Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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Panasonic
ideas for life

AC Servo
MINAS A5 series
2009/10
Catalog

High performance, multi function and easy use,
all advanced.

DIGITAL AC SERVO MOTOR & DRIVER

MINAS A5

A small step for axis.
Large step ahead for system motion.

MINAS A5 Series

Five industry-leading advantages supported by a variety of new technologies and new features.

1 Quick
- 2.0 kHz frequency response
- 20 bits/revolution
- Low cogging torque
- The input/output pulse 4 Mpps

2 Smart
- Highly functional real-time auto-gain tuning
- Manual/auto notch filter
- Manual/auto damping filter
- Motion simulation

3 Light
- New structure
- Innovative core
- Innovative encoder

4 Safe
- Complies with European safety standards
- Low noise
- IP67 enclosure rating

5 Easy
- Set-up support software
  Localized in 4 languages
  Service life prediction
  Encoder temperature monitor

Contents

MINAS A5 series Line-up

1 Quick

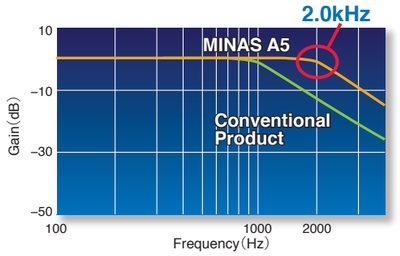
2.0 kHz frequency response

2.0kHz

Example application Semiconductor production equipment, packaging, etc.

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

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



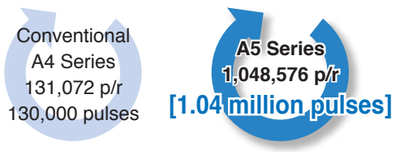
20 bits/revolution, 1.04 million pulses

20 bits/rev

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 encoder.



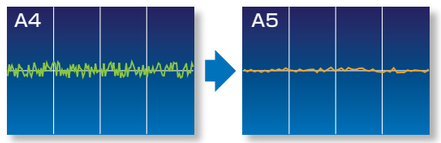
Low cogging torque (Excluding MSMD, MHMD type)

Low cogging

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.**



Vibration reduced to only **1/8**

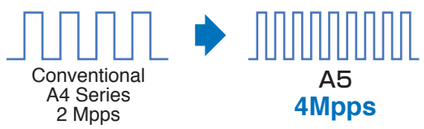
The input/output pulse 4 Mpps

4 Mpps

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.



2 Smart

Highly Functional Real-time Auto-Gain Tuning

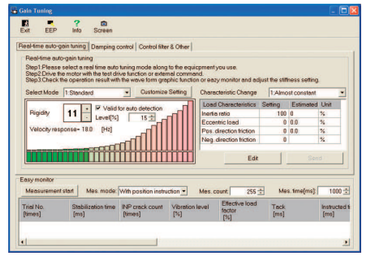
Auto tuning

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

Incorporates the industry's quickest high-performance real-time auto-gain tuning featuring simple setup.

After installation, tuning is completed automatically in several operations. When the response is adjusted, **simple tuning** is supported with a change to 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.



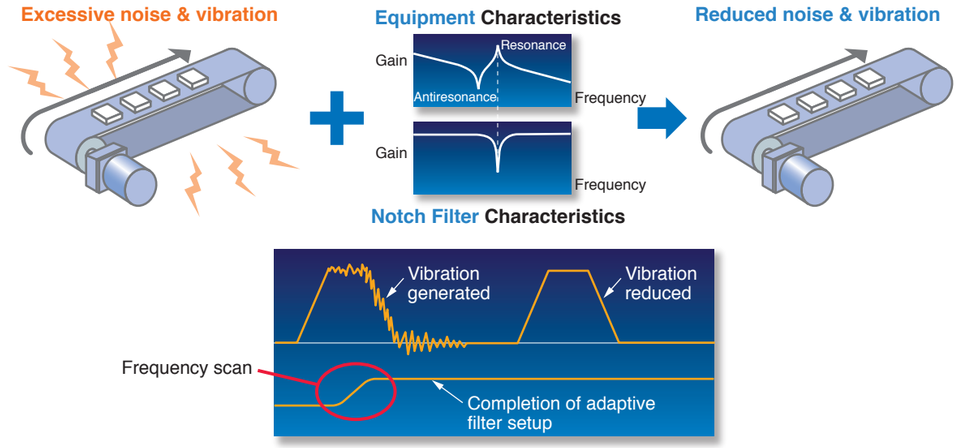
Manual/Auto Notch Filters

Nocth filters

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 A5 Series features an industry-largest total of four notch filters with setup frequencies of 50 to 5,000 Hz. This approach enables depth adjustment within this frequency range. (Two of the filters share the auto set-up.)



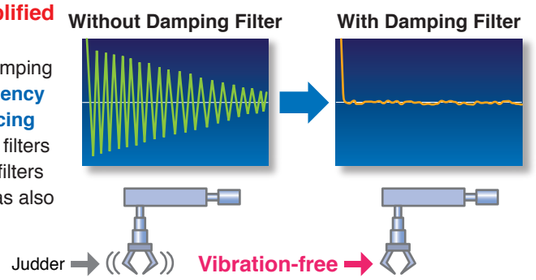
Manual/Auto Damping Filter

Damping filter

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 to 200 Hz.



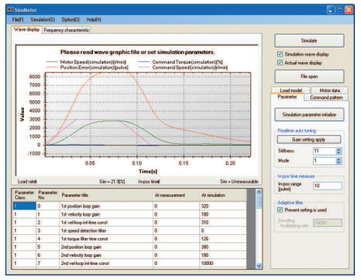
Motion Simulation

Simulation

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

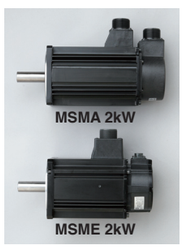
New Structure/ Innovative Core/ Innovative Encoder (Excluding MSMD, MHMD type)

New structure
Innovative core
Innovative encoder

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 to 6 kg) reduction in motor weight in the 1 kW and larger class when compared with conventional motors.**



[Examples for MSM or MDM]

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

4 Safe

Complies with European Safety Standards. (A5E series doesn't correspond to the safety standard.)

Safe torque off

Example application: Semiconductor and LCD production equipment, etc.

Complies with the latest European safety standards.

Features non-software-based (hardware-based?) 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.)

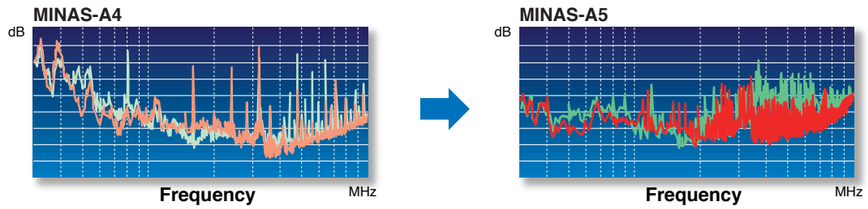
Low noise

Low noise

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



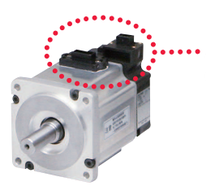
IP67 Enclosure Rating (Excluding MSMD, MHMD type)

IP67

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.



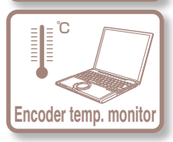
Adoption of direct-mount connector

IP67

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

IP65: MSMD, MHMD series

5 Easy



PANATERM Set-up Support Software

Introducing the new PANATERM Set-up Support Software, now with many added features.

Localized in 4 languages

Choose either **English, Japanese, Chinese, or Korean***-language display.
* The Korean-language version is scheduled for release in December.

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.

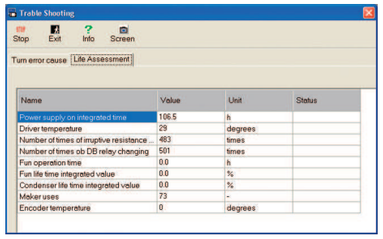
Encoder Temperature Monitor

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).

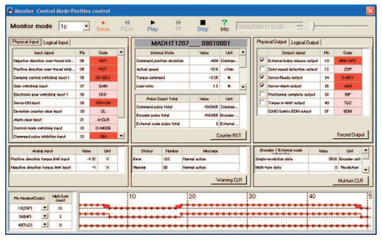
Other New Function

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, the trial run function supports positioning with a Z-phase search and software limit as well as a non-rotating contributing factor display function.

・**Service Life Prediction function**
(Screen shown for reference only.)



・**The Data Logging function handles a variety of data types.**



Other Functions

Command Control Mode (Excluding A5E Series)

- Command control mode is available for Position, Speed (including eight internal gears) and Torque.
- Using parameter settings, you can set up one optional command control mode or two command control modes by switching.
- With a suitable application utility, you can choose an optional command control mode.

Full closed Control (Excluding A5E Series)

You can use the AB-phase linear scale (for general all-purpose products) or the serial scale (for products with Panasonic□s exclusive format) for supported scales (see table below).

SEMI F47

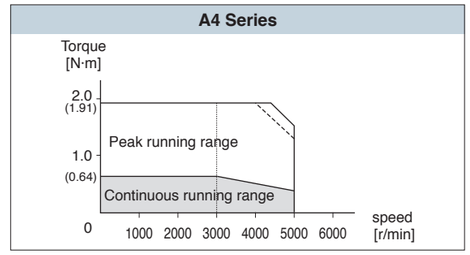
- Includes a function in compliance with the SEMI F47 standard for voltage sag immunity under no load or light load.
- Ideal for the semiconductor and LCD industries.

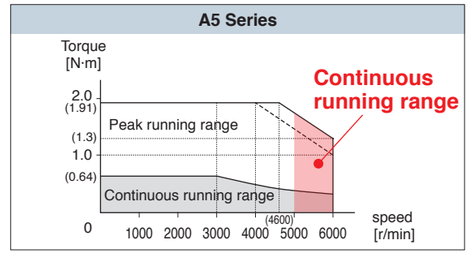
Notes:
1) Excluding the single-phase 100-V type.
2) Please verify the actual compliance of your machine with the F47 standard for voltage sag immunity.

6,000-rpm capability

The MSME motor (under 750 W) can accommodate a maximum speed of 6,000 r/min.

[Comparison of new and conventional 200 W]





Inrush Current Preventive Function

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

Table 1

Applicable Linear Scale	Manufacturer	Model No.	Resolution [μs]	Maximum Speed (m/s) *
Parallel Type (AB-phase)	General	—	Maximum speed after 4 × multiplication: 4 Mpps	
Serial Type (Incremental)	Sony Manufacturing Systems Corporation	SR75	0.01	3.3
		SR85	0.01	3.3
		SL700/PL101-RP	0.1	10
		SL710/PL101-RP	0.1	10
Serial Type (Absolute)	Mitutoyo Corporation	AT573A	0.05	2
		ST771A(L)	0.5	5
		ST773A(L)	0.1	4
	Sony Manufacturing Systems Corporation	SR77	0.01	3.3
		SR87	0.01	3.3

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

Regenerative Energy Discharge

- A regenerative resistor is used to discharge regenerative energy, which is the energy generated when stopping a load with a large moment of inertia or when using this unit in vertical operation. This energy is returned to the driver from the motor.
- Frame A and Frame B model drivers do not contain a regenerative resistor. We recommend that you connect an optional regenerative resistor.
- Frame C to Frame F model drivers contain one regenerative resistor; however, adding an optional regenerative resistor provides additional regeneration capability.

Dynamic Braking

- With parameter settings, you can select dynamic braking, which shorts servomotor windings U, V and W at Servo-OFF, during positive direction/ negative direction over-travel inhibition, and during power shutdown and tripping of the circuit breaker.
- The desired action sequence can be set up to accommodate your machine requirements.

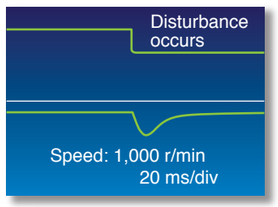
Parameter Initialization

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

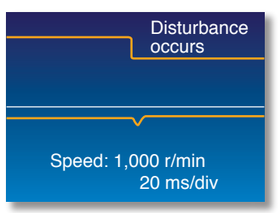
Disturbance Observer

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

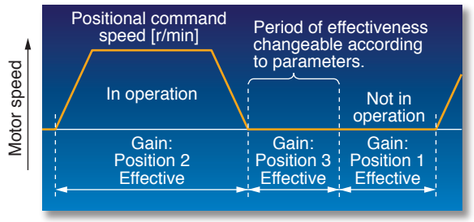
The Torque Feed Forward function performs a comparison with feedback and calculates the amount of torque to add to the necessary torque command in the command for actuation.

Friction Torque Compensation

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

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 diffent tunings for normal running, stopping for faster positioning and at stopping.
The right gaing tunings achieve lower vibration and quicker positioning time of your application.



Inertia Ratio Conversion

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 conbination.
It ends up quicker response of your system.

Input/Output Signal Assignment

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

Torque Limiter Switching

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 overseas safety standards

		Driver	Motor
EC Directives	EMC Directives	EN55011 EN61000-6-2 IEC61800-3	—
	Low-Voltage Directives	EN61800-5-1	EN60034-1 EN60034-5
	Functional safety	EN954-1(CAT3) ISO13849-1(PL-D) EN61508(SIL2) EN62061(SIL2) EN61800-5-2(STO) IEC61326-3-1	—
UL Standards		UL508C (E164620)	UL1004-1 (E327868: Small type) UL1004 (E166557: Large type)
CSA Standards		C22.2 No.14	C22.2 No.100

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.
* A5E series doesn't correspond to the functional safety standard.

MEMO

Motor Line-up/ Driver and Motor Combination

Motor Line-up

		Low inertia			Middle inertia		High inertia	
		MSMD (Small type)	MSME (Small type)	MSME (Large type)	MDME	MGME (Low speed/ High torque type)	MHMD	MHME
Motor								
Rated output (kW)		0.05 0.1 0.2 0.4 0.75	0.05 0.1 0.2 0.4 0.75	1.0 1.5 2.0 3.0 4.0 5.0	1.0 1.5 2.0 3.0 4.0 5.0	0.9 2.0 3.0	0.2 0.4 0.75	1.0 1.5 2.0 3.0 4.0 5.0
Rated rotational speed (Max. speed) (r/min)		3000 (5000) For 750W 3000 (4500)	3000 (6000)	3000 (5000) For 4.0kW and 5.0kW 3000 (4500)	2000 (3000)	1000 (2000)	3000 (5000) For 750W 3000 (4500)	2000 (3000)
Rotary encoder	20-bit incremental	○	○	○	○	○	○	○
	17-bit absolute	○	○	○	○	○	○	○
Enclosure		IP65 (*)	IP67 (*)	IP67 (*)	IP67 (*)	IP67 (*)	IP65 (*)	IP67 (*)
Features		• Leadwire type • Small capacity • Suitable for high speed application • Suitable for all applications	• Small capacity • Suitable for high speed application • Suitable for all applications	• Middle capacity • Suitable for the machines directly coupled with ball screw and high stiffness and high repetitive	• Middle capacity • Suitable for low stiffness machines with belt driven	• Middle capacity • Flat type and suitable for machines with space limitation	• Leadwire type • Small capacity • Suitable for low stiffness machines with belt driven	• Middle capacity • Suitable for low stiffness machines with belt driven, and large load moment of inertia
Applications		• Bonder • Semiconductor production equipment • Packing machines etc		• SMT machines • Food machines • LCD production equipment	• Conveyors • Robots • Machine tool etc	• Conveyors • Robots • Textile machines etc	• Conveyors • Robots	• Conveyors • Robots • LCD manufacturing equipment etc

(*) Except for output shaft, and connector.

Driver and Motor Combination

Driver		Motor						
Frame	Part No.	MSMD	MSME	MSME	MDME	MGME	MHMD	MHME
A-Frame	MADHT1105	MSMD5AZ✻✻✻	MSME5AZ✻✻✻					
	MADHT1107	MSMD011✻✻✻	MSME011✻✻✻					
	MADHT1505	MSMD5AZ✻✻✻	MSME5AZ✻✻✻					
		MSMD012✻✻✻	MSME012✻✻✻					
	MADHT1507	MSMD022✻✻✻	MSME022✻✻✻				MHMD022✻✻✻	
B-Frame	MBDHT2110	MSMD021✻✻✻	MSME021✻✻✻				MHMD021✻✻✻	
	MBDHT2510	MSMD042✻✻✻	MSME042✻✻✻				MHMD042✻✻✻	
C-Frame	MCDHT3120	MSMD041✻✻✻	MSME041✻✻✻				MHMD041✻✻✻	
	MCDHT3520	MSMD082✻✻✻	MSME082✻✻✻				MHMD082✻✻✻	
D-Frame	MDDHT3530				MDME102✻✻✻			MHME102✻✻✻
	MDDHT2412				MDME104✻✻✻			MHME104✻✻✻
	MDDHT5540			MSME102✻✻✻	MDME152✻✻✻	MGME092✻✻✻		MHME152✻✻✻
				MSME152✻✻✻				
	MDDHT3420			MSME104✻✻✻	MDME154✻✻✻	MGME094✻✻✻		MHME154✻✻✻
				MSME154✻✻✻				
E-Frame	MEDHT7364			MSME202✻✻✻	MDME202✻✻✻			MHME202✻✻✻
	MEDHT4430			MSME204✻✻✻	MDME204✻✻✻			MHME204✻✻✻
F-Frame	MFDHTA390			MSME302✻✻✻	MDME302✻✻✻	MGME202✻✻✻		MHME302✻✻✻
	MFDHT5440			MSME304✻✻✻	MDME304✻✻✻	MGME204✻✻✻		MHME304✻✻✻
	MFDHTB3A2			MSME402✻✻✻	MDME402✻✻✻	MGME302✻✻✻		MHME402✻✻✻
				MSME502✻✻✻	MDME502✻✻✻			MHME502✻✻✻
	MFDHTA464			MSME404✻✻✻	MDME404✻✻✻	MGME304✻✻✻		MHME404✻✻✻
				MSME504✻✻✻	MDME504✻✻✻			MHME504✻✻✻

Motor (Scheduled to be released.)
- MDME 7.5kW, 11kW, 15kW
- MHME 7.5kW
- MGME 4.5kW, 6.0kW
- MFME 1.5kW, 2.5kW, 4.5kW
- Motor with Gear Reduce: 100W, 200W, 400W, 750W

* A5E series (dedicated for position control) drivers are also used in combination with motors show above.

