## **Safety Precautions**

· Important Notes on exporting this product or equipment containing this product;

If the end-user or application of this product is related to military affairs or weapons, its export may be controlled by "Foreign Exchange and Foreign Trade Control Law" of Japan where export license will be required before product can be exported from Japan

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

Repair	Consult to the dealer from whom you have purchased this product for details of repair work. When the product is incorporated to the machine you have purchased, consult to the machine manufacturer or its dealer.
URL	Electric data of this product (Instruction Manual, CAD data) can be download from the following web site; industrial.panasonic.com/ac/e/

• Contakut to

## Panasonic Corporation,

**Electromechanical Control Business Division** 1-1 Morofuku 7-chome, Daito, Osaka 574-0044, Japan ©Panasonic Corporation 2019

The contents of this catalog apply to the products as of March 2019.

# Panasonic

Panasonic

AC

Servo

Motor

Ø

Driver

<MINAS

A6

family, MINAS

ш

series>

2019 / 3



## **AC Servo Motor & Driver** MINAS A6 family / MINAS E series

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





More compact, more faster and more easy-to-use Servomotors

that meet the demands of the present age.

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



## Robots

A robot is required to operate stably despite arm posture and position, workload and other conditions changing from moment to moment.

The MINAS A6 family assures stable operation by suppressing effects of load to a minimum using "adaptive load control."

## Processing machinery

With metal processing machine, it is very difficult to render mirror-like finishing on a polygonal body. The A6 family realizes "3.2 kHz frequency response" to improve feedback

responsiveness, thus enabling mirror surfacing without generating lines or streaks.

## Component mounting machines

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



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### Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

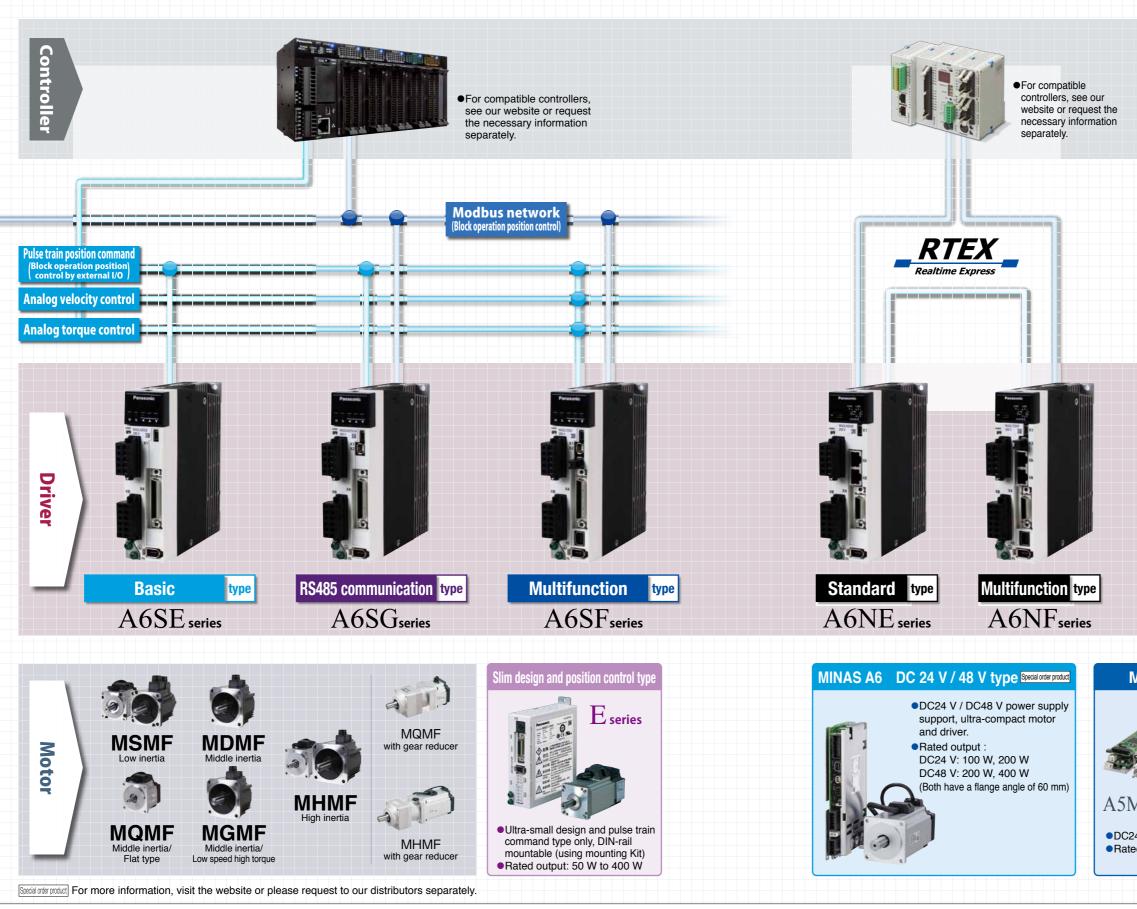
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# Servomotors that flexibly and effectively fit into

