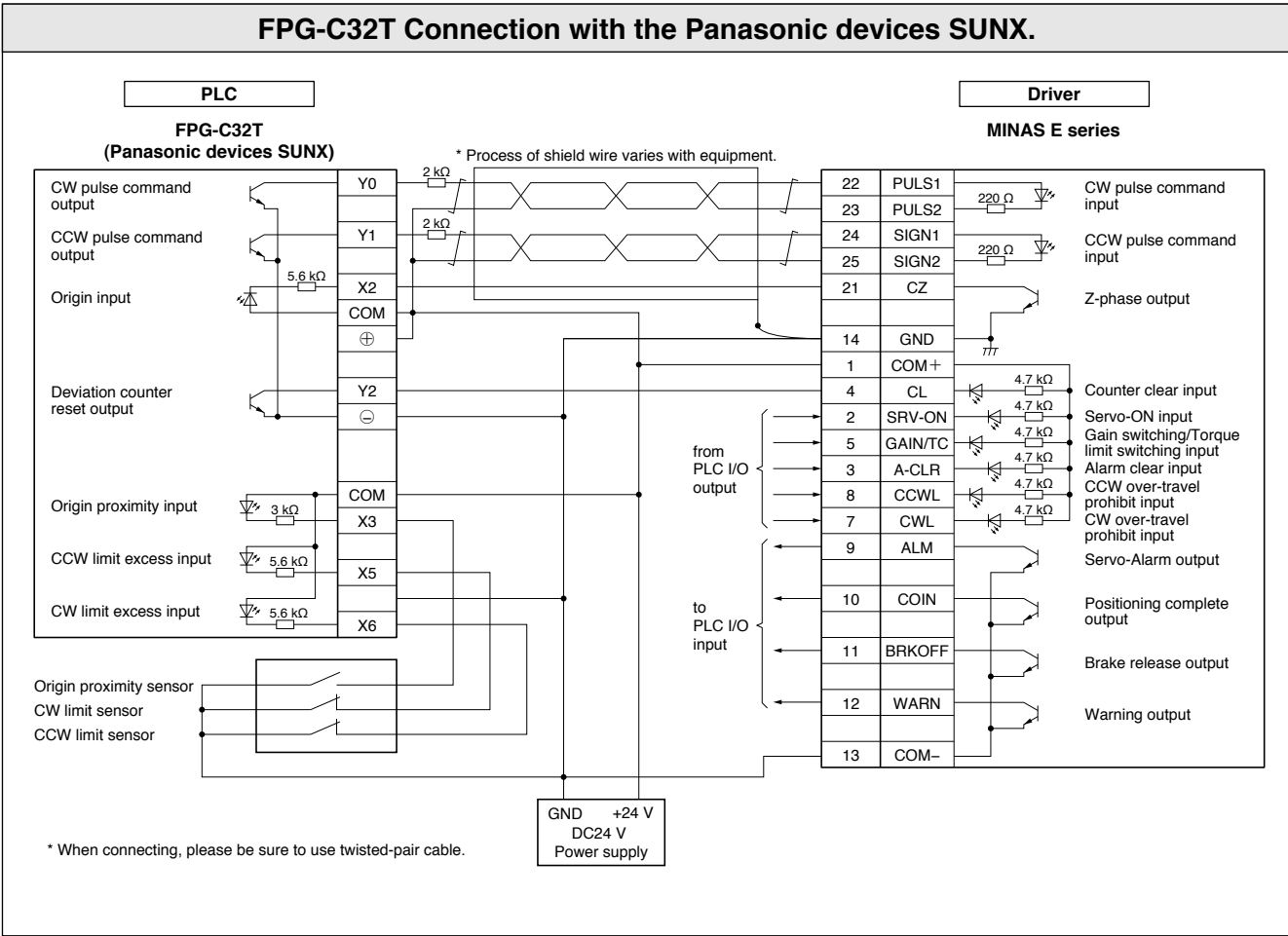
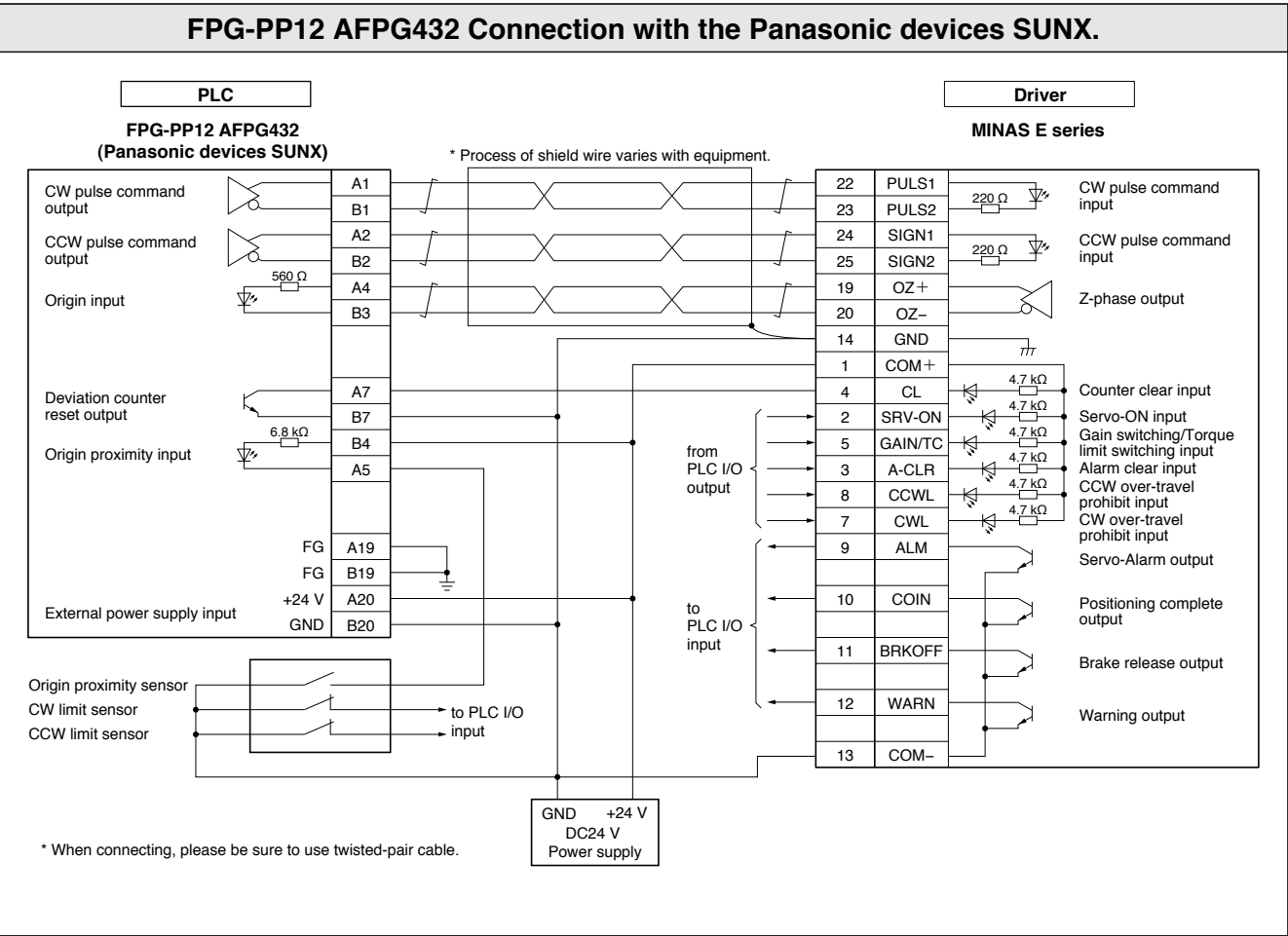
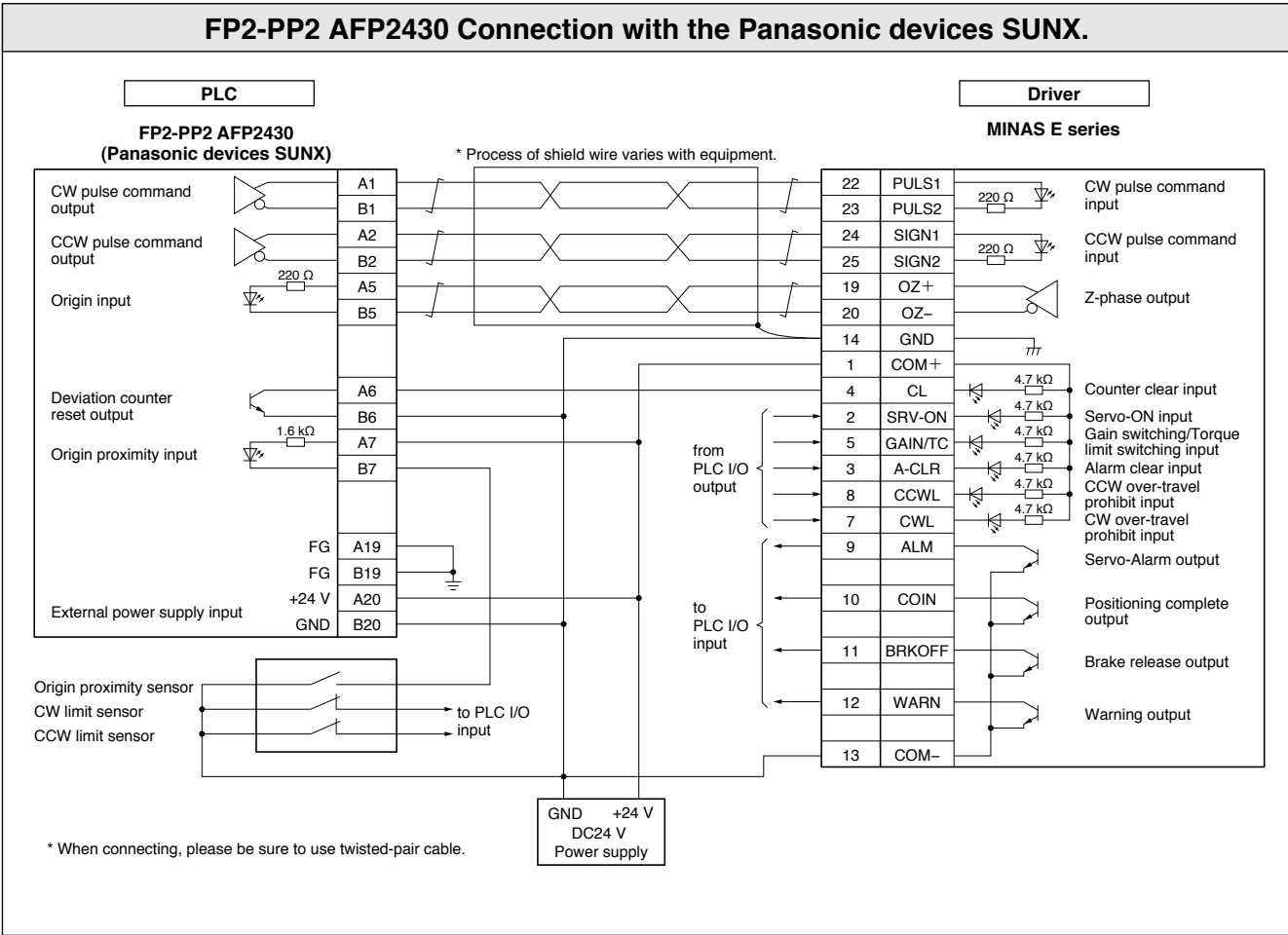
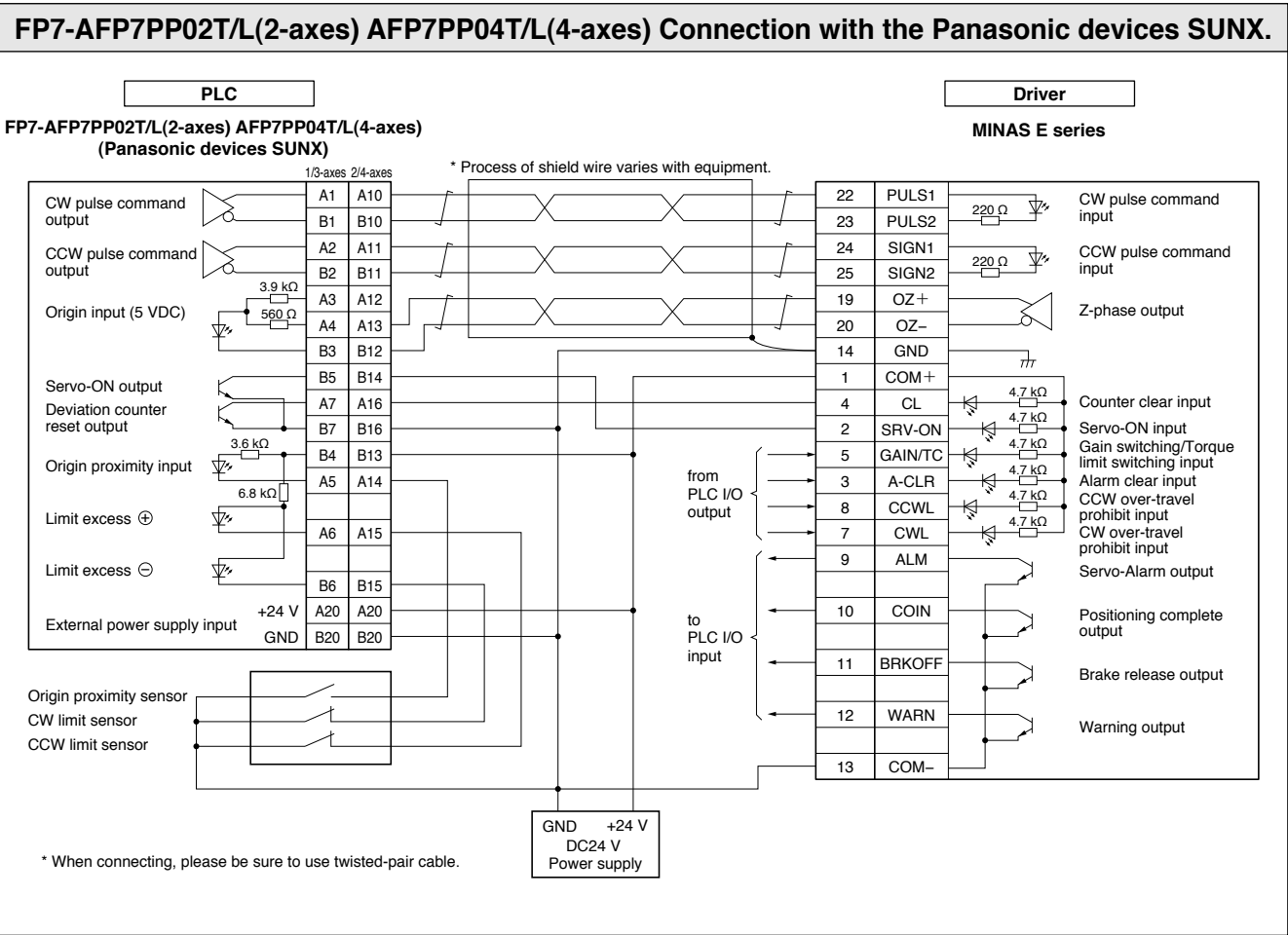
Replacing Old Model Servo Driver with MINAS A5Ⅱ, A5 series