Model Designation

Servo Motor

M S M E 5 A Z G 1 S ✻ ✻

Symbol	Type
MSMD	Low inertia (50W to 750W)
MSME	Low inertia (50W to 5.0kW)
MDME	Middle inertia (1.0kW to 5.0kW)
MGME	Middle inertia (0.9kW to 3.0kW)
MHMD	High inertia (200W to 750W)
MHME	High inertia (1.0kW to 5.0kW)

Motor rated output

Symbol	Rated output	Symbol	Rated output
5A	50W	10	1.0kW
01	100W	15	1.5kW
02	200W	20	2.0kW
04	400W	30	3.0kW
08	750W	40	4.0kW
09	0.9kW	50	5.0kW

Voltage specifications

Symbol	Specifications
1	100V
2	200V
4	400V
Z	100V/200V common (50W only)

Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
G	Incremental	20-bit	1,048,576	5
S	Absolute	17-bit	131,072	7

* S: can be used in incremental.

Design order
1 : Standard

Special specifications

Motor specifications
MSME(50W to 750W), MSMD, MHMD

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way, center tap	without	with	without	with
A	●		●		●	
B	●			●	●	
C	●		●			●
D	●			●		●
S		●	●		●	
T		●		●	●	
U		●	●			●
V		●		●		●

MSME(1.0kW to 5.0kW), MDME, MGME, MHME

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Motor with reduction gear

M S M E 0 1 1 G 3 1 N

Symbol	Type
MSME	Low inertia (50W to 750W)

Motor rated output

Symbol	Rated output
01	100W
02	200W
04	400W
08	750W

Voltage specifications

Symbol	Specifications
1	100V
2	200V

Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
G	Incremental	20-bit	1,048,576	5
S	Absolute	17-bit	131,072	7

* S: can be used in incremental.

Gear ratio, gear type

Symbol	Gear reduction ratio	Motor output (W) 100	200	400	750	Gear type
1N	1/5	●	●	●	●	For high accuracy
2N	1/9	●	●	●	●	
3N	1/15	●	●	●	●	
4N	1/25	●	●	●	●	

Motor structure

Symbol	Shaft	Holding brake	
	Key-way	without	with
3	●	●	
4	●		●

Servo Driver

Standard type M A D H T 1 5 0 5 ✻ ✻ ✻ — **Special specifications**

Positioning type M A D H T 1 5 0 5 E ✻ ✻ — **Special specifications**

Frame symbol

Symbol	Frame
MADH	Frame A
MBDH	Frame B
MCDH	Frame C
MDDH	Frame D
MEDH	Frame E
MFDH	Frame F

Power device Max. current rating

Symbol	Current rating
T1	10A
T2	15A
T3	30A
T4	35A
T5	50A
T7	75A
TA	100A
TB	150A

Supply voltage specifications

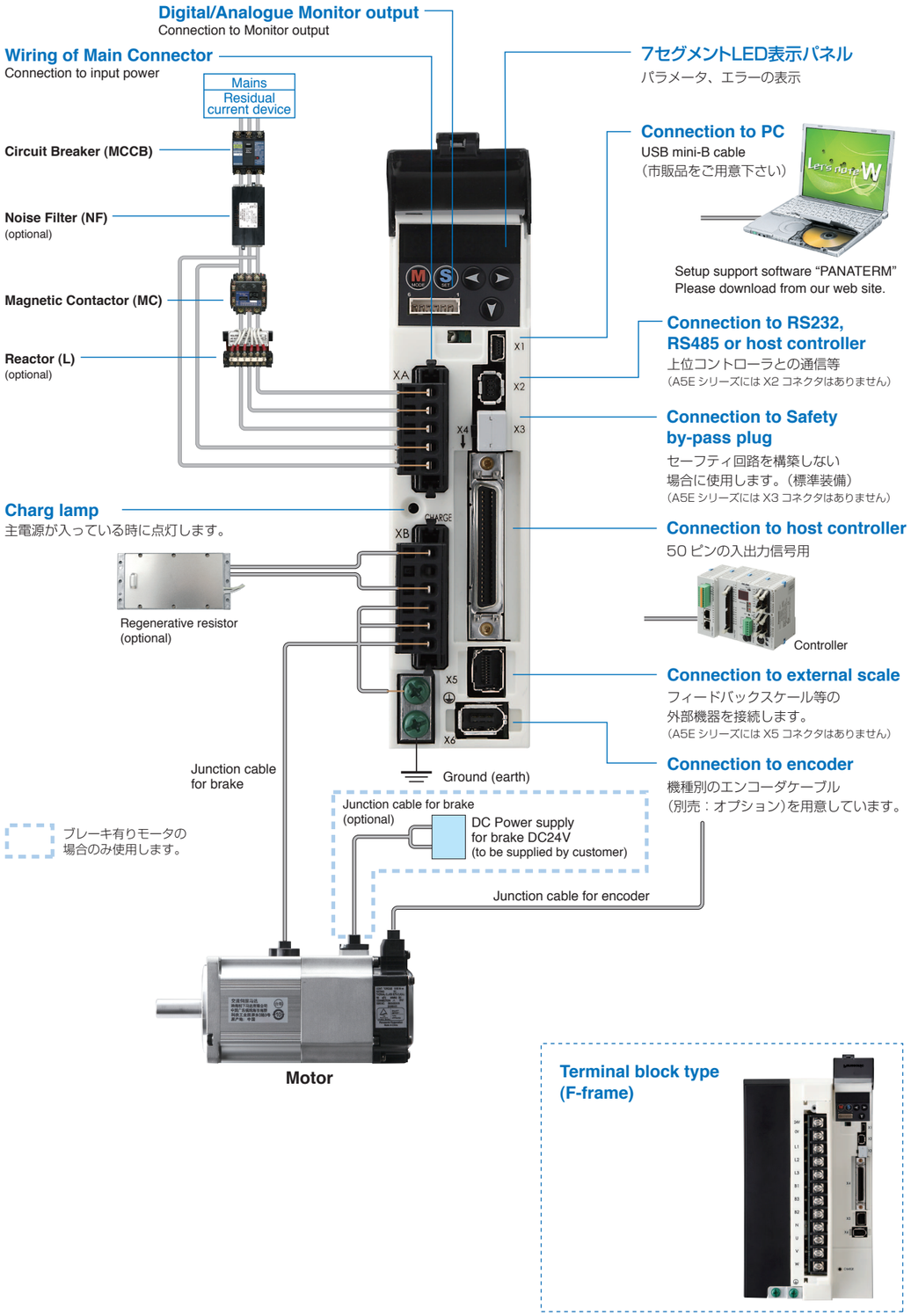
Symbol	Specifications
1	Single phase, 100V
3	3-phase, 200V
4	3-phase, 400V
5	Single/3-phase, 200V

Only position control

Current detector current rating

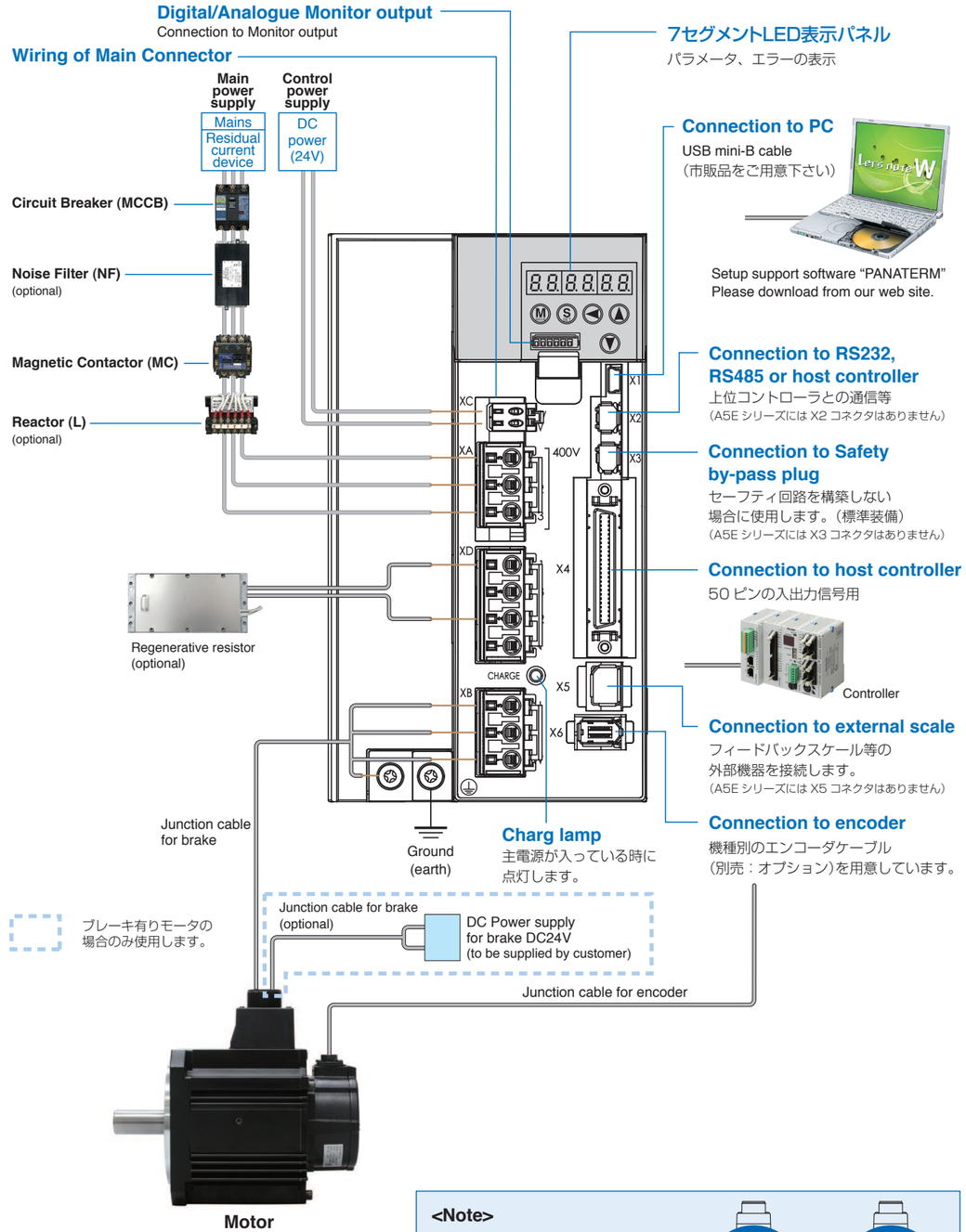
Symbol	Current rating
05	5A
07	7.5A
10	10A
12	12A
20	20A
30	30A
40	40A
64	64A
90	90A
A2	120A

[Connector type (A to E-frame)]



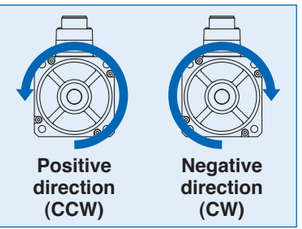
Terminal block type (F-frame)

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



<Caution>
製品の取り付けネジの締付トルクは使用されるネジの強度、取り付け先の材質を考慮し、緩みや破損の無い様に適切に選定してください。
例）鋼材への鋼材ネジ（M5）での締付けの場合、2.7～3.3N·m。

<Note>
回転方向の初期設定を正方向(CCW)、負方向(CW)と定義しています。
ご注意ください。



Driver and List of Applicable Peripheral Equipments

Driver	Applicable motor	Voltage	Rated output	Required Power (at the rated load)	Circuit breaker (rated current)	Surge absorber	Noise filter for signal	Magnetic contactor (定格通電電流／開放熱電流)	Cable diameter (main circuit)	Cable diameter (control circuit)	Connection
MADH	MSMD MSME MHMD	Single phase, 100V	50W to 100W	approx. 0.4kVA	10A	DV0P4190	DV0P1460	20A	0.75mm²/ AWG18 to 2.0mm²/ AWG14	0.75mm²/ AWG18	Connection to exclusive connector
		Single/3-phase, 200V	50W to 200W	approx. 0.5kVA		DV0P4190 DV0P1450					
MBDH	MSMD MSME MHMD	Single phase, 100V	200W	approx. 0.5kVA		DV0P4190					
		Single/3-phase, 200V	400W	approx. 0.9kVA		DV0P4190 DV0P1450					
MCDH	MSMD MSME MHMD	Single phase, 100V	400W	approx. 0.9kVA		DV0P4190					
		Single/3-phase, 200V	750W	approx. 1.3kVA	15A	DV0P4190 DV0P1450					
MDDH	MDME	Single/3-phase, 200V	1.0kW	approx. 1.8kVA				30A	2.0mm²/ AWG14	0.5mm²/ AWG 20～24	
	MHME										
	MGME		900W	approx. 1.8kVA	20A						
	MSME		1.0kW	approx. 1.8kVA							
	MHME		1.5kW	approx. 2.3kVA							
	MDME										
	MSME										
	MSME	3-phase, 400V	1.0kW	approx. 1.8kVA	10A	DV0PM20050		20A			
	MDME										
	MHME										
	MGME		0.9kW								
	MSME		1.5kW	approx. 2.3kVA							
	MDME										
	MHME										
MEDH	MDME MSME MHME	3-phase, 200V	2.0kW	approx. 3.3kVA	30A	DV0P1450		60A		0.75mm²/ AWG18	
	MSME MDME MHME	3-phase, 400V	2.0kW	approx. 3.3kVA	15A	DV0PM20050		30A		0.5mm²/ AWG 20～24	
MFDH	MGME	3-phase, 200V	2.0kW	approx. 3.8kVA	50A	DV0P1450		60A	3.5mm²/ AWG12	0.75mm²/ AWG18	11mm or smaller φ5.3 Terminal block M5
	MDME		3.0kW	approx. 4.5kVA							
	MHME										
	MSME										
	MGME		4.0kW	approx. 6kVA				100A			
	MDME										
	MHME										
	MSME		5.0kW	approx. 7.5kVA					5.3mm²/ AWG10		
	MDME										
	MHME										
	MGME	3-phase, 400V	2.0kW	approx. 3.8kVA	30A	DV0PM20050		60A	3.5mm²/ AWG12		
	MSME		3.0kW	approx. 4.5kVA							
	MDME										
	MGME										
	MHME										
	MSME		4.0kW	approx. 6.8kVA							
	MDME										
	MHME										
	MSME		5.0kW	approx. 7.5kVA							
	MDME										
	MHME										

- Select peripheral equipments for single/3phase common specification according to the power source.
- About circuit breaker and magnetic contactor

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

  Suitable for use on a circuit capable of delivering not more than 5,000 rms 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.

  The screws of protective earth terminals for Frame A to D are M4 (Fastening torque: 0.7 to 0.8N·m) and M5 (Fastening torque: 1.4 to 1.6N·m) for Frame E, F.

  Fastening torque of earth screws.

  Tighten the terminal block screw on frame F with a torque between 1.0 and 2.0 N·m. Application of overtorque (more than 2.0 N·m) will cause damage to terminal block. Maximum allowable torque to the screw securing terminal block cover is 0.19 to 0.21 N·m.
- The cable diameter of an earth cable.

  Use an earth cable with the same diameter or larger as that of the main circuit cable.

  If the diameter of the main circuit cable is 1.6mm² or less, use an earth cable with a diameter of 2.0mm² (AWG14).
- Use the attached exclusive connector for A to E-frame, and maintain the peeled off length of 8 to 9mm.
- Tighten the screws of the connector, Connector X4 for the host controller with the torque of 0.3 to 0.35 N·m.

  Larger torque than 0.35N·m may damage the connector at the driver side.

<Caution>

Do not turn on power without tightening all terminal block screws properly, otherwise, loose contacts may generate heat (smoking, firing).