# various system configurations MII



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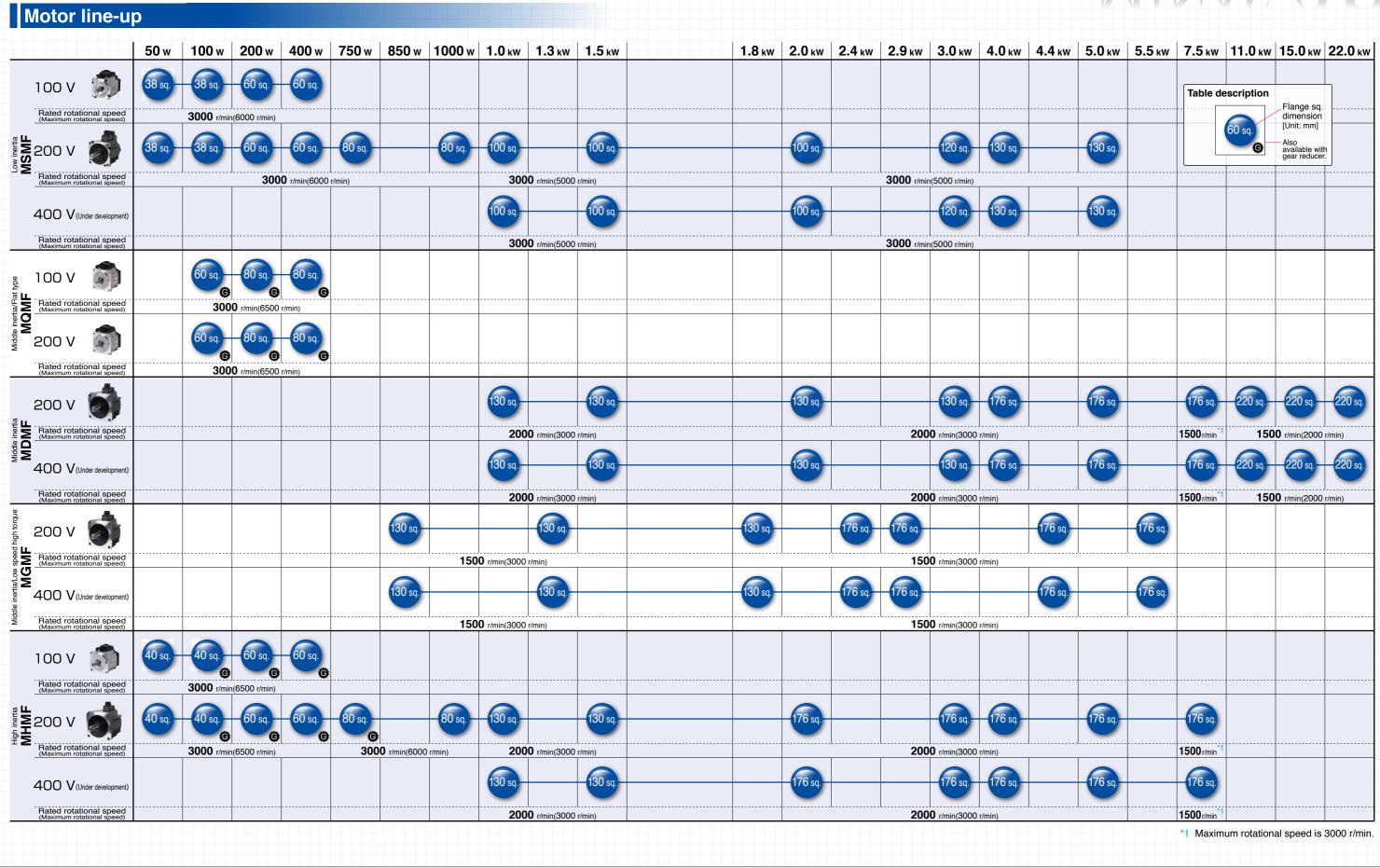
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# It is MINAS A6 Family lineup that meets the