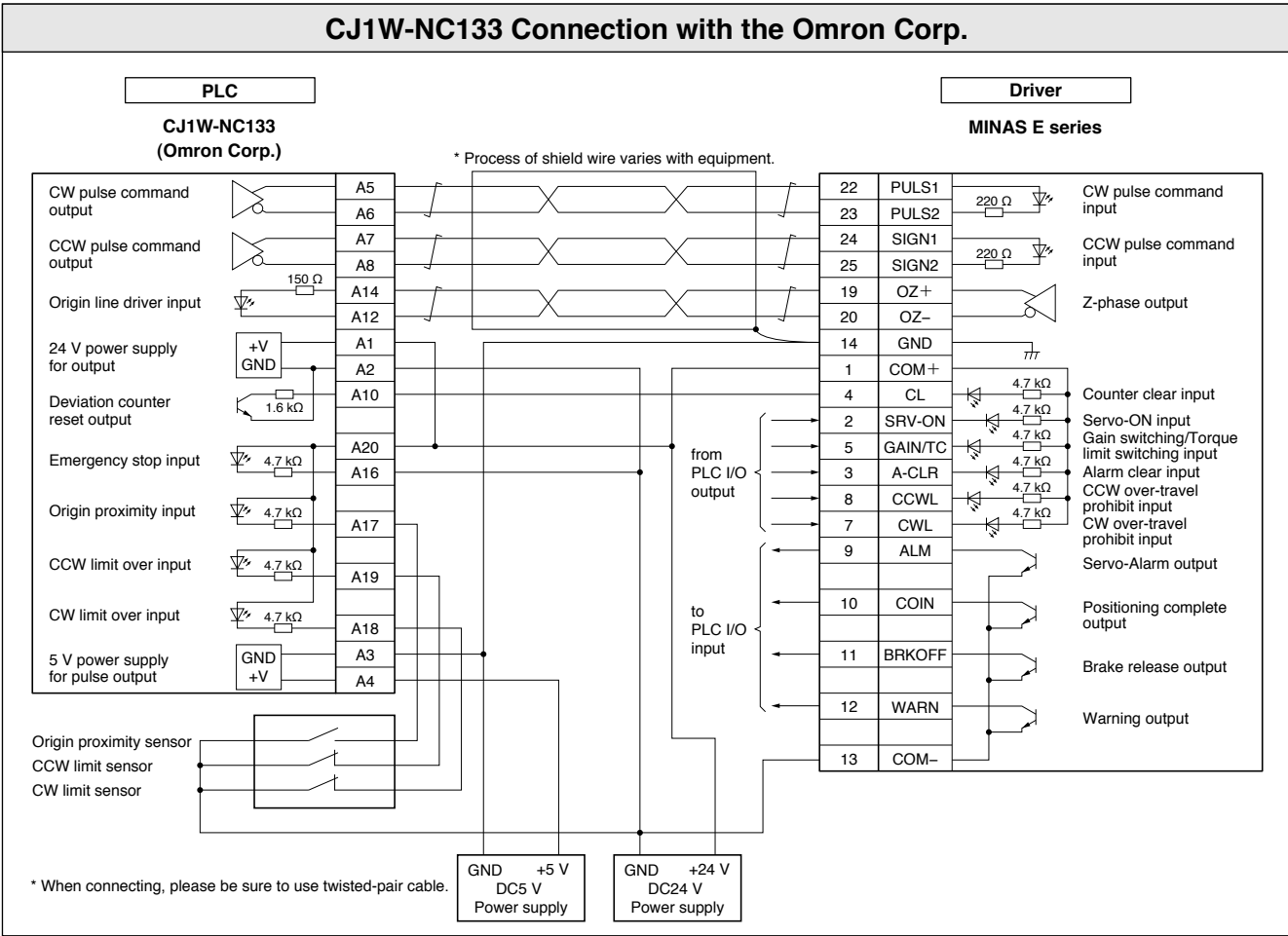
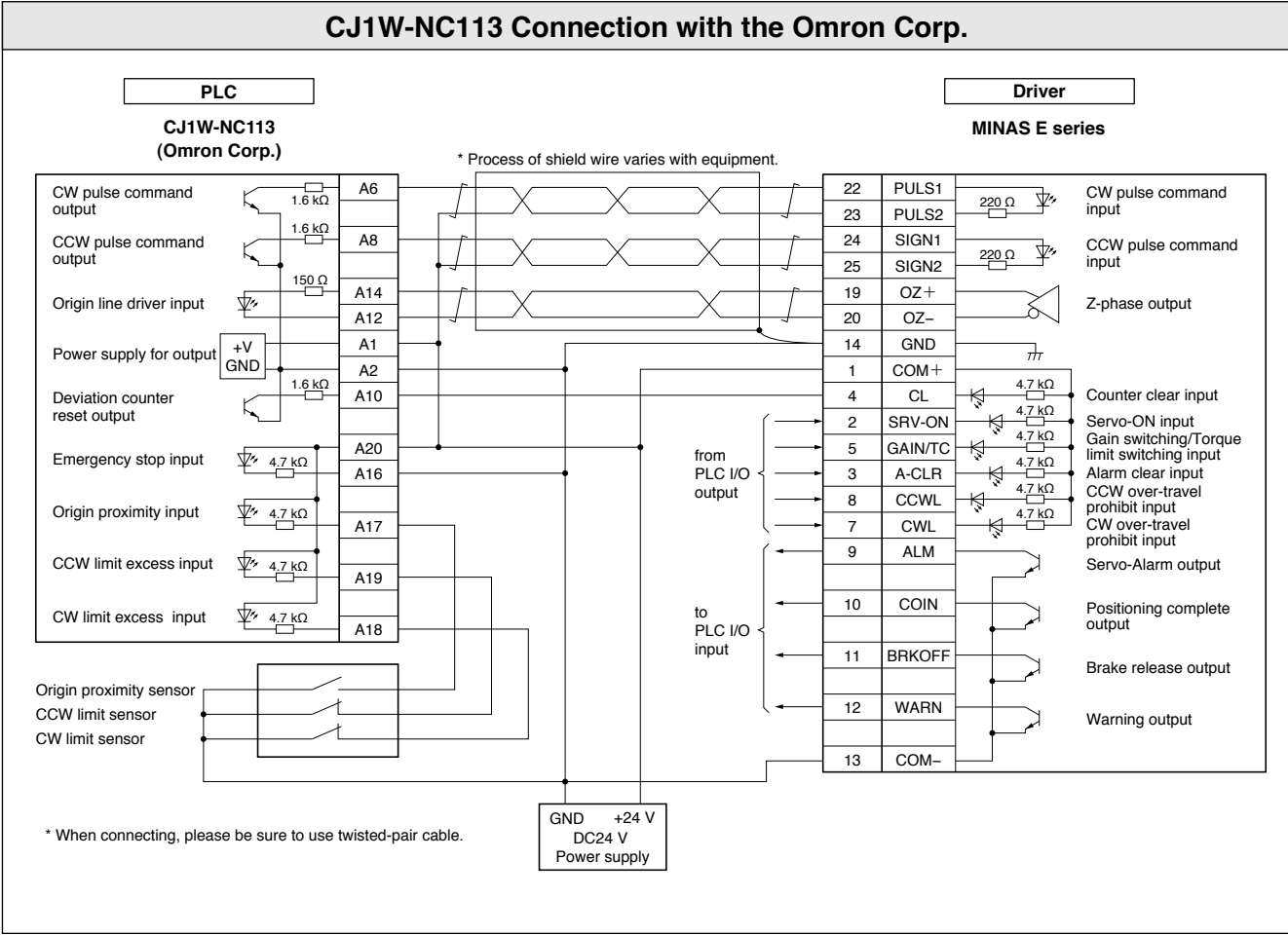
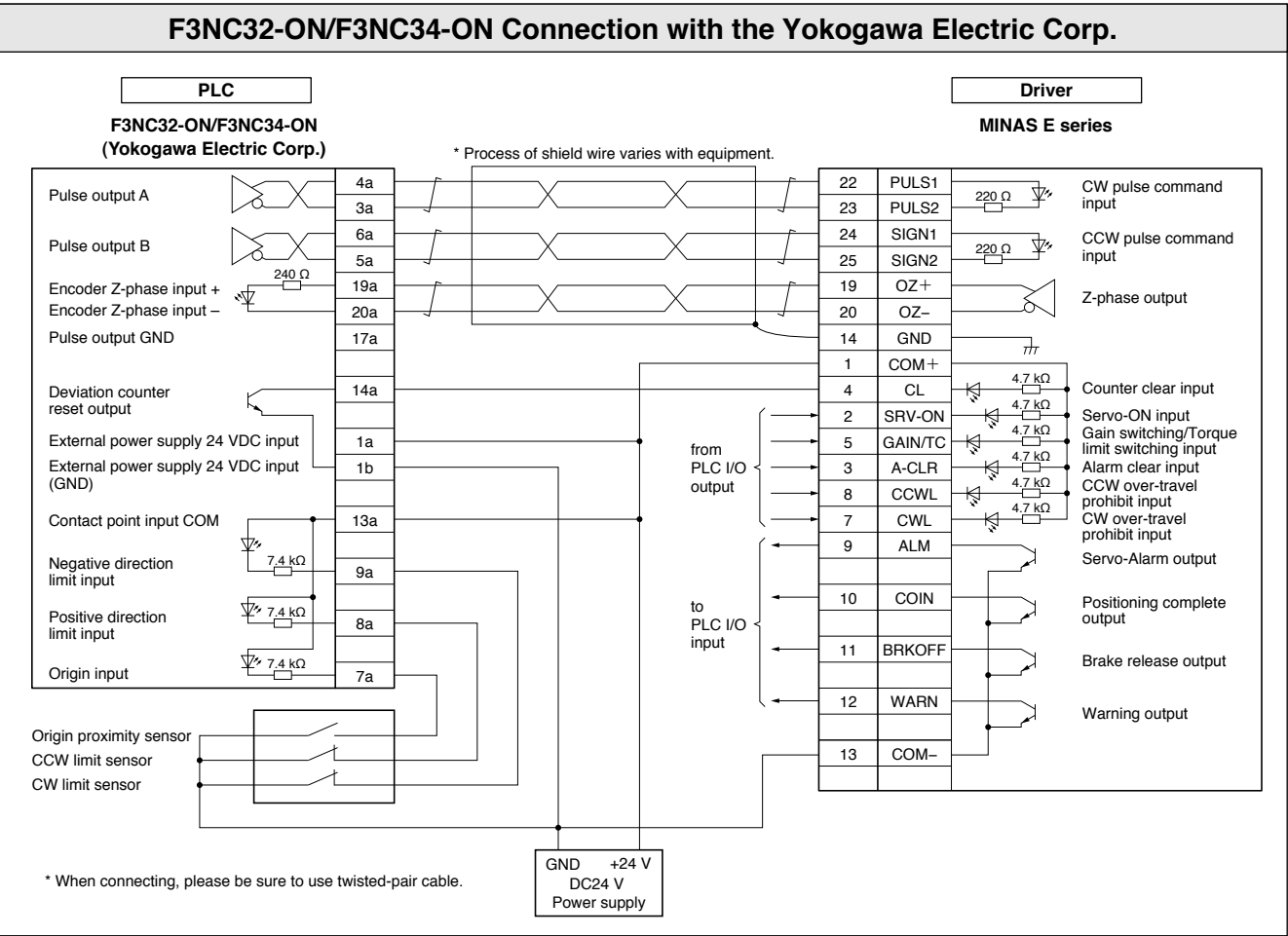
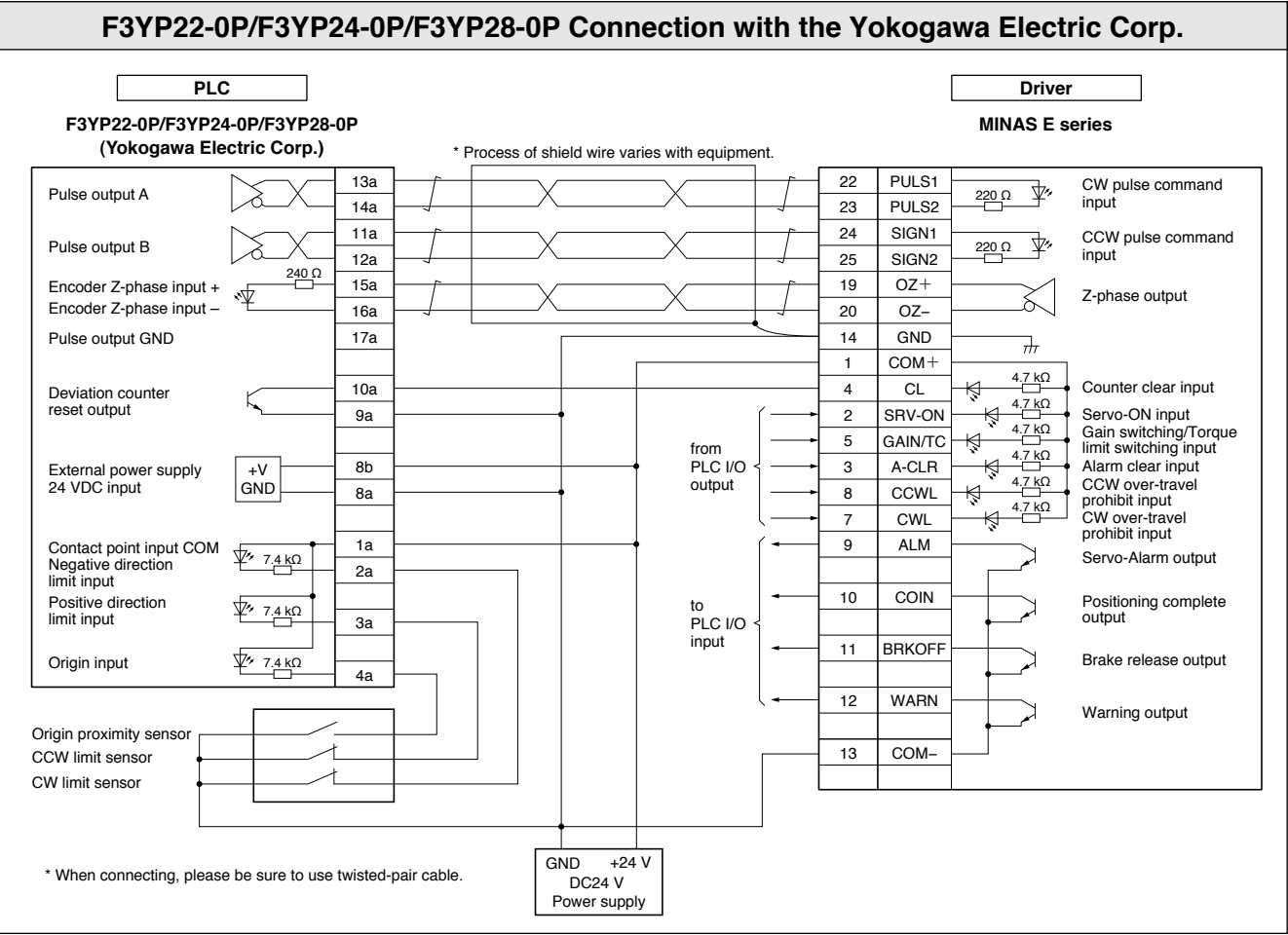
Pin No. on Old Model	DV0P4130			DV0P4131		
	Pin No. on Current Model	Signal Name	Symbol	Pin No. on Current Model	Signal Name	Symbol
1	8	CW over-travel inhibit input	CWL	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL	9	CCW over-travel inhibit input	CCWL
3	3	Command pulse input 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.