Table of Part Numbers and Options

Motor						Driver			Power capacity (atrated load)	Optional parts								
Motor series		Power supply	Output (W)	Part No. Note) 1	Rating/ Spec. (page)	Part No. (Standard type)	Part No. (Positioning type)	Frame		Encoder cable: 20-bit Incremental Note) 2	Encoder cable: 17-bit Absolute Note) 2	Motor cable: without brake Note) 2	Motor cable: with brake Note) 2	Brake cable Note) 2	Regenerative resistor	Reactor	Noise filter
Low inertia	MSMD (Leadwire type) 3000r/min	Single phase 100V	50	MSMD5AZ□1✻	66	MADHT1105	MADHT1105E	A-frame	Approx. 0.4kVA	MFECA 0**0EAM	MFECA 0**0EAE	MFMCA 0**0EED	—	MFMCB 0**0GET	DV0P4280	DV0P227	DV0P4170
			100	MSMD011□1✻	68	MADHT1107	MADHT1107E		Approx. 0.4kVA								
			200	MSMD021□1✻	70	MBDHT2110	MBDHT2110E	B-frame	Approx. 0.5kVA						DV0P4283	DV0P228	
			400	MSMD041□1✻	72	MCDHT3120	MCDHT3120E	C-frame	Approx. 0.9kVA						DV0P4282		DV0P20042
		Single phase/ 3-phase 200V	50	MSMD5AZ□1✻	67	MADHT1505	MADHT1505E	A-frame	Approx. 0.5kVA						DV0P4281	DV0P220	
			100	MSMD012□1✻	69	MADHT1505	MADHT1505E		Approx. 0.5kVA								
			200	MSMD022□1✻	71	MADHT1507	MADHT1507E		Approx. 0.5kVA								DV0PM20042
			400	MSMD042□1✻	73	MBDHT2510	MBDHT2510E	B-frame	Approx. 0.9kVA						DV0P4283	DV0P221	
			750	MSMD082□1✻	74	MCDHT3520	MCDHT3520E	C-frame	Approx. 1.3kVA								
	MSME 3000r/min	Single phase 100V	50	MSME5AZ□1✻	36	MADHT1105	MADHT1105E	A-frame	Approx. 0.4kVA	MFECA 0**0MJD	MFECA 0**0MJE	MFMCA 0**0NJD	—	MFMCB 0**0PJT	DV0P4280	DV0P227	DV0P4170
			100	MSME011□1✻	38	MADHT1107	MADHT1107E		Approx. 0.4kVA								
			200	MSME021□1✻	40	MBDHT2110	MBDHT2110E	B-frame	Approx. 0.5kVA						DV0P4283	DV0P228	
			400	MSME041□1✻	42	MCDHT3120	MCDHT3120E	C-frame	Approx. 0.9kVA						DV0P4282		DV0P20042
		Single phase/ 3-phase 200V	50	MSME5AZ□1✻	37	MADHT1505	MADHT1505E	A-frame	Approx. 0.5kVA						DV0P4281	DV0P220	
			100	MSME012□1✻	39	MADHT1505	MADHT1505E		Approx. 0.5kVA								
			200	MSME022□1✻	41	MADHT1507	MADHT1507E		Approx. 0.5kVA								DV0PM20042
			400	MSME042□1✻	43	MBDHT2510	MBDHT2510E	B-frame	Approx. 0.9kVA						DV0P4283	DV0P221	
			750	MSME082□1✻	44	MCDHT3520	MCDHT3520E	C-frame	Approx. 1.3kVA								
	MSME 3000r/min	Single phase/ 3-phase 200V	1000	MSME102□1✻	45	MDDHT5540	MDDHT5540E	D-frame	Approx. 1.8kVA	MFECA 0**0ETD	MFECA 0**0ETE	MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P222	DV0P4220
			1500	MSME152□1✻	46	MDDHT5540	MDDHT5540E		Approx. 2.3kVA								
		3-phase 200V	2000	MSME202□1✻	47	MEDHT7364	MEDHT7364E	E-frame	Approx. 3.3kVA						DV0P4285	DV0P223	DV0PM20043
			3000	MSME302□1✻	48	MFDHTA390	MFDHTA390E	F-frame	Approx. 4.5kVA			MFMCA 0**3ECT	MFMCA 0**3FCT		DV0P4285 × 2 in parallel	DV0P224	
			4000	MSME402□1✻	49	MFDHTB3A2	MFDHTB3A2E		Approx. 6kVA							DV0P225	DV0P3410
			5000	MSME502□1✻	50	MFDHTB3A2	MFDHTB3A2E		Approx. 7.5kVA							—	
		3-phase 400V	1000	MSME104□1✻	82	MDDHT3420	MDDHT3420E	D-frame	Approx. 1.8kVA			MFMCD 0**2ECD	MFMCE 0**2FCD		DV0PM20048	—	—
			1500	MSME154□1✻	83	MDDHT3420	MDDHT3420E		Approx. 2.3kVA								
			2000	MSME204□1✻	84	MEDHT4430	MEDHT4430E	E-frame	Approx. 3.3kVA						DV0PM20049		
			3000	MSME304□1✻	85	MFDHT5440	MFDHT5440E	F-frame	Approx. 4.5kVA			MFMCA 0**3ECT	MFMCA 0**3FCT		DV0PM20049 × 2 in parallel		
			4000	MSME404□1✻	86	MFDHTA464	MFDHTA464E		Approx. 6.8kVA								
			5000	MSME504□1✻	87	MFDHTA464	MFDHTA464E		Approx. 7.5kVA								
Middle inertia	MDME 2000r/min	Single phase/ 3-phase 200V	1000	MDME102□1✻	51	MDDHT3530	MDDHT3530E	D-frame	Approx. 1.8kVA	MFECA 0**0ETD	MFECA 0**0ETE	MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P222	DV0P4220
			1500	MDME152□1✻	52	MDDHT5540	MDDHT5540E		Approx. 2.3kVA								
		3-phase 200V	2000	MDME202□1✻	53	MEDHT7364	MEDHT7364E	E-frame	Approx. 3.3kVA						DV0P4285	DV0P223	DV0PM20043
			3000	MDME302□1✻	54	MFDHTA390	MFDHTA390E	F-frame	Approx. 4.5kVA			MFMCA 0**3ECT	MFMCA 0**3FCT		DV0P4285 × 2 in parallel	DV0P224	
			4000	MDME402□1✻	55	MFDHTB3A2	MFDHTB3A2E		Approx. 6kVA							DV0P225	DV0P3410
			5000	MDME502□1✻	56	MFDHTB3A2	MFDHTB3A2E		Approx. 7.5kVA							—	
		3-phase 400V	1000	MDME104□1✻	88	MDDHT2412	MDDHT2412E	D-frame	Approx. 1.8kVA			MFMCD 0**2ECD	MFMCE 0**2FCD		DV0PM20048	—	—
			1500	MDME154□1✻	89	MDDHT3420	MDDHT3420E		Approx. 2.3kVA								
			2000	MDME204□1✻	90	MEDHT4430	MEDHT4430E	E-frame	Approx. 3.3kVA						DV0PM20049		
			3000	MDME304□1✻	91	MFDHT5440	MFDHT5440E	F-frame	Approx. 4.5kVA			MFMCA 0**3ECT	MFMCA 0**3FCT		DV0PM20049 × 2 in parallel		
			4000	MDME404□1✻	92	MFDHTA464	MFDHTA464E		Approx. 6.8kVA								
			5000	MDME504□1✻	93	MFDHTA464	MFDHTA464E		Approx. 7.5kVA								
	MGME 1000r/min	Single phase/ 3-phase 200V	900	MGME092□1✻	57	MDDHT5540	MDDHT5540E	D-frame	Approx. 1.8kVA	MFECA 0**0ETD	MFECA 0**0ETE	MFMCD0**2ECD	MFMCA0**2FCD	—	DV0P4284	DV0P222	DV0P4220
		3-phase 200V	2000	MGME202□1✻	58	MFDHTA390	MFDHTA390E	F-frame	Approx. 3.8kVA			MFMCA 0**3ECT	MFMCA 0**3FCT		DV0P4285 × 2 in parallel	DV0P223	DV0P3410
			3000	MGME302□1✻	59	MFDHTB3A2	MFDHTB3A2E		Approx. 4.5kVA							DV0P224	
		3-phase 400V	900	MGME094□1✻	94	MDDHT3420	MDDHT3420E	D-frame	Approx. 1.8kVA			MFMCD0**2ECD	MFMCE0**2FCD		DV0PM20048	—	—
			2000	MGME204□1✻	95	MFDHT5440	MFDHT5440E	F-frame	Approx. 3.8kVA			MFMCA 0**3ECT	MFMCA 0**3FCT		DV0PM20049 × 2 in parallel		
			3000	MGME304□1✻	96	MFDHTA464	MFDHTA464E		Approx. 4.5kVA								
High inertia	MHMD (Leadwire type) 3000r/min	Single phase 100V	200	MHMD021□1✻	76	MBDHT2110	MBDHT2110E	B-frame	Approx. 0.5kVA	MFECA 0**0EAM	MFECA 0**0EAE	MFMCA 0**0EED	—	MFMCB 0**0GET	DV0P4283	DV0P228	DV0P4170
			400	MHMD041□1✻	78	MCDHT3120	MCDHT3120E	C-frame	Approx. 0.9kVA						DV0P4282		DV0PM20042
		Single phase/ 3-phase 200V	200	MHMD022□1✻	77	MADHT1507	MADHT1507E	A-frame	Approx. 0.5kVA						DV0P4283	DV0P220	DV0PM20042
			400	MHMD042□1✻	79	MBDHT2510	MBDHT2510E	B-frame	Approx. 0.9kVA							DV0P221	
			750	MHMD082□1✻	80	MCDHT3520	MCDHT3520E	C-frame	Approx. 1.3kVA								
	MHME 2000r/min	Single phase/ 3-phase 200V	1000	MHME102□1✻	60	MDDHT3530	MDDHT3530E	D-frame	Approx. 1.8kVA	MFECA 0**0ETD	MFECA 0**0ETE	MFMCD 0**2ECD	MFMCA 0**2FCD	—	DV0P4284	DV0P222	DV0P4220
			1500	MHME152□1✻	61	MDDHT5540	MDDHT5540E		Approx. 2.3kVA								
		3-phase 200V	2000	MHME202□1✻	62	MEDHT7364	MEDHT7364E	E-frame	Approx. 3.3kVA			MFMCE0**2ECD	MFMCE0**2FCD		DV0P4285	DV0P223	DV0PM20043
			3000	MHME302□1✻	63	MFDHTA390	MFDHTA390E	F-frame	Approx. 4.5kVA			MFMCA 0**3ECT	MFMCA 0**3FCT		DV0P4285 × 2 in parallel	DV0P224	
			4000	MHME402□1✻	64	MFDHTB3A2	MFDHTB3A2E		Approx. 6kVA							DV0P225	DV0P3410
			5000	MHME502□1✻	65	MFDHTB3A2	MFDHTB3A2E		Approx. 7.5kVA							—	
		3-phase 400V	1000	MHME104□1✻	98	MDDHT2412	MDDHT2412E	D-frame	Approx. 1.8kVA			MFMCD 0**2ECD	MFMCE 0**2FCD		DV0PM20048	—	—
			1500	MHME154□1✻	99	MDDHT3420	MDDHT3420E		Approx. 2.3kVA								
			2000	MHME204□1✻	100	MEDHT4430	MEDHT4430E	E-frame	Approx. 3.3kVA			MFMCE0**2ECD			DV0PM20048		
			3000	MHME304□1✻	101	MFDHT5440	MFDHT5440E	F-frame	Approx. 4.5kVA			MFMCA 0**3ECT	MFMCA 0**3FCT		DV0PM20049 × 2 in parallel		
			4000	MHME404□1✻	102	MFDHTA464	MFDHTA464E		Approx. 6.8kVA								
			5000	MHME504□1✻	103	MFDHTA464	MFDHTA464E		Approx. 7.5kVA								

note)1 Rotary encoder specifications: □ Motor specification: ✻ (refer to P.13)

note)2 Cable length: ** (03: 3m, 05: 5m, 10: 10m, 20: 20m)

· Options

Title	構成品名		Part No.	Page
Interface cable			DV0P4360	118
Interface Connector			DV0P4350	118
Connector for Power Supply Input Connection	A to D-frame (100V/ 200V)	Single row type	DV0PM20032	120
		Double row type	DV0PM20033	120
	E-frame (200V)		DV0PM20044	120
	D-frame (400V)		DV0PM20051	121
	E-frame (400V)		DV0PM20052	121
Connector for Control Power Supply Input Connection	D, E-frame (400V)		DV0PM20053	121
Connector for Motor Connection	A to D-frame		DV0PM20034	121
	E-frame (200V)		DV0PM20046	122
	D-frame (400V)		DV0PM20054	122
Connector for Regenerative Resistor	E-frame		DV0PM20045	121
	D-frame (400V)		DV0PM20055	121
Connector Kit for Motor/Encoder Connection			DV0P4290	122
			DV0P4380	122
			DV0PM20035	123
			DV0PM20036	123
			DV0PM20037	123
			DV0PM20038	124
			DV0PM20039	124
Connector Kit for Motor/Brake Connection			DV0PM20040	124
Connector	RS485, RS232		DV0PM20024	119
	Safety		DV0PM20025	119
	External Scale		DV0PM20026	119
	Encoder		DV0PM20010	119
	Analog Monitor Signal		DV0PM20031	120
Battery For Absolute Encoder			DV0P2990	125
Battery Box			DV0P4430	125
Mounting bracket	A-frame		DV0PM20027	126
	B-frame		DV0PM20028	126
	C-frame		DV0PM20029	126
	D-frame		DV0PM20030	126
Junction Cable for Encoder	without Buttery Box		MFECA0**0EAM	112
			MFECA0**0MJD	112
			MFECA0**0ETD	113
	with Buttery Box		MFECA0**0EAE	112
			MFECA0**0MJE	113
			MFECA0**0ETE	113
Junction Cable for Motor	without Brake		MFMCA0**0EED	114
			MFMCA0**0NJD	114
			MFMCD0**2ECD	114
			MFMCE0**2ECD	115
			MFMCA0**3ECT	115
	with Brake		MFMCA0**2FCD	116
			MFMCE0**2FCD	116
			MFMCA0**3FCT	116
Junction Cable for Brake			MFMCB0**0GET	117
			MFMCB0**0PJT	117
External Regenerative Resistor	50Ω 25W		DV0P4280	128
	100Ω 25W		DV0P4281	128
	25Ω 50W		DV0P4282	128
	50Ω 50W		DV0P4283	128
	30Ω 100W		DV0P4284	128
	20Ω 130W		DV0P4285	128
	120Ω 35W		DV0PM20048	128
	80Ω 65W		DV0PM20049	128
Reactor	DV0P220, DV0P221, DV0P222, DV0P223, DV0P224, DV0P225, DV0P227, DV0P228			127
Noise Filter	DV0P4170, DV0PM20042 DV0P4220, DV0PM20043 DV0P3410			108
Surge absorber	Single phase		DV0P4190	109
	3-phase (200V)		DV0P1450	109
	3-phase (400V)		DV0PM20050	109
Noise Filter for Signal Lines			DV0P1460	109

Basic Specifications	Input power	100V	Main circuit	Single phase, 100 to 120V +10% –15% 50/60Hz
			Control circuit	Single phase, 100 to 120V +10% –15% 50/60Hz
		200V	Main circuit A to D-frame	Single/3-phase, 200 to 240V +10% –15% 50/60Hz
			Main circuit E to F-frame	3-phase, 200 to 230V +10% –15% 50/60Hz
			Control circuit A to D-frame	Single phase, 200 to 240V +10% –15% 50/60Hz
			Control circuit E to F-frame	Single phase, 200 to 230V +10% –15% 50/60Hz
		400V	Main circuit D to F-frame	Single phase, 380 to 480V +10% –15% 50/60Hz
			Control circuit D to F-frame	DC 24V ± 15%
	Withstand voltage			Primary to earth: withstand 1500 VAC, 1 min,(sensed current: 20 mA)
	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)
		humidity		Both operating and storage : 20 to 85%RH or less (free from condensation)
		Altitude		Lower than 1000m
		Vibration		5.88m/s^2 or less, 10 to 60Hz (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, initialization signal defferential input. Manufacturers that support serial communication scale: Mitsutoyo Corp. Sony Manufacturing Systems Corp.
	Control signal	Input		General purpose 10 inputs The function of general-purpose input is selected by parameters.
		Output		General purpose 6 outputs The function of general-purpose input is selected by parameters.
	Analog /Digital signal	Input		3 inputs (16Bit A/D : 1 input, 12Bit A/D : 2 inputs)
		Output		3 outputs (Analog monitor: 2 output, Digital monitor: 1 output)
	Pulse signal	Input		2 inputs (Photo-coupler input, Line receiver input) Photocoupler input is compatible with both line driver I/F and open collector I/F. Line receiver input is compatible with line driver I/F.
		Output		4 outputs (Line driver: 3 output, open collector: 1 output) Feed out the encoder pulse (A, B and Z-phase) or feedback scale pulse (EXA, EXB and EXZ-phase) in line driver. Z-phase and EXZ-phase pulse is also fed out in open collector.
	Communication function	USB		Connection with PC etc.
		RS232		1 : 1 communication to a host with RS23 interface is enabled.
		RS485		1 : n communication up to 15 axes to a host with RS485 interface is enabled.
	Safety function			Used for IEC61800-5-2: STO.
	Front panel			(1) 5 keys (MODE, SET, UP, DOWN, SHIFT) (2) LED (6-digit) (3) Analog monitor output (2ch) (4) Digital monitor output (1ch)
	Regeneration			A, B-frame: no built-in regenerative resistor (external resistor only) C to F-frame: Built-in regenerative resistor (external resistor is also enabled.)
	Dynamic brake			Built-in
	Control mode			Switching among the following 7 mode is enabled, (1) Position control (2) Velocity control (3) Toque control (4) Position/Velocity control (5) Position/Torque control (6) Velocity/Torque control (7) Full-closed control

Function	Position control	Control input		(1) Deviation counter clear (2) Command pulse inhibition (3) Command dividing gradual increase switching (4) Damping control switching etc.
		Control output		Positioning complete (In-position) etc.
		Pulse input	Max. command pulse frequency	Exclusive interface for Photo-coupler: 500kpps Exclusive interface for line driver : 4Mpps
			Input pulse signal format	Differential input. Selectable with parameter. ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)
			Electronic gear (Division/ Multiplication of command pulse)	Process command pulse frequency × electronic gear ratio $\left(\frac{1 \text{ to } 2^{30}}{1 \text{ to } 2^{30}}\right)$ as positional command input. Use electronic gear ratio in the range 1/1000 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. (3V/rated torque)
		Instantaneous Speed Observer		Available
		Damping Control		Available
	Velocity 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.
			Torque limit command input	Individual torque limit for both positive and negative direction is enabled. (3V/rated torque)
		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 to 10s/1000r/min. Sigmoid acceleration/deceleration is also enabled.
		Zero-speed clamp		0-clamp of internal velocity command with speed zero clamp input is enabled.
		Instantaneous Speed Observer		Available
		Velocity Control filter		Available
	Torque control	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.
		Speed limit function		Speed limit value with parameter t is enabled.
	Full-closed control	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: 500kpps Exclusive interface for line driver : 4Mpps
			Input pulse signal format	Differential input. Selectable with parameter. ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)
			Electronic gear (Division/ Multiplication of command pulse)	Process command pulse frequency × electronic gear ratio $\left(\frac{1 \text{ to } 2^{30}}{1 \text{ to } 2^{30}}\right)$ as positional command input. Use electronic gear ratio in the range 1/1000 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. (3V/rated torque)
		Setup range of division/ multiplication of feedback scale		1/40 to 160 times The ratio of encoder pulse (numerator) to external scale pulse (denominator) can be set to 1 to 2^{20} (numerator) to 1 to 2^{20} (denominator), but should be set to a ratio within the range shown above.
	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.