# manufacturing industry needs. M



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# It is MINAS A6 Family lineup that meets the

# manufacturing industry needs. MINA

**Rotary motor** 

**Rotary motor** 

Standard

type

A6BE series

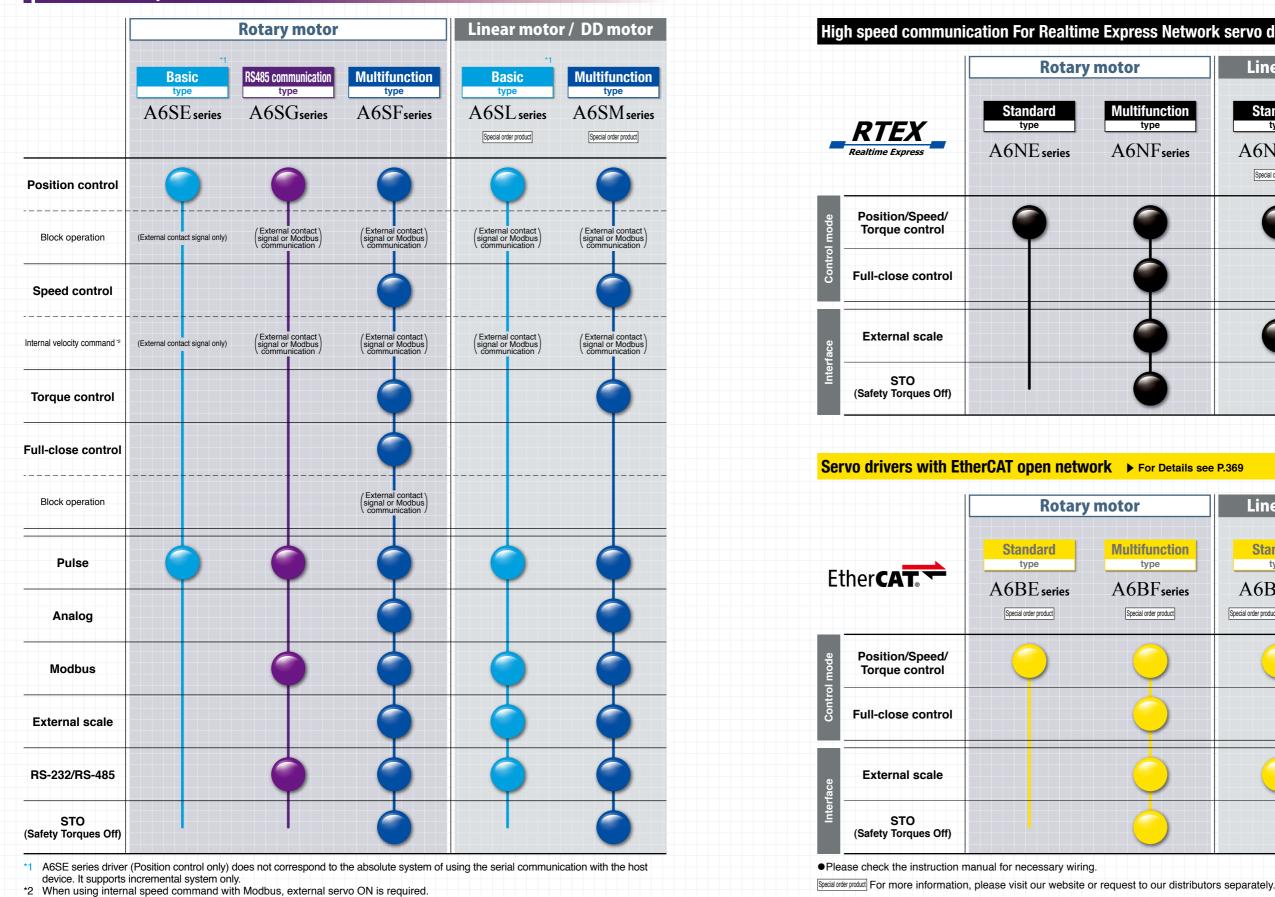
Special order product

Standard

type

A6NE series