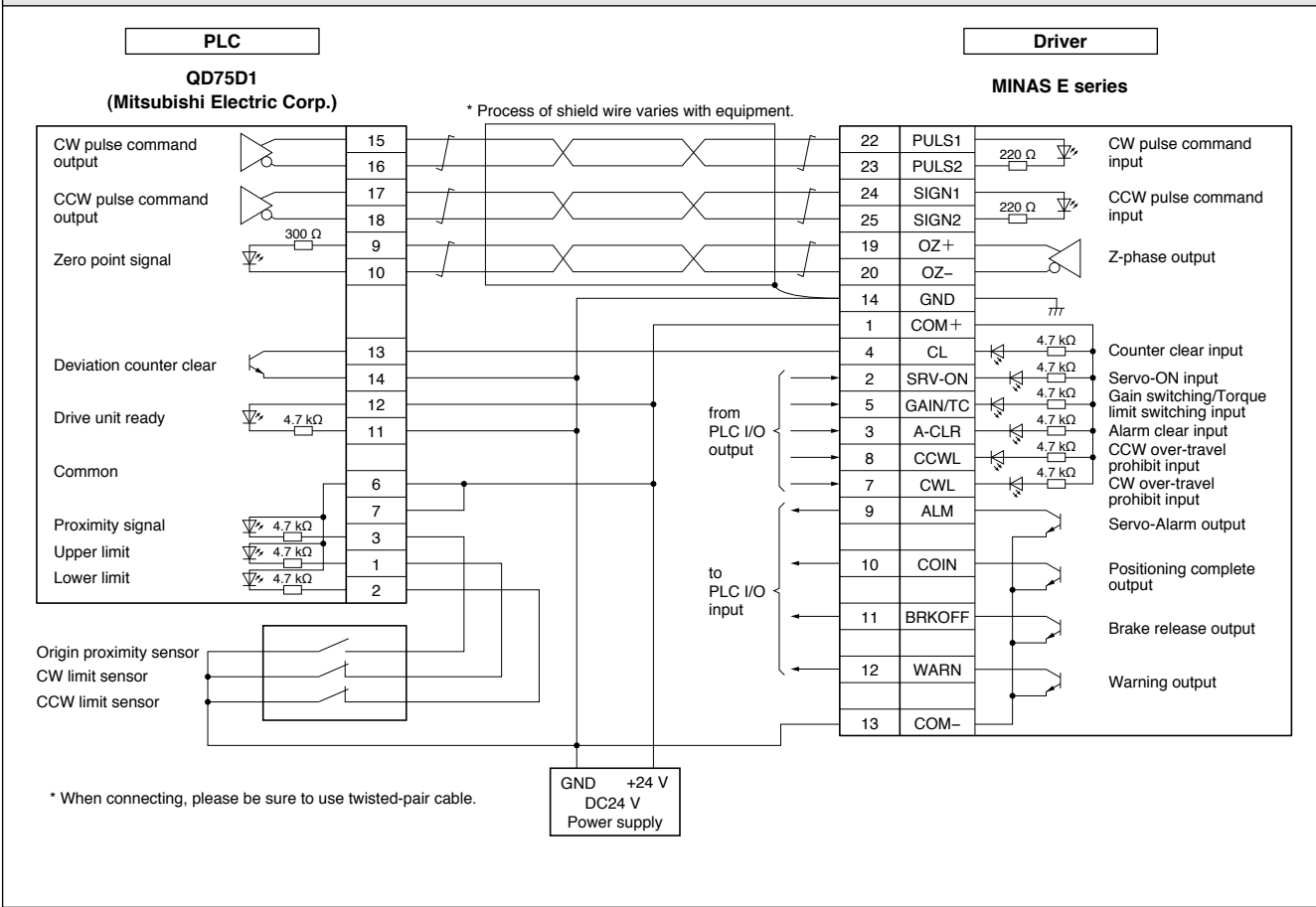
Pin No. on Old Model	DV0P4132		
	Pin No. on Current Model	Signal Name	Symbol
1	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL
3	NC		
4	NC		
5	NC		
6	NC		
7	7	Power supply for control signal (+)	COM+
8	NC		
9	NC		
10	NC		
11	11	External brake release signal	BRK-OFF+
12	12	Zero-speed 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.