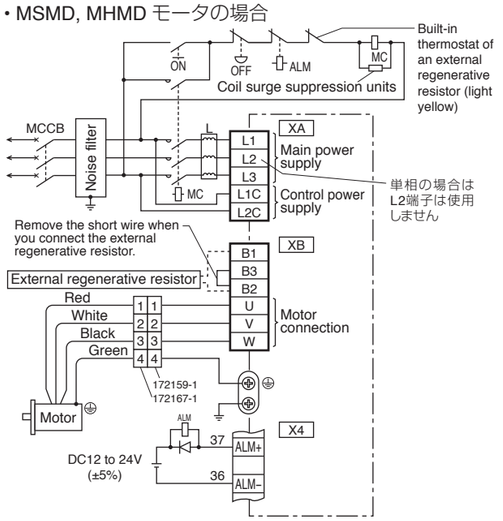
Basic Specifications	Input power	100V	Main circuit	Single phase, 100 to 120V +10% –15% 50/60Hz
			Control circuit	Single phase, 100 to 120V +10% –15% 50/60Hz
		200V	Main circuit A to D-frame	Single/3-phase, 200 to 240V +10% –15% 50/60Hz
			Main circuit E to F-frame	3-phase, 200 to 230V +10% –15% 50/60Hz
			Control circuit A to D-frame	Single phase, 200 to 240V +10% –15% 50/60Hz
			Control circuit E to F-frame	Single phase, 200 to 230V +10% –15% 50/60Hz
		400V	Main circuit D to F-frame	Single phase, 380 to 480V +10% –15% 50/60Hz
			Control circuit D to F-frame	DC 24V ± 15%
	Withstand voltage			Primary to earth: withstand 1500 VAC, 1 min,(sensed current: 20 mA)
	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)
		humidity		Both operating and storage : 20 to 85%RH or less (free from condensation)
		Altitude		Lower than 1000m
		Vibration		5.88m/s^2 or less, 10 to 60Hz (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
	Control signal	Input		General purpose 10 inputs The function of general-purpose input is selected by parameters.
		Output		General purpose 6 outputs The function of general-purpose input is selected by parameters.
	Analog /Digital signal	Input		3 inputs (16Bit A/D : 1 input, 12Bit A/D : 2 inputs)
		Output		3 outputs (Analog monitor: 2 output, Digital monitor: 1 output)
	Pulse signal	Input		2 inputs (Photo-coupler input, Line receiver input) Photocoupler input is compatible with both line driver I/F and open collector I/F. Line receiver input is compatible with line driver I/F.
		Output		4 outputs (Line driver: 3 output, open collector: 1 output) Feed out the encoder pulse (A, B and Z-phase) or feedback scale pulse (EXA, EXB and EXZ-phase) in line driver. Z-phase and EXZ-phase pulse is also fed out in open collector.
	Communication function	USB		Connection with PC etc.
	Safety function			Used for IEC61800-5-2: STO.
	Front panel			(1) 5 keys (MODE, SET, UP, DOWN, SHIFT) (2) LED (6-digit) (3) Analog monitor output (2ch) (4) Digital monitor output (1ch)
	Regeneration			A, B-frame: no built-in regenerative resistor (external resistor only) C to F-frame: Built-in regenerative resistor (external resistor is also enabled.)
	Dynamic brake			Built-in
	Control mode			Position control

Function	Position control	Control input		(1) Deviation counter clear (2) Command pulse inhibition (3) Command dividing gradual increase switching (4) Damping control switching etc.
		Control output		Positioning complete (In-position) etc.
		Pulse input	Max. command pulse frequency	Exclusive interface for Photo-coupler: 500kpps Exclusive interface for line driver : 4Mpps
			Input pulse signal format	Differential input. Selectable with parameter. ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)
			Electronic gear (Division/ Multiplication of command pulse)	Process command pulse frequency × electronic gear ratio $\left(\frac{1 \text{ to } 2^{30}}{1 \text{ to } 2^{30}}\right)$ as positional command input. Use electronic gear ratio in the range 1/1000 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
	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.

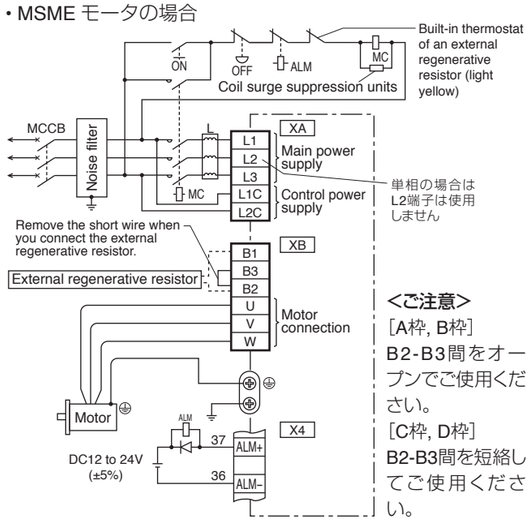
Wiring to Connector, XA, XB, XC, XD

In Case of Single Phase, A to D-frame, 100 V / 200 V type and 3-Phase, A to D-frame, 200 V type

• MSMD, MHMD モータの場合

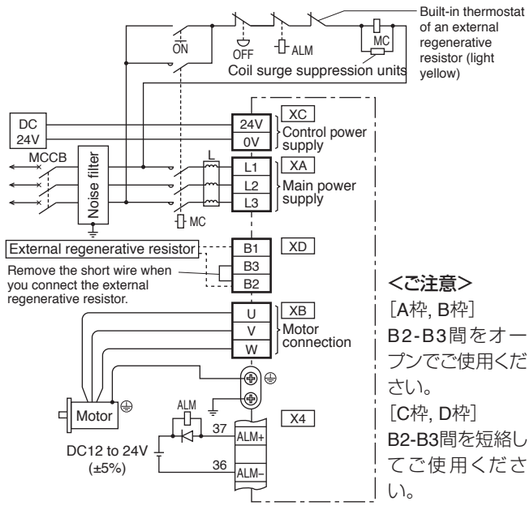


• MSME モータの場合



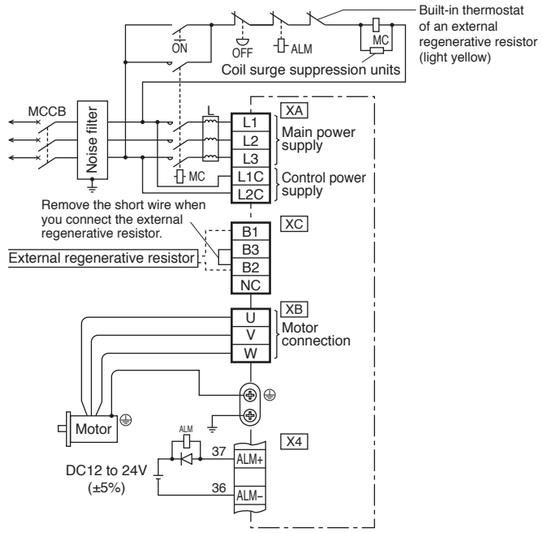
<ご注意>
[A枠, B枠]
B2-B3間をオープンでご使用ください。
[C枠, D枠]
B2-B3間を短絡してご使用ください。

In Case of 3-Phase, D-frame, 400 V type

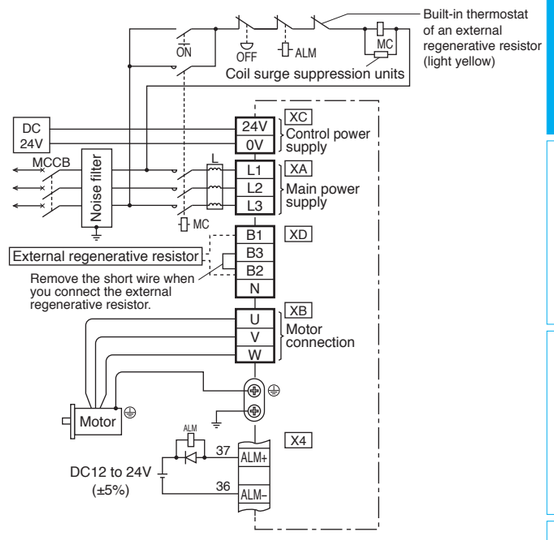


<ご注意>
[A枠, B枠]
B2-B3間をオープンでご使用ください。
[C枠, D枠]
B2-B3間を短絡してご使用ください。

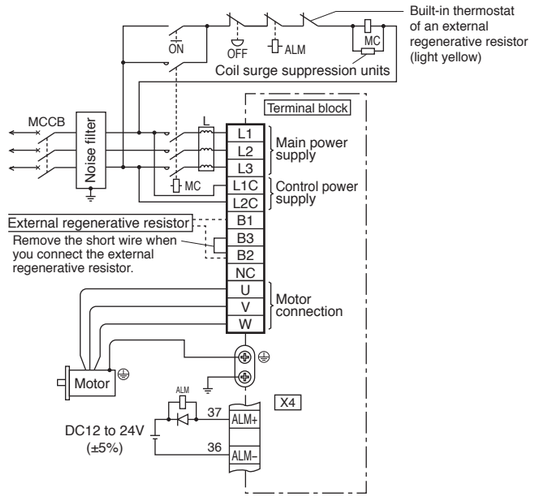
In Case of 3-Phase, E-frame, 200 V type



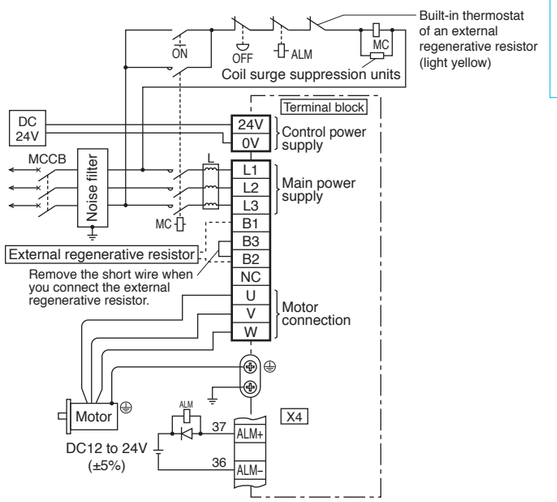
In Case of 3-Phase, E-frame, 400 V type



In Case of 3-Phase, F-frame, 200 V type



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



Specifications of Motor connector (The figures show connectors for the motor.)

• When the motors of <MSMD, MHMD> are used, they are connected as shown below.
Connector: Made by Tyco Electronics AMP

<Motor>

172167-1

PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
4	Ground

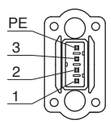
<Brake>

172165-1

PIN No.	Application
1	Brake
2	Brake

• When the motors of <MSME (50 W to 750 W)> are used, they are connected as shown below.
Connector: Made by Japan Aviation Electronics Industry, Ltd.

<Motor>



JN8AT04NJ1

PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
PE	Ground

Tightening torque of the screw (M2) 0.085 to 0.095 N·m (screwed to plastic)

<Brake>

JN4AT02PJM-R

PIN No.	Application
1	Brake
2	Brake

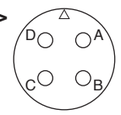
Tightening torque of the screw(M2) 0.19 to 0.21 N·m

* Be sure to use only the screw supplied with the connector, to avoid damage.

• When the motors of <MSME (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.

* For detail of Applicable model, refer to P.111 “Specifications of Motor connector”.

<without Brake>



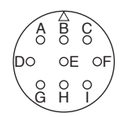
JL04V-2E20-4PE-B-R
JL04HV-2E22-22PE-B-R

PIN No.	Application
A	U-phase
B	V-phase
C	W-phase
D	Ground

<with Brake>

JL04V-2E20-18PE-B-R

PIN No.	Application
G	Brake
H	Brake
A	NC
F	U-phase
I	V-phase
B	W-phase
E	Ground
D	Ground
C	NC



JL04V-2E24-11PE-B-R

PIN No.	Application
A	Brake
B	Brake
C	NC
D	U-phase
E	V-phase
F	W-phase
G	Ground
H	Ground
I	NC

<Remarks> Do not connect anything to NC.

Safety function　Wiring to the connector, X3 (Excluding A5E Series)

上位コントローラを接続して、セーフティ機能をコントロールするセーフティ回路を構築することができます。
セーフティ回路を構築しない場合は、付属のセーフティバイパスプラグをご使用ください。

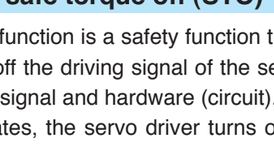
Outline description of safe torque off (STO)

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.

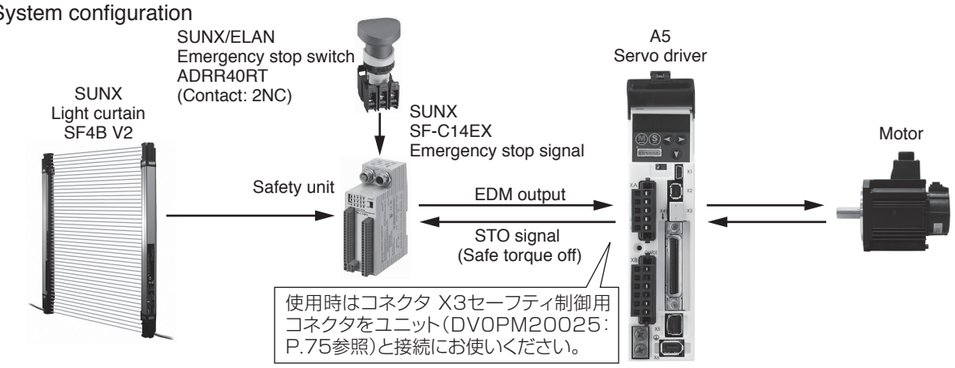
Safety precautions

- 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 eternal 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 (hereafter 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)

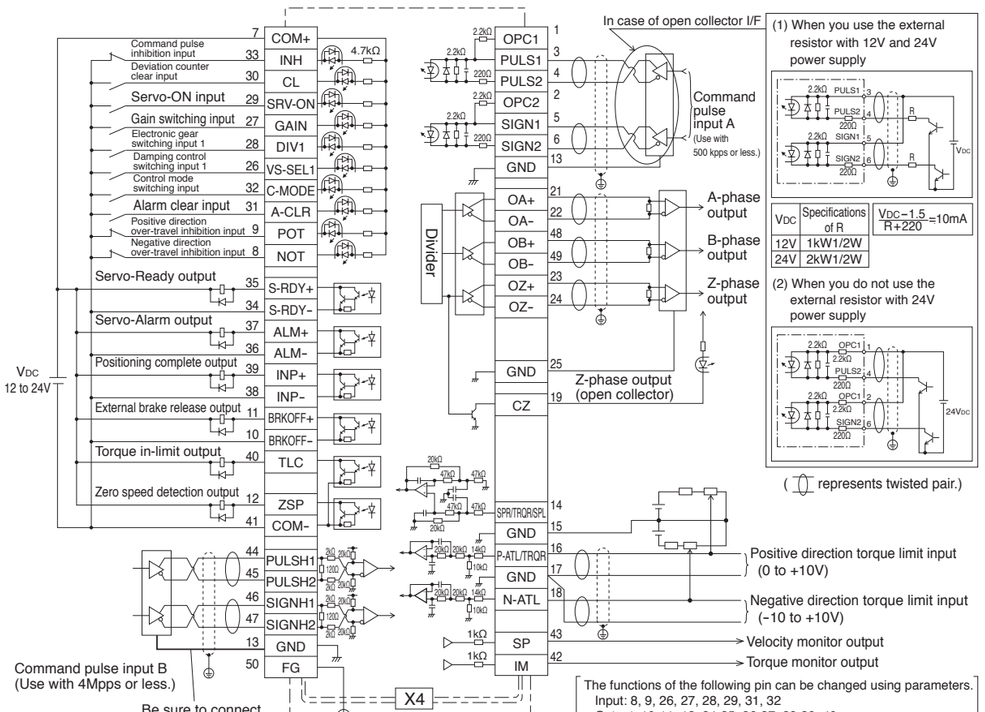


- System configuration



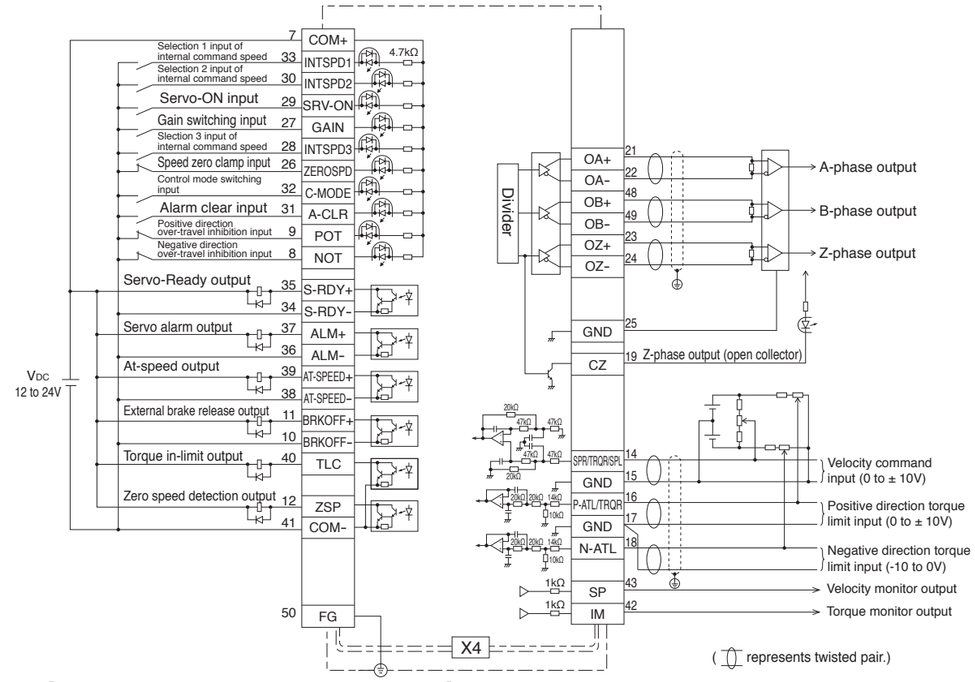
Control Circuit Diagram　Wiring to the connector, X4

Wiring Example of Position Control Mode



* For detail of connector, refer to P.118.