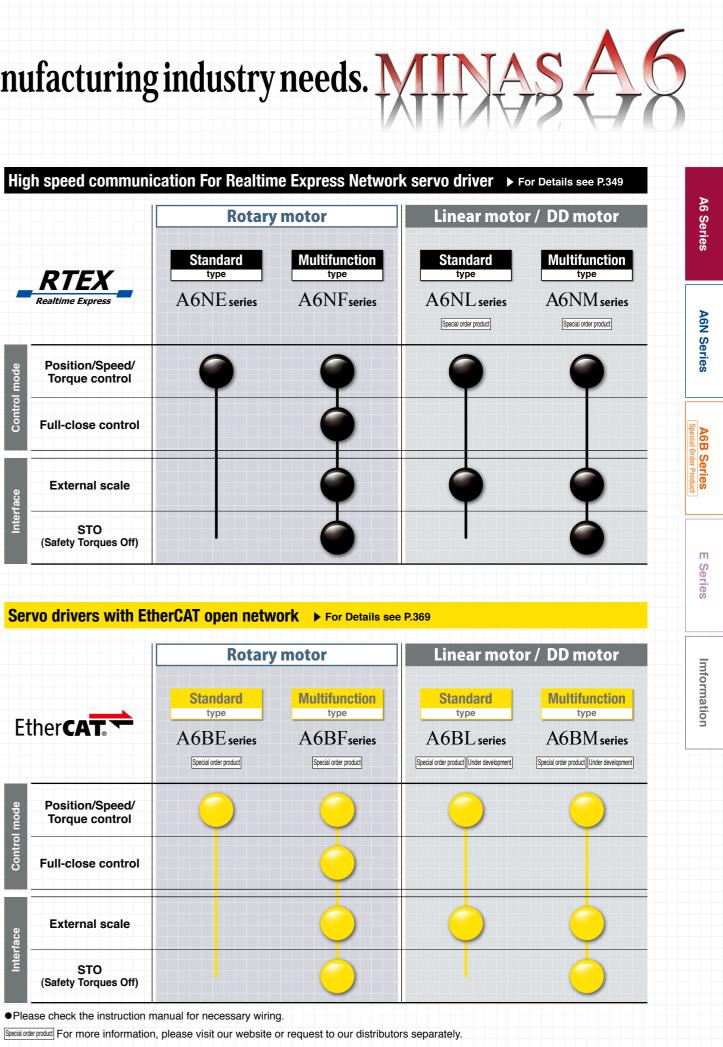
## Driver line-up



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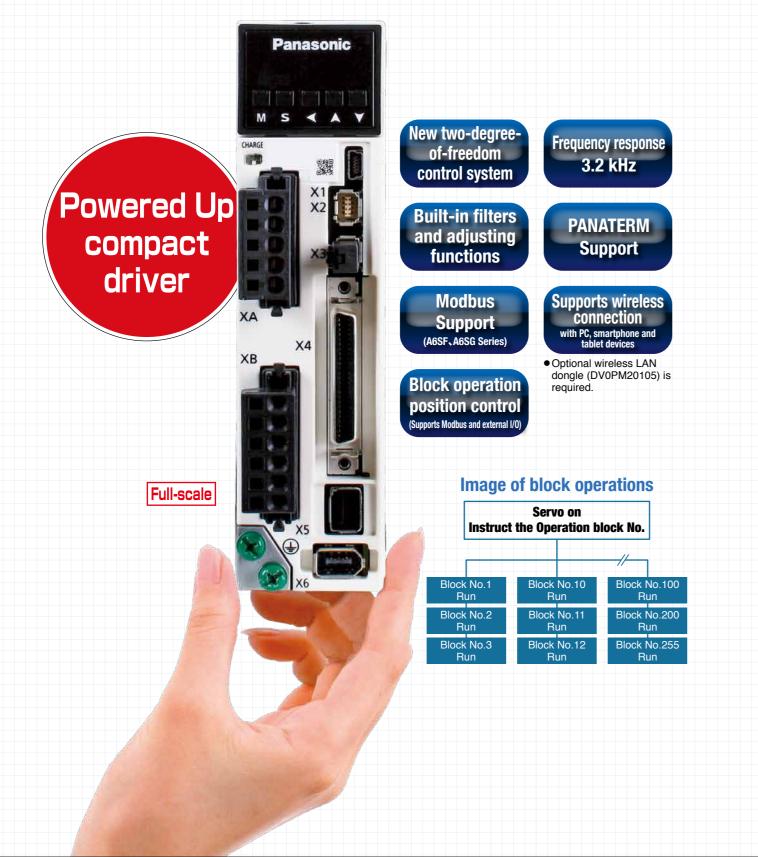
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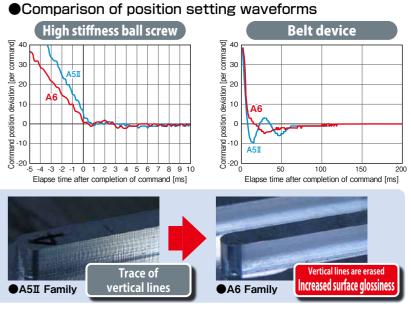
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# Swifter, smarter and easier to use