QD75D1 Connection with the Mitsubishi Electric Corp.



DV0P	Part No.	Title	Page
	DV0P0770	Connector kit for external peripheral equipment	240
	DV0P0800	Interface cable	241
	DV0P1450	Surge absorber (3-phase)	253,256
	DV0P1460	Noise Filter for Signal Lines	254,256
	DV0P1960	Communication cable	241
	DV0P220	Reactor	209
	DV0P221	Reactor	209
	DV0P222	Reactor	209
	DV0P223	Reactor	209
	DV0P224	Reactor	209
	DV0P225	Reactor	209
	DV0P227	Reactor	209
	DV0P228	Reactor	209
	DV0P2870	Connector kit for power supply connection	239
	DV0P2890	External regenerative resistor	242
	DV0P2891	External regenerative resistor	242
	DV0P2990	Battery For Absolute Encoder	207
	DV0P3410	Noise Filter	251
	DV0P3670	Connector kit for motor/encoder connection	239
	DV0P37300	Cable set (3 m)	238
	DV0P3811	DIN rail mounting unit	242
	DV0P39200	Cable set (5 m)	238
	DV0P4120	Interface conversion cable	197
	DV0P4121	Interface conversion cable	197
	DV0P4130	Interface conversion cable	197
	DV0P4131	Interface conversion cable	197
	DV0P4132	Interface conversion cable	197
	DV0P4160	Noise filter	256
	DV0P4170	Noise Filter	250
	DV0P4190	Surge absorber (Single phase)	253,256
	DV0P4220	Noise Filter	250
	DV0P4280	External Regenerative Resistor: 50 Ω 25 W	210
	DV0P4281	External Regenerative Resistor: 100 Ω 25 W	210
	DV0P4282	External Regenerative Resistor: 25 Ω 50 W	210
	DV0P4283	External Regenerative Resistor: 50 Ω 50 W	210
	DV0P4284	External Regenerative Resistor: 30 Ω100 W	210
	DV0P4285	External Regenerative Resistor: 20 Ω130 W	210
	DV0P4290	Connector Kit for Motor/Encoder Connection	202
	DV0P4310	Connector Kit for Motor/Encoder Connection	204
	DV0P4320	Connector Kit for Motor/Encoder Connection	204
	DV0P4330	Connector Kit for Motor/Encoder Connection	205
	DV0P4340	Connector Kit for Motor/Encoder Connection	205
	DV0P4350	Interface Connector	198
	DV0P4360	Interface cable	197
	DV0P4380	Connector Kit for Motor/Encoder Connection	202
	DV0P4420	Console	241
	DV0P4430	Battery Box	207
	DV0P4460	Setup support software "PANATERM" for MINAS series AC servo motor & Driver	236
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	DV0PM20025	Connector Kit: Safety	198
	DV0PM20026	Connector Kit: External Scale	199
	DV0PM20027	Mounting bracket: A-frame	208
	DV0PM20028	Mounting bracket: B-frame	208
	DV0PM20029	Mounting bracket: C-frame	208
	DV0PM20030	Mounting bracket: D-frame	208
	DV0PM20031	Connector Kit: Analog Monitor Signal	199
	DV0PM20032	Connector for Power Supply Input Connection (A-frame to D-frame (Single row type))	200
	DV0PM20033	Connector for Power Supply Input Connection (A-frame to D-frame (Double row type))	200
	DV0PM20034	Connector for Motor Connection (A-frame to D-frame)	201
	DV0PM20035	Connector Kit for Motor/Encoder Connection	203
	DV0PM20036	Connector Kit for Motor/Encoder Connection	203
	DV0PM20037	Connector Kit for Motor/Encoder Connection	204
	DV0PM20038	Connector Kit for Motor/Encoder Connection	204
	DV0PM20039	Connector Kit for Motor/Encoder Connection	205
	DV0PM20040	Connector Kit for Motor/Brake Connection	206
	DV0PM20042	Noise Filter	250
	DV0PM20043	Noise Filter	250