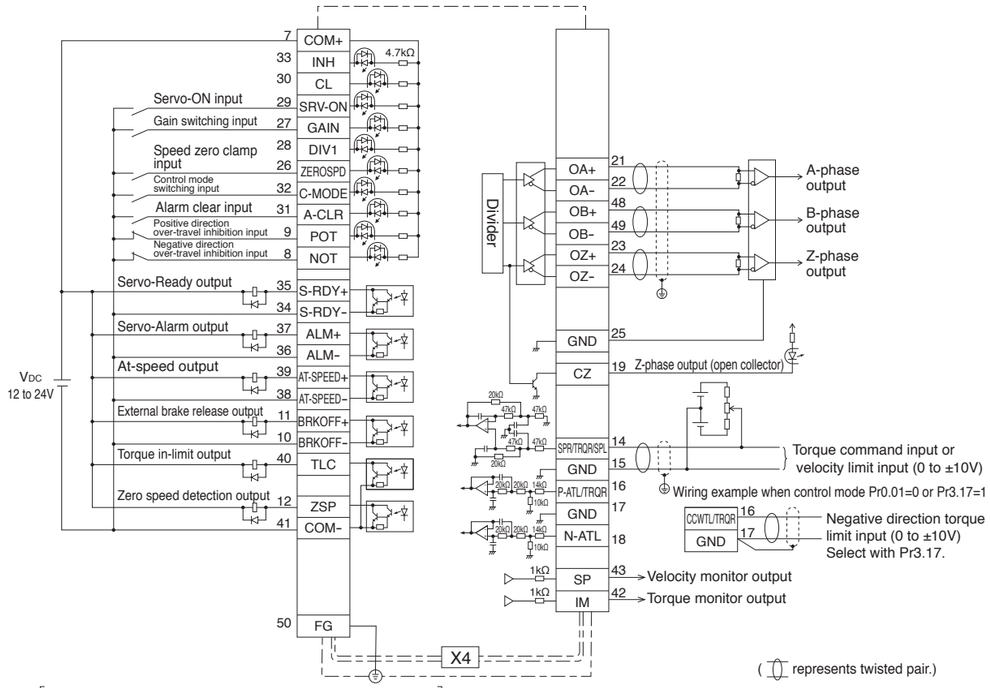
Wiring Example of Velocity Control Mode (Excluding A5E Series)



* For detail of connector, refer to P.118.

Wiring to the connector, X4

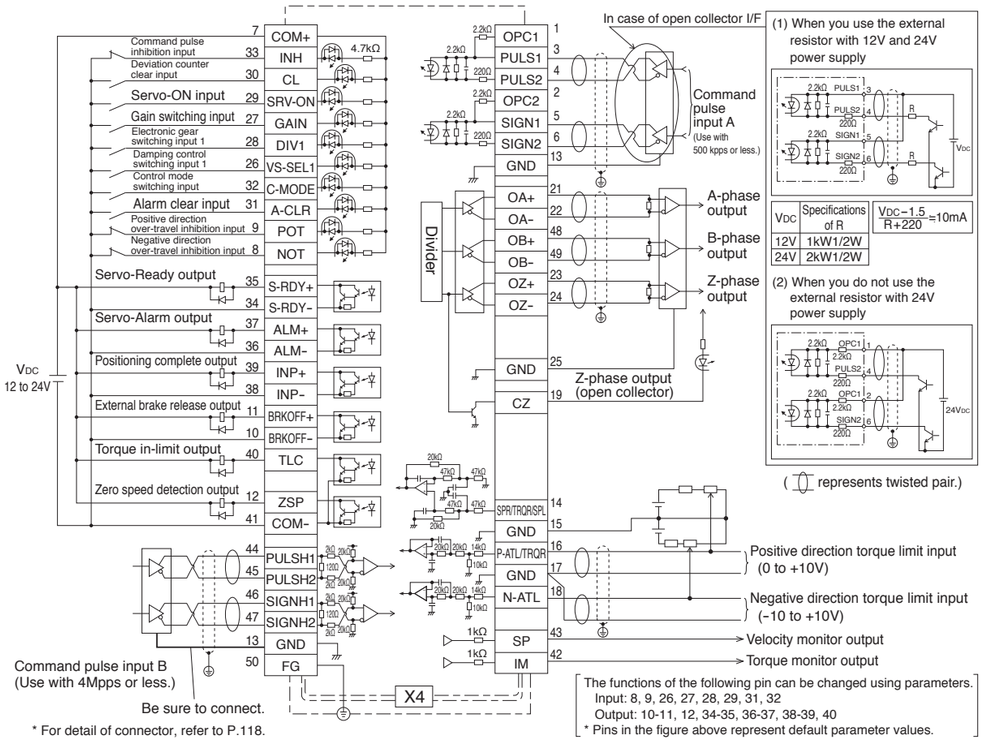
Wiring Example of Torque Control Mode (Excluding A5E Series)



The functions of the following pin can be changed using parameters.
Input: 8, 9, 26, 27, 28, 29, 30, 31, 32, 33
Output: 10-11, 12, 34-35, 36-37, 38-39, 40
* Pins in the figure above represent default parameter values.

* For detail of connector, refer to P.118.

Wiring Example of Full-closed Control Mode (Excluding A5E Series)



The functions of the following pin can be changed using parameters.
Input: 8, 9, 26, 27, 28, 29, 31, 32
Output: 10-11, 12, 34-35, 36-37, 38-39, 40
* Pins in the figure above represent default parameter values.

* For detail of connector, refer to P.118.

Wiring to the connector, X5 (Excluding A5E Series)

Applicable external scale

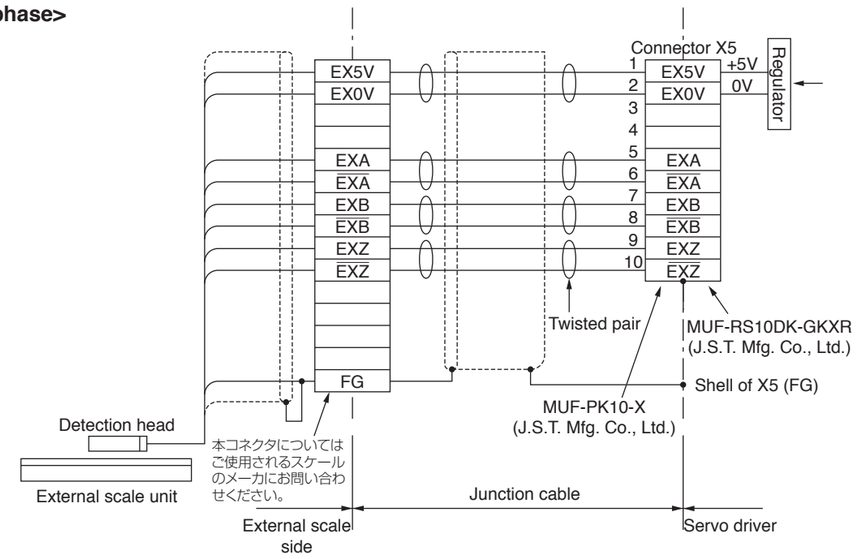
The manufacturers applicable external scales for this product are as follows.

- Mitutoyo Corp.
  ST771A(L), ST773A(L), AT573A
- Sony Manufacturing Systems Corp.
  SR75, SR85, SR77, SR87, SL700 · PL101-RP, SL710 · PL101-RP

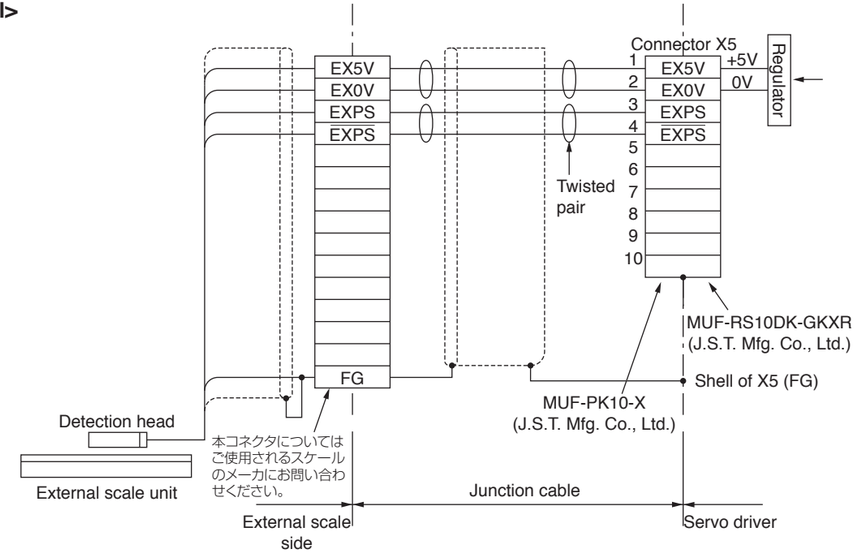
* For the details of the external scale product, contact each company.

Wiring Diagram of X5

<A/B-phase>



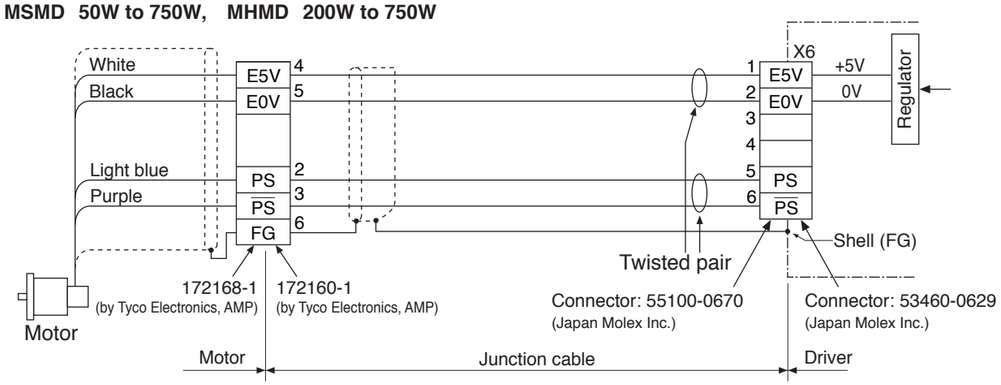
<Serial>



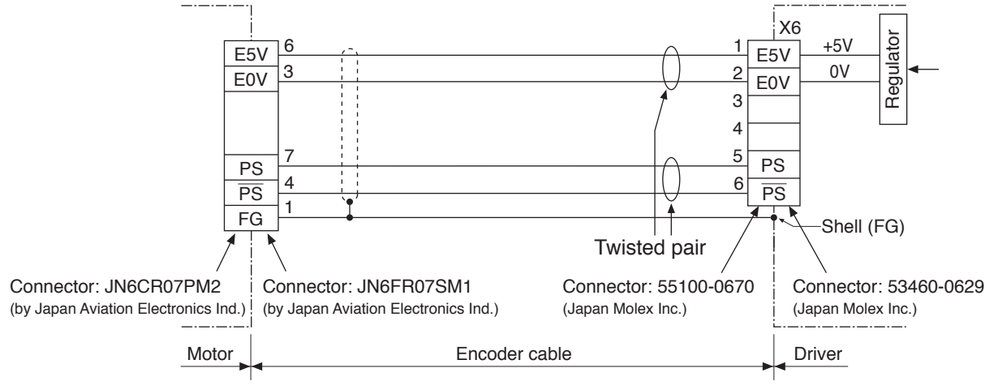
Wiring to the connector, X6

In case of 20-bit incremental encoder

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



MSME 50W to 750W

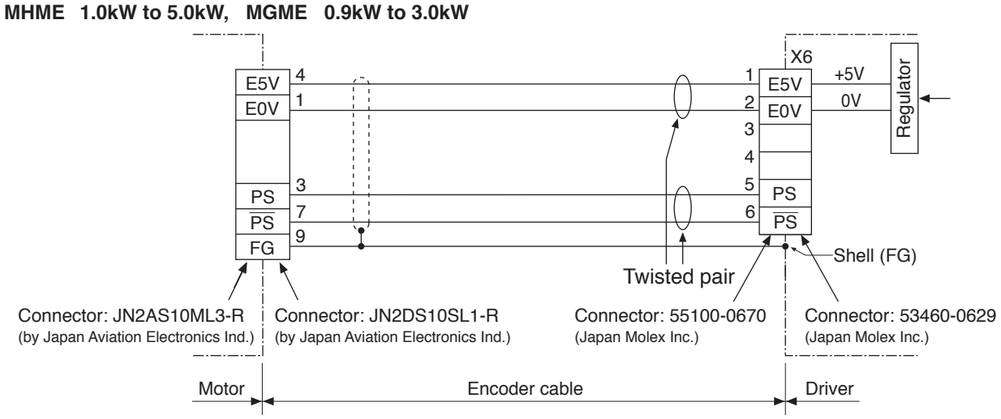


Tighten the motor connector mounting screw (M2) with a torque between 0.19 and 0.21 N·m. To avoid damage, be sure to use only the screw supplied with the connector.

[Connector pin assignment (Motor side)]

(Viewed from cable)

MSME 1.0kW to 5.0kW, MDME 1.0kW to 5.0kW
MHME 1.0kW to 5.0kW, MGME 0.9kW to 3.0kW

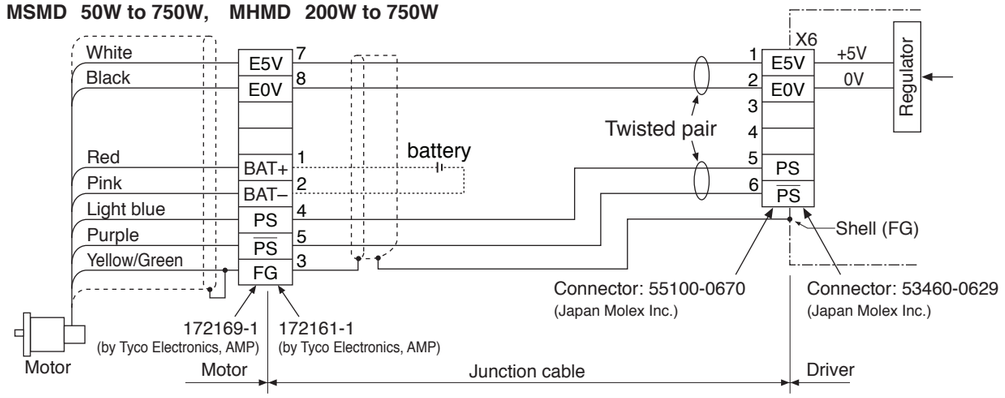


[Connector pin assignment]

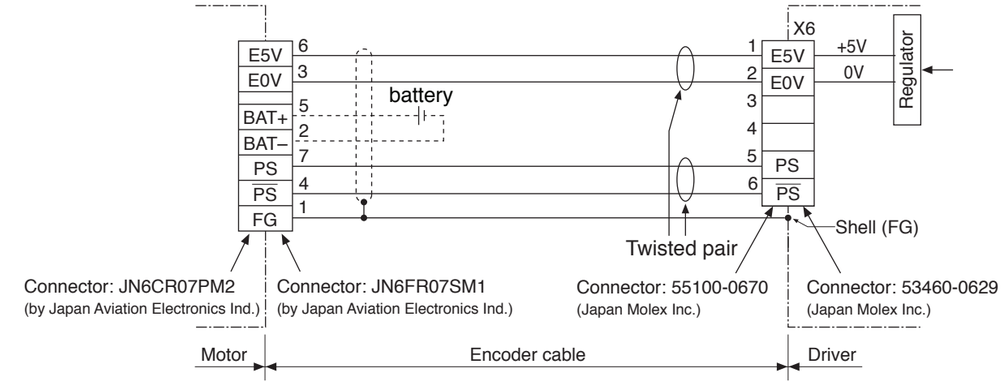
Refer to P.111 “Specifications of Motor connector”.

In case of 17-bit absolute encoder

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



MSME 50W to 750W

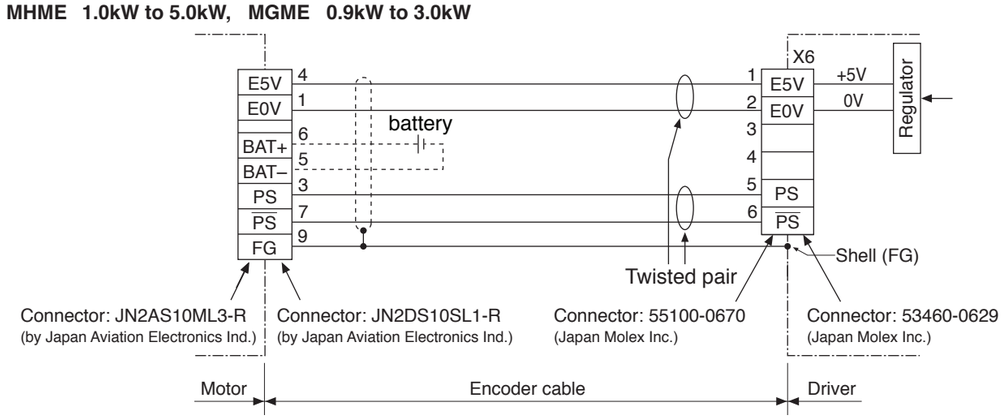


Tighten the motor connector mounting screw (M2) with a torque between 0.19 and 0.21 N·m. To avoid damage, be sure to use only the screw supplied with the connector.

[Connector pin assignment (Motor side)]

(Viewed from cable)

MSME 1.0kW to 5.0kW, MDME 1.0kW to 5.0kW
MHME 1.0kW to 5.0kW, MGME 0.9kW to 3.0kW

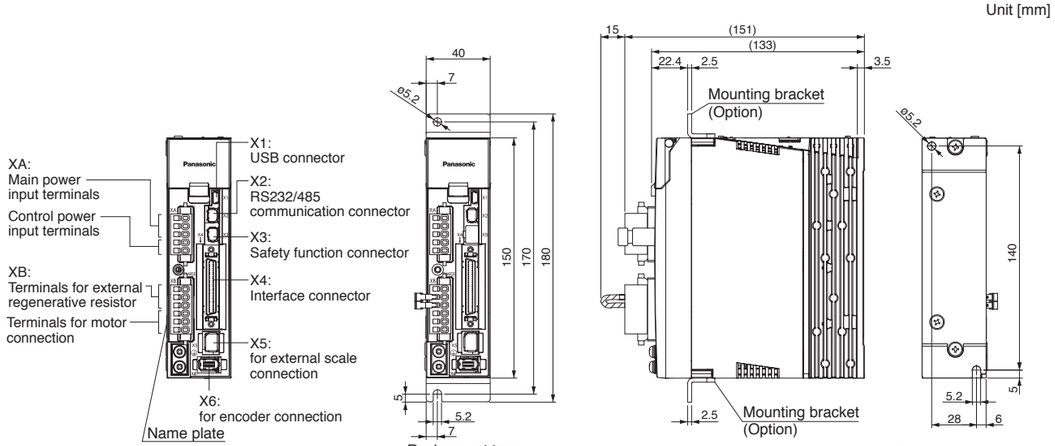


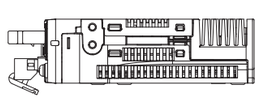
[Connector pin assignment]

Refer to P.111 “Specifications of Motor connector”.