DV0P	Part No.	Title	Page
	DV0PM20044	Connector for Power Supply Input Connection (E-frame)	200
	DV0PM20045	Connector for Regenerative Resistor (E-frame 200 V/400 V common)	201
	DV0PM20046	Connector for Motor Connection (E-frame 200 V/400 V common)	201
	DV0PM20047	Reactor	209
	DV0PM20048	External Regenerative Resistor: 120 Ω 240 W	210
	DV0PM20049	External Regenerative Resistor: 80 Ω 450 W	210
	DV0PM20050	Surge absorber (3-phase)	253
	DV0PM20051	Connector for Power Supply Input Connection (D-frame 400 V)	200
	DV0PM20052	Connector for Power Supply Input Connection (E-frame 400 V)	200
	DV0PM20053	Connector for Control Power Supply Input Connection (D-frame, E-frame 400 V)	201
	DV0PM20054	Connector for Motor Connection (D-frame 400V)	201
	DV0PM20055	Connector for Regenerative Resistor (D-frame 400 V)	201
	DV0PM20056	Connector Kit for Motor/Encoder Connection	206
	DV0PM20057	Connector Kit for Motor/Encoder Connection	206
	DV0PM20058	External Regenerative Resistor: 3.3 Ω 780 W	210
	DV0PM20059	External Regenerative Resistor:13.3 Ω 1140 W	210

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	MADHT1105E	A5E series Driver: A-frame	31,42
	MADHT1107	A5 series Driver: A-frame	29,42
	MADHT1107E	A5E series Driver: A-frame	31,42
	MADHT1505	A5 series Driver: A-frame	29,42
	MADHT1505E	A5E series Driver: A-frame	31,42
	MADHT1507	A5 series Driver: A-frame	29,42
	MADHT1507E	A5E series Driver: A-frame	31,42

MADKT	Part No.	Title	Page
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	MADKT1105E	A5IE series Driver: A-frame	31,42
	MADKT1107	A5II series Driver: A-frame	29,42
	MADKT1107E	A5IE series Driver: A-frame	31,42
	MADKT1505	A5II series Driver: A-frame	29,42
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	MADKT1507	A5II series Driver: A-frame	29,42
	MADKT1507E	A5IE series Driver: A-frame	31,42

MBDHT	Part No.	Title	Page
	MBDHT2110	A5 series Driver: B-frame	29,42
	MBDHT2110E	A5E series Driver: B-frame	31,42
	MBDHT2510	A5 series Driver: B-frame	29,42
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MBDKT	Part No.	Title	Page
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MCDHT	Part No.	Title	Page
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MCDKT	Part No.	Title	Page
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Sales Office

This image shows a full page of white paper with horizontal grey ruling lines. The word "MEMO" is printed at the top center in a bold, black, sans-serif font. Below it, there are numerous evenly spaced horizontal lines extending across the width of the page, providing a template for writing.