A-frame

Unit [mm]



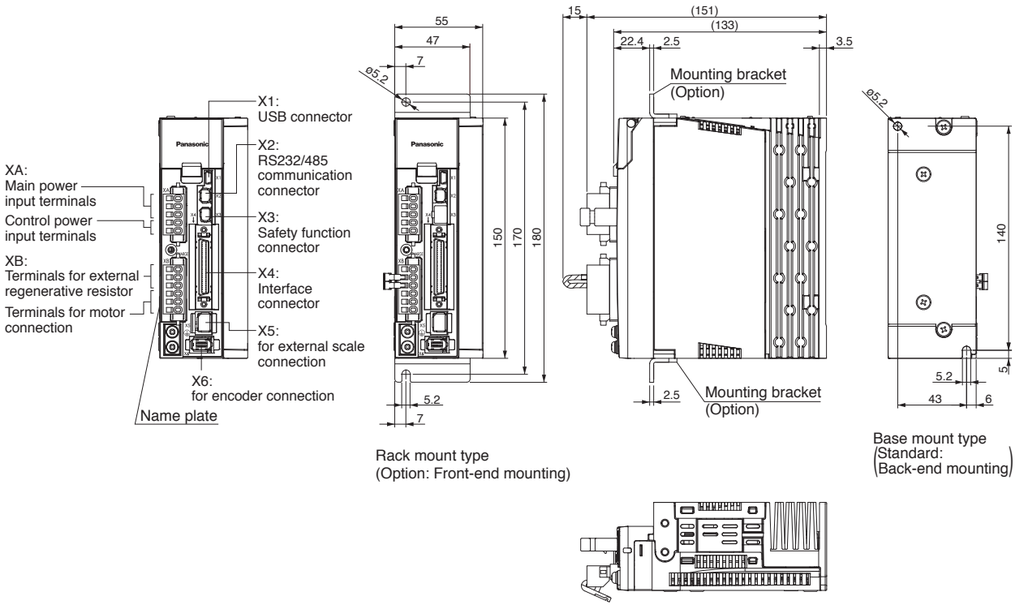


Connector of driver side		
Connector XA	S05B-F32SK-GGXR	J.S.T. Mfg. Co., Ltd.
Connector XB	S06B-F32SK-GGXR	J.S.T. Mfg. Co., Ltd.
Connector X1	UB-M5BR-DMP14-4S (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector X2	1-2040537-1 (or equivalent)	Tyco Electronics AMP k.k,
Connector X3	2040537-1 (or equivalent)	Tyco Electronics AMP k.k,
Connector X4	529865079 (or equivalent)	Japan Molex Inc.
Connector X5	MUF-RS10DK-GKXR (or equivalent)	J.S.T. Mfg. Co., Ltd.
Connector X6	53460-0629 (or equivalent)	Japan Molex Inc.
Connector X7	530140610 (or equivalent)	Japan Molex Inc.
Connector of power and motor side（アンプ本体に同梱）		
Connector XA	05JFAT-SAXGF	J.S.T. Mfg. Co., Ltd.
Connector XB	06JFAT-SAXGF	J.S.T. Mfg. Co., Ltd.

Mass: 0.8kg

B-frame

Unit [mm]

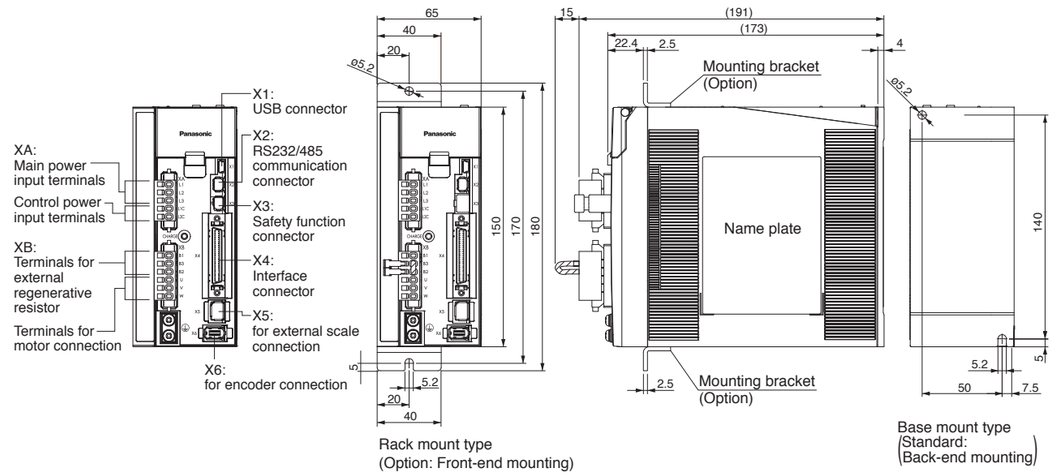


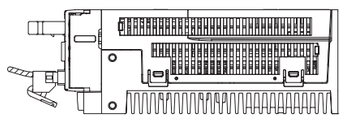
※アンプ側コネクタ及び電源側、モータ側コネクタは
A 枠と同じですので、A 枠の表をご覧ください。

Mass: 1.0kg

C-frame

Unit [mm]



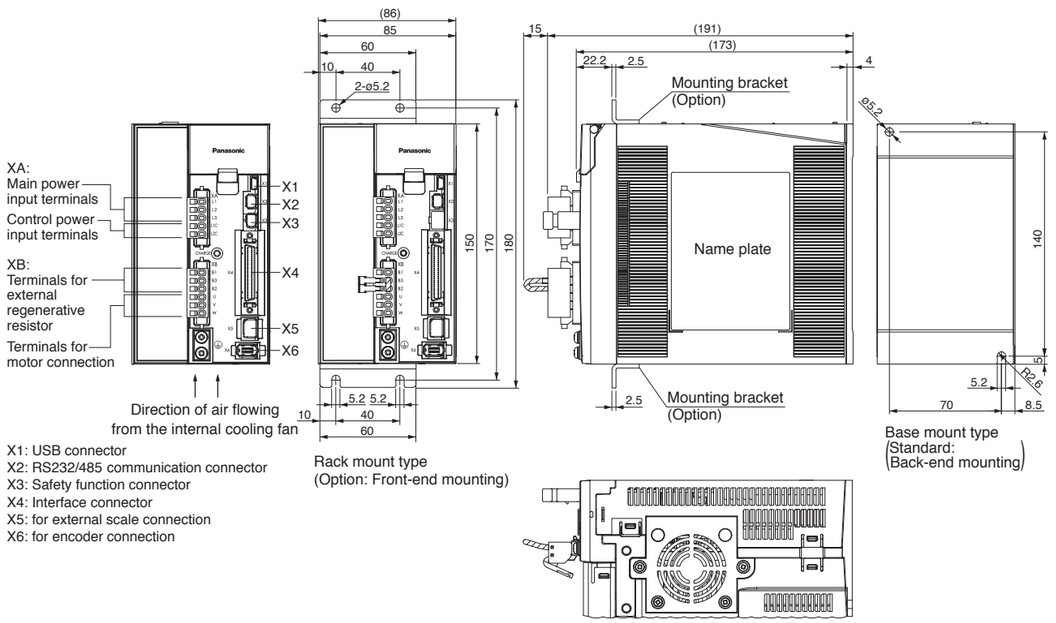


※アンプ側コネクタ及び電源側、モータ側コネクタは
A 枠と同じですので、A 枠の表をご覧ください。

Mass: 1.6kg

D-frame (200V)

Unit [mm]



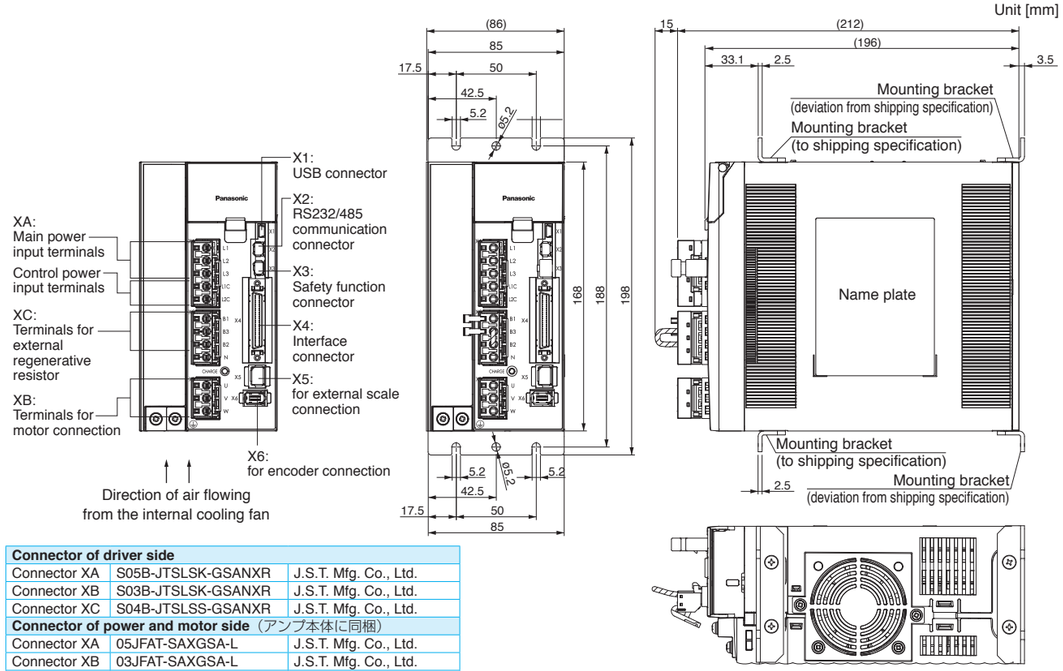
X1: USB connector
X2: RS232/485 communication connector
X3: Safety function connector
X4: Interface connector
X5: for external scale connection
X6: for encoder connection

※アンプ側コネクタ及び電源側、モータ側コネクタは
A 枠と同じですので、A 枠の表をご覧ください。

Mass: 1.8kg

E-frame (200V)

Unit [mm]



Connector of driver side		
Connector XA	S05B-JTSLSK-GSANXR	J.S.T. Mfg. Co., Ltd.
Connector XB	S03B-JTSLSK-GSANXR	J.S.T. Mfg. Co., Ltd.
Connector XC	S04B-JTSLSS-GSANXR	J.S.T. Mfg. Co., Ltd.
Connector of power and motor side（アンプ本体に同梱）		
Connector XA	05JFAT-SAXGSA-L	J.S.T. Mfg. Co., Ltd.
Connector XB	03JFAT-SAXGSA-L	J.S.T. Mfg. Co., Ltd.
Connector XC	04JFAT-SAXGSA-L	J.S.T. Mfg. Co., Ltd.

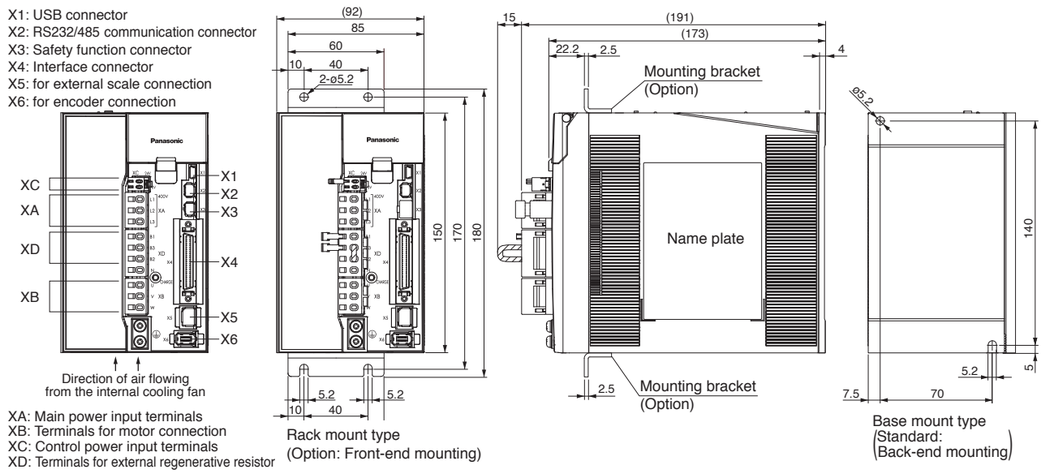
※コネクタ X1 ～ X7 のアンプ側コネクタは、A 枠と同じですので、A 枠の表をご覧ください。

Mass: 2.7kg

D-frame (400V)

Unit [mm]

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



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

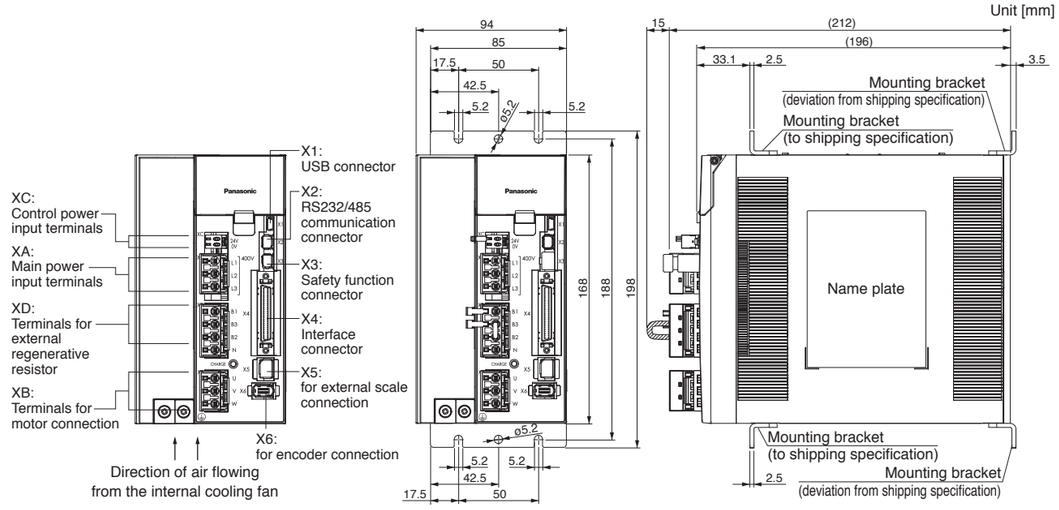
Connector of driver side		
Connector XA	S03B-JTSMSS-GSANYR	J.S.T. Mfg. Co., Ltd.
Connector XB	S03B-JTSMSK-GSANXR	J.S.T. Mfg. Co., Ltd.
Connector XC	S02B-J25SK-GGR	J.S.T. Mfg. Co., Ltd.
Connector XD	S04B-JTSMSK-GSANXR	J.S.T. Mfg. Co., Ltd.
Connector of power and motor side（アンプ本体に同梱）		
Connector XA	03JFAT-SAYGSA-M	J.S.T. Mfg. Co., Ltd.
Connector XB	03JFAT-SAXGSA-M	J.S.T. Mfg. Co., Ltd.
Connector XC	02MJFAT-SAGF	J.S.T. Mfg. Co., Ltd.
Connector XD	04JFAT-SAXGSA-M	J.S.T. Mfg. Co., Ltd.

※コネクタ X1 ～ X7 のアンプ側コネクタは、A 枠と同じですので、A 枠の表をご覧ください。

Mass: 1.9kg

E-frame (400V)

Unit [mm]



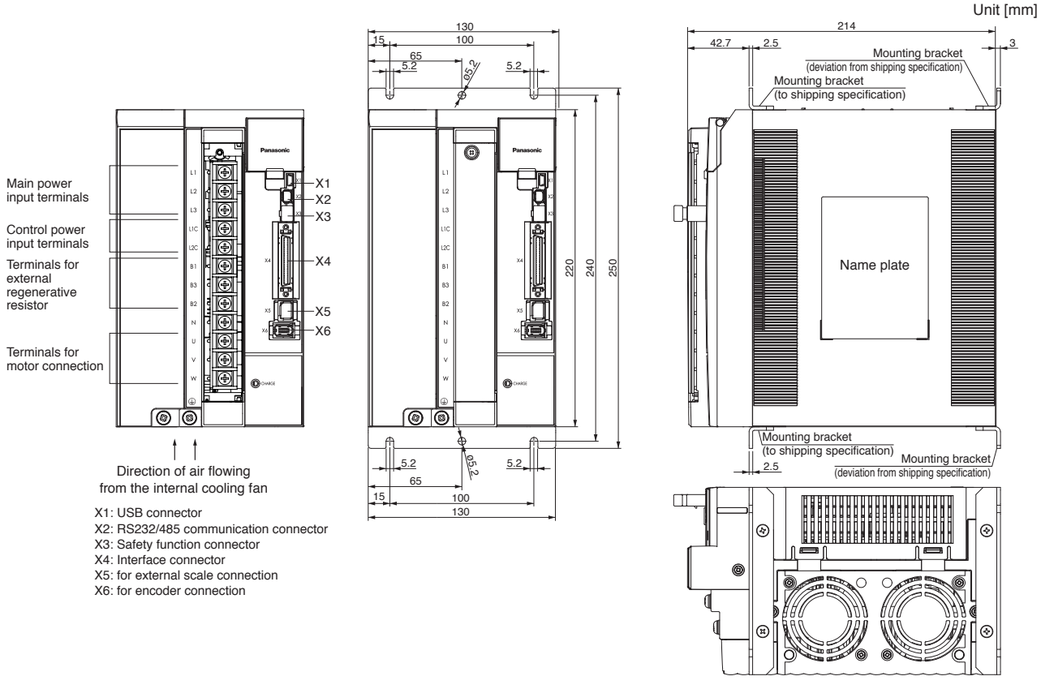
Connector of driver side		
Connector XA	S03B-JTSLSS-GSANYR	J.S.T. Mfg. Co., Ltd.
Connector XB	S03B-JTSLSK-GSANXR	J.S.T. Mfg. Co., Ltd.
Connector XC	S02B-J25SK-GGR	J.S.T. Mfg. Co., Ltd.
Connector XD	S04B-JTSLSK-GSANXR	J.S.T. Mfg. Co., Ltd.
Connector of power and motor side（アンプ本体に同梱）		
Connector XA	03JFAT-SAYGSA-L	J.S.T. Mfg. Co., Ltd.
Connector XB	03JFAT-SAXGSA-L	J.S.T. Mfg. Co., Ltd.
Connector XC	02MJFAT-SAGF	J.S.T. Mfg. Co., Ltd.
Connector XD	04JFAT-SAXGSA-L	J.S.T. Mfg. Co., Ltd.

※コネクタ X1 ～ X7 のアンプ側コネクタは、A 枠と同じですので、A 枠の表をご覧ください。

Mass: 2.7kg

F-frame (200V)

Unit [mm]



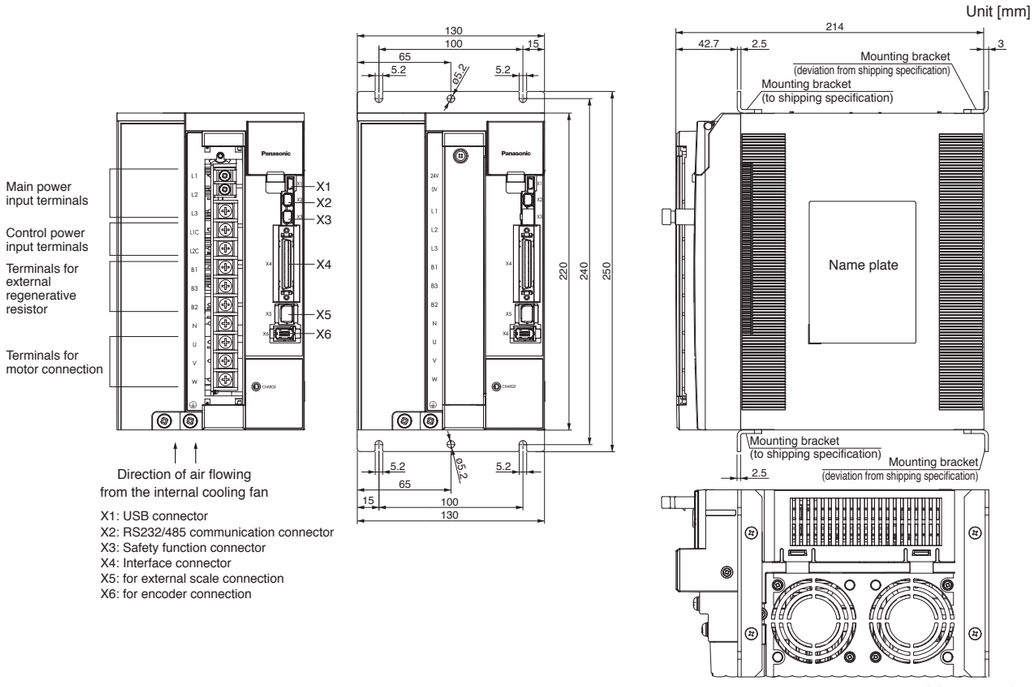
X1: USB connector
X2: RS232/485 communication connector
X3: Safety function connector
X4: Interface connector
X5: for external scale connection
X6: for encoder connection

Mass: 4.8kg

※アンプ側コネクタは、A 枠と同じですので、A 枠の表をご覧ください。

F-frame (400V)

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

Mass: 4.7kg

※アンプ側コネクタは、A 枠と同じですので、A 枠の表をご覧ください。

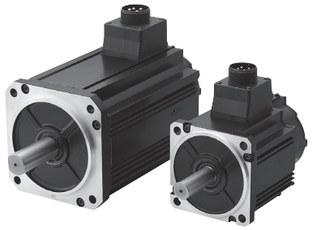
Features

- Line-up: 50W to 5.0kW
- Max speed: 6000r/min (MSME 50W to 750W)
- Low inertia (MSME) to High inertia (MHME).
- Low cogging torque: Rated torque ratio 0.5% (typical value).
- 20-bit incremental encoder (1,048,576 pulse)
- 17-bit absolute encoder (131,072 pulse).
- Enclosure rating: IP67 (M*ME), IP65 (M*MD)
- Compact & Light weight

Small capacity type

[MSME (50W to 750W)]

Middle capacity type



[MSME (1.0kW to 5.0kW)]

Motor (Scheduled to be released.)

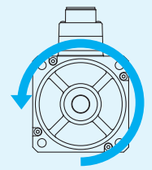
- MDME 7.5kW, 11kW, 15kW
- MHME 7.5kW
- MGME 4.5kW, 6.0kW
- MFME 1.5kW, 2.5kW, 4.5kW
- Motor with Gear Reduce: 100W, 200W, 400W, 750W

Environmental Conditions

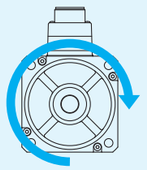
Item		Conditions
Ambient temperature *1		0˚C to 40˚C (free from freezing)
Ambient humidity		20% to 85% RH (free from condensation)
Storage temperature *2		–20˚C to 65˚C (Max.temperature guarantee: 80˚C for 72 hours)
Storage humidity		20% to 85% RH (free from condensation)
Vibration	Motor only	Lower than 49m/s^2 (5G) at running, 24.5m/s^2 (2.5G) at stall
Impact	Motor only	Lower than 98m/s^2 (10G)
Enclosure rating (Motor only)	Leadwire type *3	IP65 (except rotating portion of output shaft and readwire end.)
	Connector type *3*4	IP67 (except rotating portion of output shaft and connecting pin part of the motor connector and the encoder connector)
Altitude		Lower than 1000m

*1 Ambient temperature to be measured at 5cm 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 in case of motor 750W or less are tightened to the recommended tightening torque (Refer to 1-16, 2-18, 2-00). Be sure to use mounting screw supplied with the connector.

<Note>
回転方向の初期設定を
正方向(CCW)、
負方向(CW)と
定義しています。
ご注意ください。



Positive direction (CCW)



Negative direction (CW)

Motor Specifications 100V MSME 50W [Low inertia, Small capacity]

Specifications

			AC100V	
Motor model *1		MSME	5AZG1□	5AZS1□
Applicable driver *2	Model No.	A5 series	MADHT1105	
		A5E series	MADHT1105E	
	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 ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

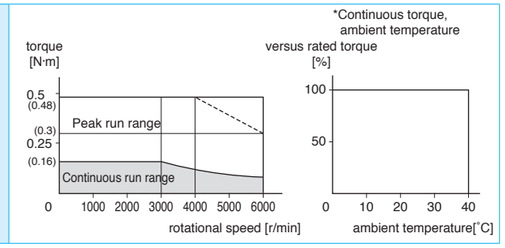
• Permissible load (For details, refer to P.104)

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

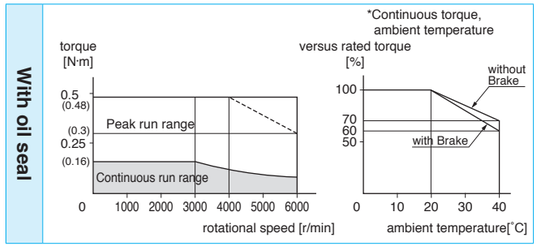
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.30.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has “E” is “positioning type”.
Detail of model designation, refer to P.11.

Torque characteristics (at AC100V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

Without oil seal



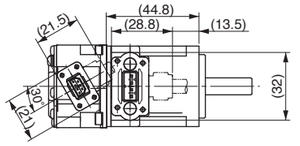
With oil seal



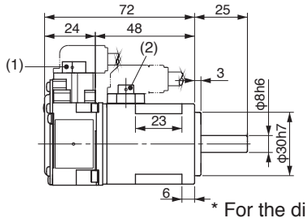
Dimensions

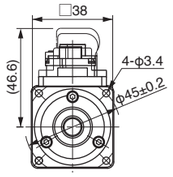
<Without Brake>

Mass (kg)/ 0.32

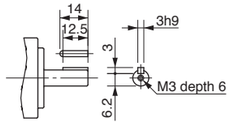


(1) Encoder connector
(2) Motor connector





Key way dimensions



* For the dimensions of 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.

Motor Specifications 200V MSME 50W [Low inertia, Small capacity]

Specifications

			AC200V	
Motor model *1		MSME	5AZG1□	5AZS1□
Applicable driver *2	Model No.	A5 series	MADHT1505	
		A5E series	MADHT1505E	
	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)	6000	
Moment of inertia of rotor ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

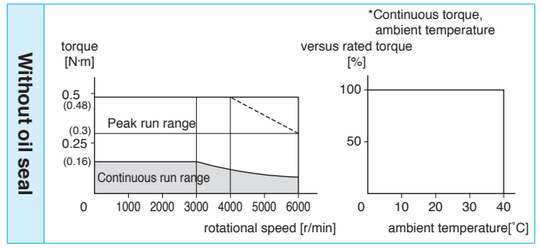
• Permissible load (For details, refer to P.104)

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

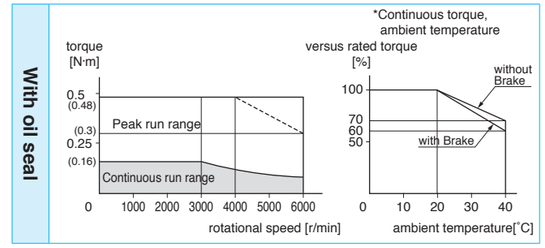
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.30.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has “E” is “positioning type”.
Detail of model designation, refer to P.11.

Torque characteristics (at AC200V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

Without oil seal



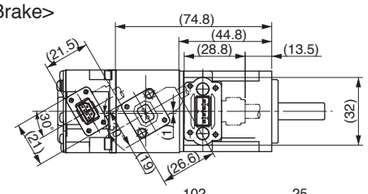
With oil seal



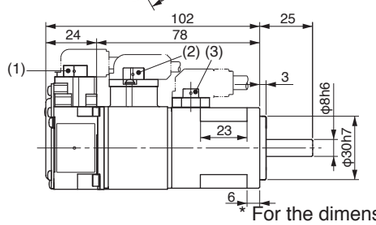
Dimensions

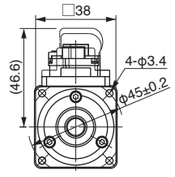
<With Brake>

Mass (kg)/ 0.53

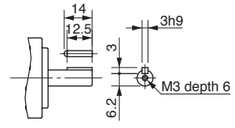


(1) Encoder connector
(2) Brake connector
(3) Motor connector





Key way dimensions



* For the dimensions of 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.

Motor Specifications 100V MSME 100W [Low inertia, Small capacity]

Specifications

			AC100V	
Motor model *1		MSME	011G1□	011S1□
Applicable driver *2	Model No.	A5 series	MADHT1107	
		A5E series	MADHT1107E	
	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 ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

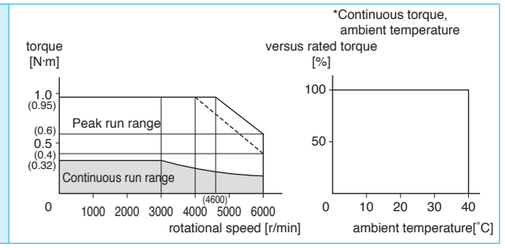
• Permissible load (For details, refer to P.104)

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

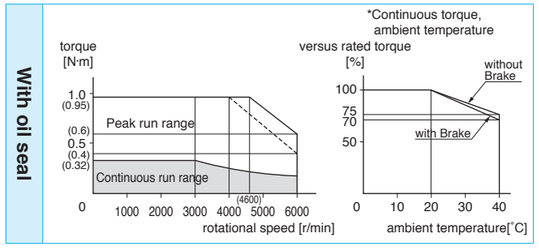
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.30.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has “E” is “positioning type”.
Detail of model designation, refer to P.11.

Torque characteristics (at AC100V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

Without oil seal



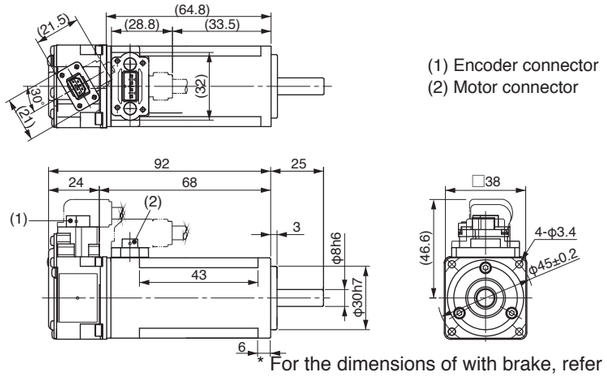
With oil seal



Dimensions

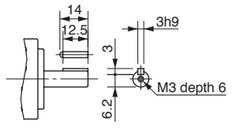
<Without Brake>

Mass (kg)/ 0.47



(1) Encoder connector
(2) Motor connector

Key way dimensions



* For the dimensions of 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.

Motor Specifications 200V MSME 100W [Low inertia, Small capacity]

Specifications

			AC200V	
Motor model *1		MSME	012G1□	012S1□
Applicable driver *2	Model No.	A5 series	MADHT1505	
		A5E series	MADHT1505E	
	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 ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

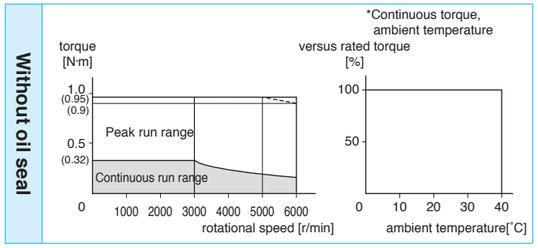
• Permissible load (For details, refer to P.104)

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

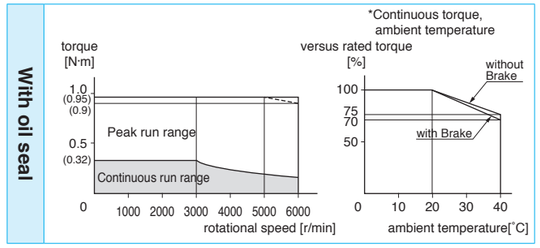
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.30.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has “E” is “positioning type”.
Detail of model designation, refer to P.11.

Torque characteristics (at AC200V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

Without oil seal



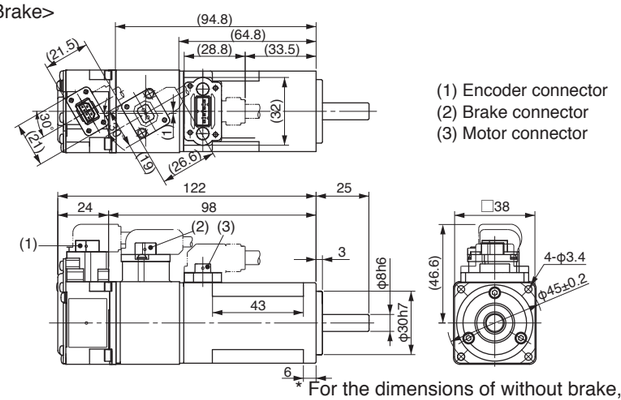
With oil seal



Dimensions

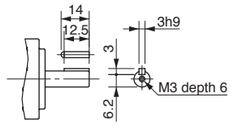
<With Brake>

Mass (kg)/ 0.68



(1) Encoder connector
(2) Brake connector
(3) Motor connector

Key way dimensions



* For the dimensions of 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.

Motor Specifications 100V MSME 200W [Low inertia, Small capacity]

Specifications

			AC100V	
Motor model *1		MSME	021G1□	021S1□
Applicable driver *2	Model No.	A5 series	MBDHT2110	
		A5E series	MBDHT2110E	
	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 ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

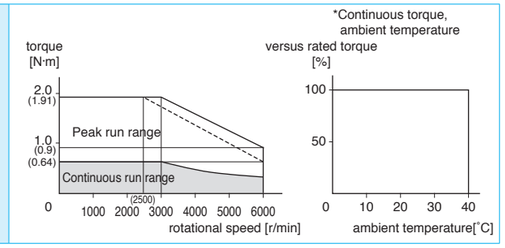
• Permissible load (For details, refer to P.104)

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

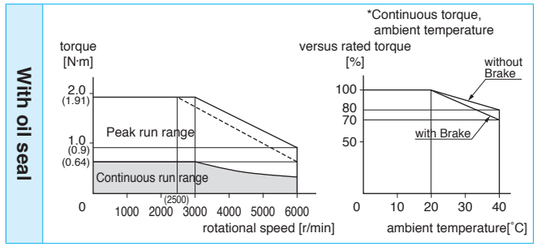
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.30.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has "E" is "positioning type".
Detail of model designation, refer to P.11.

Torque characteristics (at AC100V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

Without oil seal



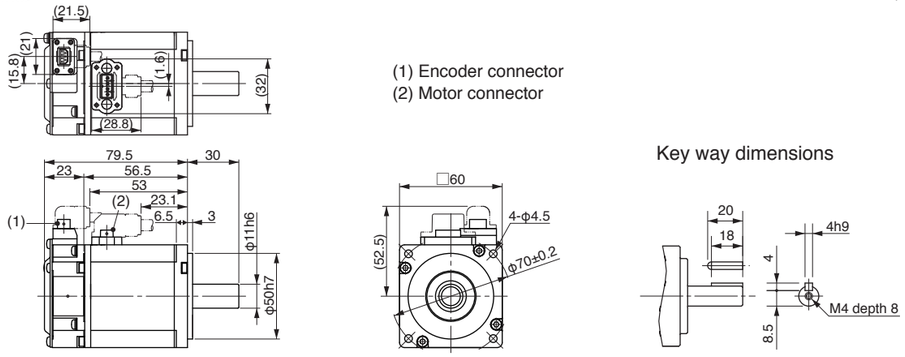
With oil seal



Dimensions

<Without Brake>

Mass (kg)/ 0.82



(1) Encoder connector
(2) Motor connector

Key way dimensions

* For the dimensions of 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.