[Panasonic Sales Office of Motors] (February.01.2016)

(February.01.2016)

Country	Company Name [Category]	City	Address		TEL	
					FAX	
U.S.A	Panasonic Industrial Devices Sales Company of America [Sales office]	New Jersey	Two Riverfront Plaza, 7th Floor Newark, NJ 07102-5490 U.S.A		+1-800-228-2350	
					—	
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					+55-11-3889-4103	
Germany	Panasonic Industrial Devices Sales Europe GmbH [Sales office] [European Headquarter]	Munich	Hans-Pinsel-Strasse 2 · D - 85540 Haar · Germany		+49-89-46-159-0	
					+49-89-46-159-212	
			e-mail	http://eu.industrial.panasonic.com/about-us/contact-us		
			Web site	http://eu.industrial.panasonic.com/products/motors- compressors-pumps		
	ghv Vertriebs-GmbH [Distributors]	Munich	Am Schammacher Feld 47 D-85567 Grafing b. Munich		+49(0)-80-92/81-89-0	
					+49(0)-80-92/81-89-99	
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					+49 (0) 8024 648-111	
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			Web site	https://www.panasonic-electric-works.com/eu/index.htm		
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		Web site	https://www.panasonic-electric-works.com/eu/index.htm			
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			Web site	https://www.panasonic-electric-works.com/eu/index.htm		
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					+39-02-270-98-290	
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Web site	http://www.lenze.com/it-it/azienda/lenze-in-italia/					
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					+44(0)1908231555	
			e-mail	https://www.panasonic-electric-works.com/eu/93.htm		
	Web site	https://www.panasonic-electric-works.com/eu/index.htm				
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					+44-1234-7532-20	
e-mail			uk.sales@lenze.com			
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					+43(0)2236-46133	
			e-mail	https://www.panasonic-electric-works.com/eu/93.htm		
Web site	https://www.panasonic-electric-works.com/eu/index.htm					
Polska	Panasonic Electric Works Polska sp. z.o.o. [Sales office]	Warszawa	ul. Woloska 9a, 02-583 Warszawa		+48(0)22338-11-33	
					+48(0)22213-95-01	
			e-mail	https://www.panasonic-electric-works.com/eu/93.htm		
Web site	https://www.panasonic-electric-works.com/eu/index.htm					
Nederland	Panasonic Electric Works Sales Western Europe B.V. [Sales office]	PJ Best	De Rijn 4 (Postbus 211), 5684 PJ Best, Nederland		+31(0)499372727	
					+31(0)499372185	
			e-mail	https://www.panasonic-electric-works.com/eu/93.htm		
Web site	https://www.panasonic-electric-works.com/eu/index.htm					

A5 Family

E Series

Information

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				FAX
Czech Republic	Panasonic Electric Works Czech s.r.o. [Sales office]	Brno	Veveří 3163/111, 616 00 Brno, Czech	+420(0)541217001
			e-mail https://www.panasonic-electric-works.com/eu/93.htm	+420(0)541217101
			Web site https://www.panasonic-electric-works.com/eu/index.htm	
Spain	Panasonic Electric Works Espana S.A. [Subsidiary]	Madrid	Barajas Park, San Severo 20, 28042 Madrid, Spain	+34-91-329-3875
			e-mail https://www.panasonic-electric-works.com/eu/93.htm	+34-91-329-2976
			Web site https://www.panasonic-electric-works.com/eu/322.htm	
Romania	C.I.T. Automatizari SRL [Distributors]	Bucuresti	sos. Bucuresti, nr.63, Ciorogirla, Ilfov, RO-077055, ROMANIA	+40-21-255-0543
			e-mail office@citautomatizari.ro	+40-21-255-0544
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Hungary	Panasonic Electric Works Hungary [Sales office]	Budapest	Neumann J. u. 1., 1117 Budapest, Hungary	+36(0)19998926
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			Web site https://www.panasonic-electric-works.com/eu/index.htm	
Switzerland	Panasonic Electric Works Schweiz AG [Sales office]	Rotkreuz	Grundstrasse 8, 6343 Rotkreuz, Schweiz, Switzerland	+33(0)417997050
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			Web site https://www.panasonic-electric-works.com/eu/index.htm	
Russia	Electroprivod Ltd. [Distributors]	St.Petersburg	Office 417, litera 43, Polustrovskiy avenue, Saint-Petersburg, Russia	+7-812-703-09-81
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			Web site http://www.bostek.com.tr/	
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			Web site http://www.savior.com.tr/	
China	Panasonic Industrial Devices Sales (Hong Kong) Co.,Ltd. (PIDSHK) [Sales office]	Hong kong	Top Floor, South Wing, ChinaChem Gloden Plaza, 77 Mody Road, S.T.S. East, Kowloon, HongKong	+852-2529-7322
				+852-2598-9743
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				—
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			Web site http://industrial.panasonic.com/sa/products/motors-compressors/fa-motors	+91-124-6670338
	Lubi Electronics [Distributors]	Gandhinaga, Gujarat	Sardar Patel Ring Road, Near Bright School, Nana Chiloda, Dist.: Gandhinagar - 382330, Gujarat, India	+91-79-39845300
			Web site http://www.lubielelectronics.com	+91-79-39845599
	Luna Bearings [Distributors]	Mumbai, Maharashtra	59, Bibijan Street, 2nd Floor, Moiz Manzil, Mumbai - 400003, Maharashtra, India	+91-22-23455052
			Web site http://www.lunabearings.com	+91-22-23427773
	Vashi Electricals Pvt. Ltd. [Distributors]	Mumbai, Maharashtra	A/6, Plot No.74, Shree Ganesh Complex, Behind Gupta Compound, Dapole Road, Mankoli Naka, Bhiwandi - 421305, Maharashtra, India	+91-2522-661600
			Web site http://www.vashielectricals.com	+91-2522-661620

Country	Company Name [Category]	City	Address	TEL
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Taiwan	Panasonic Industrial Devices Sales Taiwan Co.,Ltd. [Sales office]	Taipei	12F, No.9, SongGao Rd., Taipei 110, Taiwan, R.O.C.	+886-2-2757-1900
				+886-2-2757-1977
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			No.3 Bedok South Road Singapore 469269	+65-9435-6844
	Singapore	Singapore	Intermech Machinery Pte.Ltd. [Distributors]	+65-6751-5088
			Web site http://www.intermech.com.sg	+65-6759-2122
	Malaysia	Kuala Lumpur	Panamech Machinery Sdn Bhd [Distributors]	+60-3-5161-7876
			Web site http://panamech.com.my/	+60-3-5161-7136
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			Web site http://www.plenty.co.th	+66-2291-2065
	Indonesia	Surabaya	PT. Handal Yesindo Sejahtera [Distributors]	+62-31-843-8844
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