Motor Specifications 200V MSME 200W [Low inertia, Small capacity]

Specifications

			AC200V	
Motor model *1		MSME	022G1□	022S1□
Applicable driver *2	Model No.	A5 series	MADHT1507	
		A5E series	MADHT1507E	
	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 ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

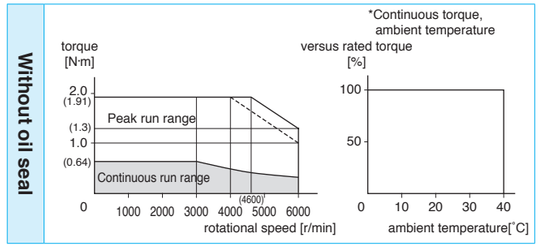
• Permissible load (For details, refer to P.104)

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

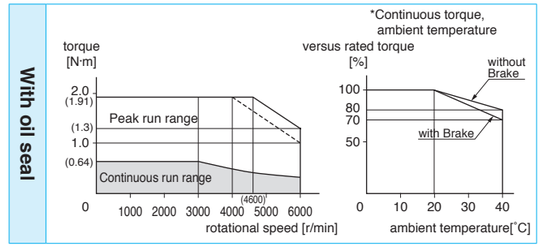
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.30.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has "E" is "positioning type".
Detail of model designation, refer to P.11.

Torque characteristics (at AC200V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

Without oil seal



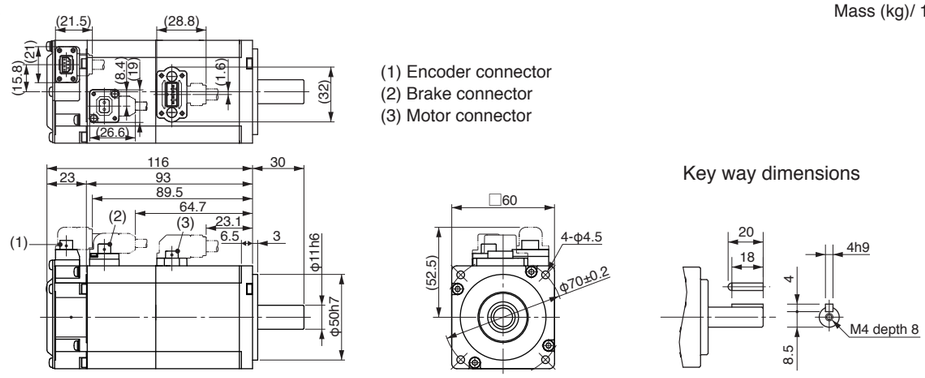
With oil seal



Dimensions

<With Brake>

Mass (kg)/ 1.30



(1) Encoder connector
(2) Brake connector
(3) Motor connector

Key way dimensions

* For the dimensions of 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.

Motor Specifications 100V MSME 400W [Low inertia, Small capacity]

Specifications

			AC100V	
Motor model *1		MSME	041G1□	041S1□
Applicable driver *2	Model No.	A5 series	MCDHT3120	
		A5E series	MCDHT3120E	
	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)	6000	
Moment of inertia of rotor ($\times10^{-4}$kg·m^2)	Without brake		0.26	
	With brake		0.28	
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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

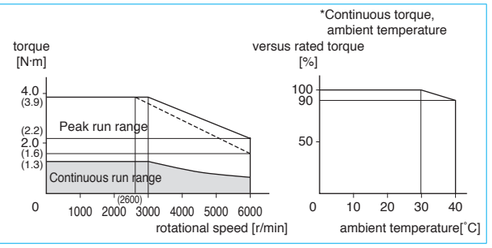
• Permissible load (For details, refer to P.104)

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

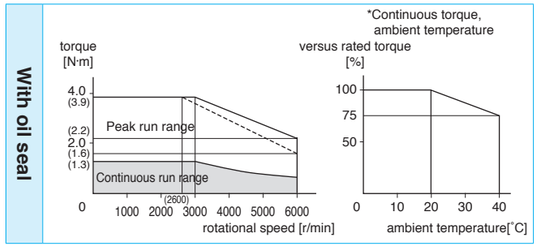
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.31.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has "E" is "positioning type".
Detail of model designation, refer to P.11.

Torque characteristics (at AC100V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

Without oil seal



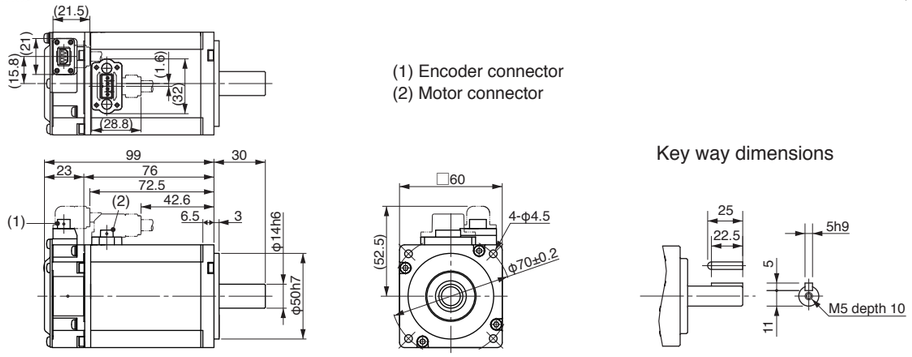
With oil seal



Dimensions

<Without Brake>

Mass (kg)/ 1.2



(1) Encoder connector
(2) Motor connector

Key way dimensions

* For the dimensions of 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.

Motor Specifications 200V MSME 400W [Low inertia, Small capacity]

Specifications

			AC200V	
Motor model *1		MSME	042G1□	042S1□
Applicable driver *2	Model No.	A5 series	MBDHT2510	
		A5E series	MBDHT2510E	
	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) 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 ($\times10^{-4}$kg·m^2)	Without brake		0.26	
	With brake		0.28	
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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

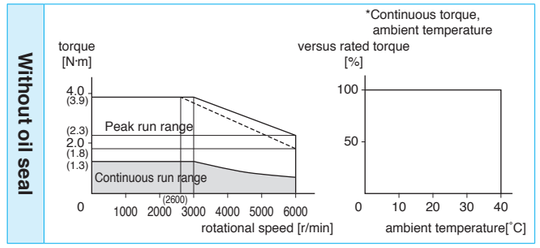
• Permissible load (For details, refer to P.104)

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

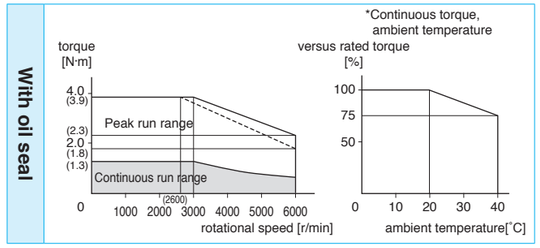
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.30.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has "E" is "positioning type".
Detail of model designation, refer to P.11.

Torque characteristics (at AC200V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

Without oil seal



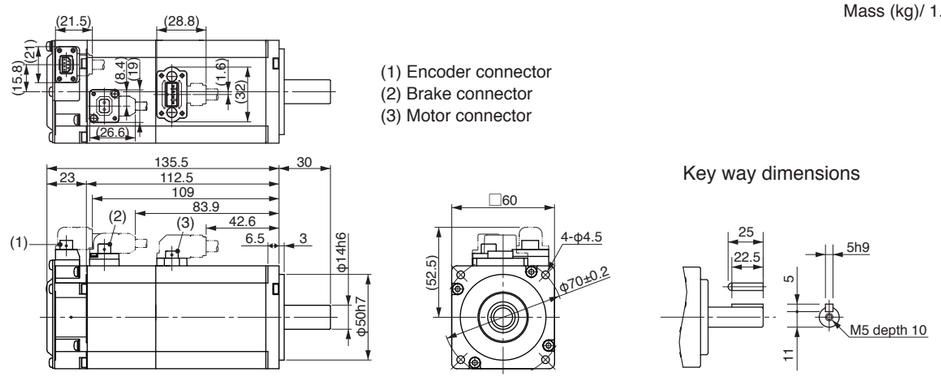
With oil seal



Dimensions

<With Brake>

Mass (kg)/ 1.7



(1) Encoder connector
(2) Brake connector
(3) Motor connector

Key way dimensions

* For the dimensions of 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.

Motor Specifications 200V MSME 750W [Low inertia, Small capacity]

Specifications

			AC200V	
Motor model *1		MSME	082G1□	082S1□
Applicable driver *2	Model No.	A5 series	MCDHT3520	
		A5E series	MCDHT3520E	
	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 ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

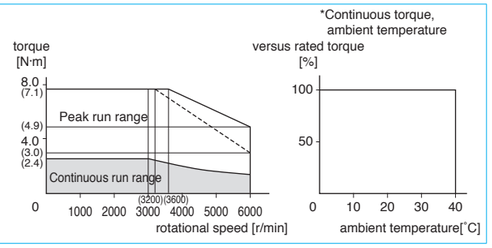
• Permissible load (For details, refer to P.104)

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

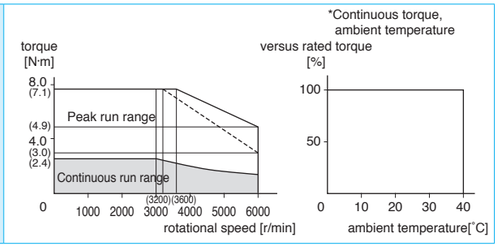
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.31.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has "E" is "positioning type".
Detail of model designation, refer to P.11.

Torque characteristics (at AC200V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

Without oil seal

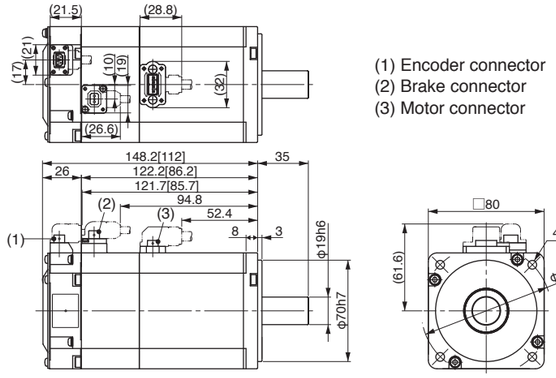


With oil seal



Dimensions

<With Brake>



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

(1) Encoder connector
(2) Brake connector
(3) Motor connector

Key way dimensions

* Figures in [ ] represent the dimensions of 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.

Motor Specifications 200V MSME 1.0kW [Low inertia, Middle capacity]

Specifications

			AC200V	
Motor model *1		MSME	102G1□	102S1□
Applicable driver *2	Model No.	A5 series	MDDHT5540	
		A5E series	MDDHT5540E	
	Frame symbol		D-frame	
Power supply capacity (kVA)			1.8	
Rated output (W)			1.0	
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	
	DV0P4284		No limit Note)2	
Rated rotational speed (r/min)			3000	
Max. rotational speed (r/min)			5000	
Moment of inertia of rotor ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

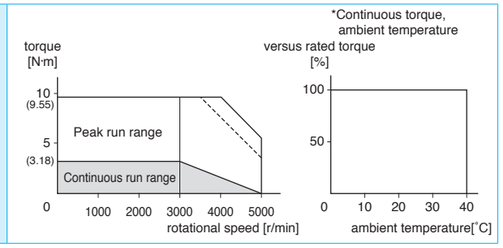
• Permissible load (For details, refer to P.104)

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

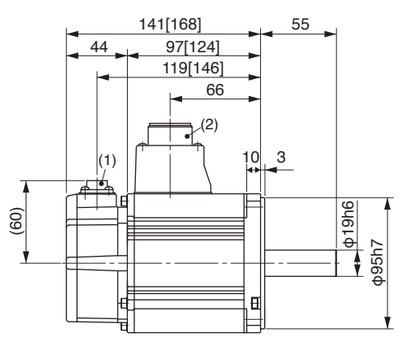
• For details of Note 1 to Note 5, refer to P.104.
• Dimensions of Driver, refer to P.32.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has "E" is "positioning type".
Detail of model designation, refer to P.11.

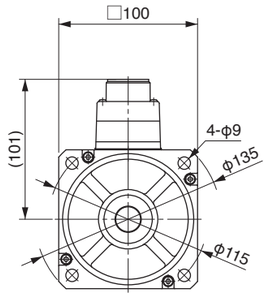
Torque characteristics (at AC200V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

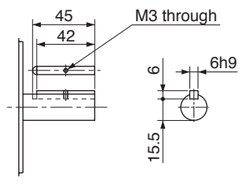
With oil seal



Dimensions







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

Key way dimensions

(1) Encoder connector
(2) Motor/Brake connector

* Figures in [ ] represent the dimensions of 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.

Motor Specifications 200V MSME 1.5kW [Low inertia, Middle capacity]

Specifications

			AC200V	
Motor model *1		MSME	152G1□	152S1□
Applicable driver *2	Model No.	A5 series	MDDHT5540	
		A5E series	MDDHT5540E	
	Frame symbol		D-frame	
Power supply capacity		(kVA)	2.3	
Rated output		(W)	1.5	
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 ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

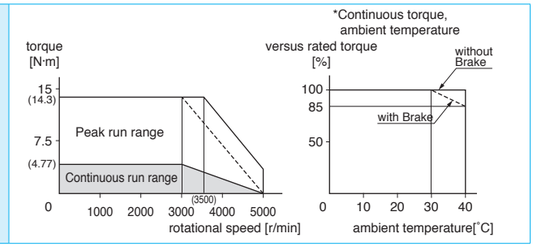
• Permissible load (For details, refer to P.104)

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.104.
• Dimensions of Driver, refer to P.32.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has "E" is "positioning type".
Detail of model designation, refer to P.11.

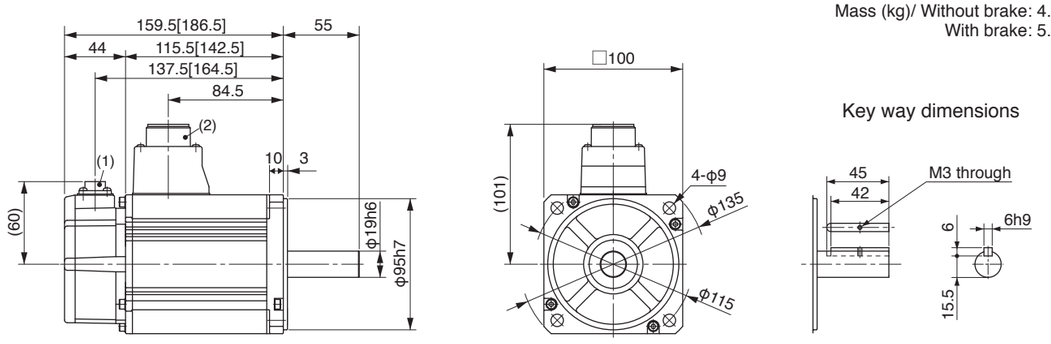
Torque characteristics (at AC200V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

With oil seal



Dimensions

Mass (kg)/ Without brake: 4.4
With brake: 5.4



(1) Encoder connector
(2) Motor/Brake connector

* Figures in [ ] represent the dimensions of 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.

Motor Specifications 200V MSME 2.0kW [Low inertia, Middle capacity]

Specifications

			AC200V	
Motor model *1		MSME	202G1□	202S1□
Applicable driver *2	Model No.	A5 series	MEDHT7364	
		A5E series	MEDHT7364E	
	Frame symbol		E-frame	
Power supply capacity		(kVA)	3.3	
Rated output		(W)	2.0	
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 ($\times10^{-4}$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		1,048,576	131,072

• Brake specifications (For details, refer to P.105)
(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

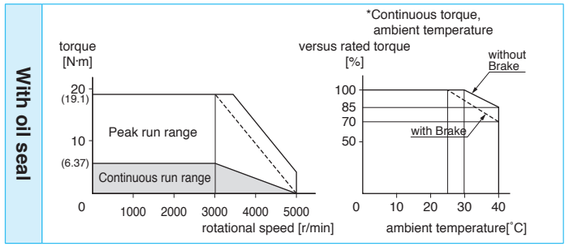
• Permissible load (For details, refer to P.104)

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.104.
• Dimensions of Driver, refer to P.33.
*1 Rotaly encoder specifications: □
*2 The product that the end of driver model designation has "E" is "positioning type".
Detail of model designation, refer to P.11.

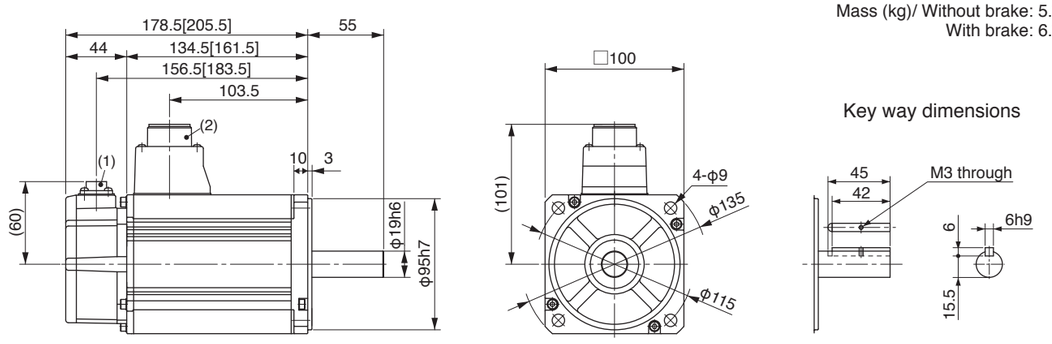
Torque characteristics (at AC200V of power voltage <Dotted line represents the torque at 10% less supply voltage.>)

With oil seal



Dimensions

Mass (kg)/ Without brake: 5.3
With brake: 6.3



(1) Encoder connector
(2) Motor/Brake connector

* Figures in [ ] represent the dimensions of 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.