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

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



Example of operation with processing machine A mirror finish is obtained even if a process that tends to cause streaking.

# Easy and quick setting, shortening conventional settling time by approx. 64%."

Newly developed fit gain function substantially reduces adjustment time. Adaptive notch filter and various gains can be automatically set and adjusted. %1 Comparison with conventional product A5II family

### (Measured or A5II Fa

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## Realized 3.2 kHz frequency response to improve productivity

Realizes 3.2 kHz frequency response. At 139% that of conventional models \*1, it enables high-speed operation and improves productivity. ※1 Comparison with conventional product A5II family

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Measured on low stiffness resonant mechanism) A5II Family 17 ms	Ball screw settling time 0 ms The above is a measure based on our test environment
Fit gain adjustment window	Automatically proposes     various settings      Recommendation setting     Recommendation setting Manual setting     The end resultbecomes as follows. Please choose recommendation     Adjustment objective Full search, Response preferentially, Midd     Select Recommendation     Rigidith, Command Stabilitation
	Sendo Rocommendation Highly response[ma] time[ms] P Minimum stabilizati
10	3.2 kHz
vity % that	A6 Family Conventional
Speed	2000 3000 Frequency (Hz)

# **Reduced maintenance work**

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

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

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

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

protective lip) are not mounting-compatible with A5 Family models. Applicable oil seals

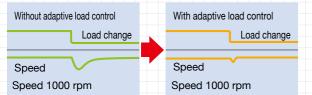
Flange size	Motor type	With o	il seal	,	With oil seal (w	ith protective lip)
00	MSMF	O			No s	etting
80 mm or less	MHMF, MQMF	O	Made of nitrile rubber (NBR)	Ô	Made of	Not mounting-compatible with A5 family products
100 mm or more	All Type	O		Ô	fluororubber	Mounting-compatible with A5 family products

# **Other driver functions**

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### Adaptive load control

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

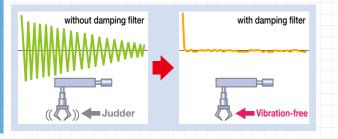


### Friction torque compensation

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

### Manual/Auto damping filter

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



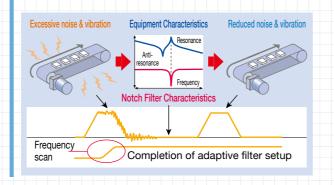
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### Manual/Auto notch filter

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

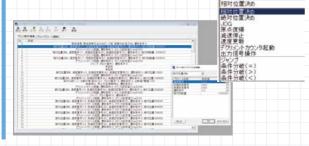
lip" that prevents dust and oil pen

Our notch filters automatically detect vibration and provide simple auto-setting. These notch filters greatly reduce noise and vibration caused by equipment resonance and respond quickly. The A6 family is equipped with 5 notch filters with frequencies settable from 50 Hz to 5000 Hz. Depth can be individually adjusted within this range. (Two of the filters share automatic settings.)

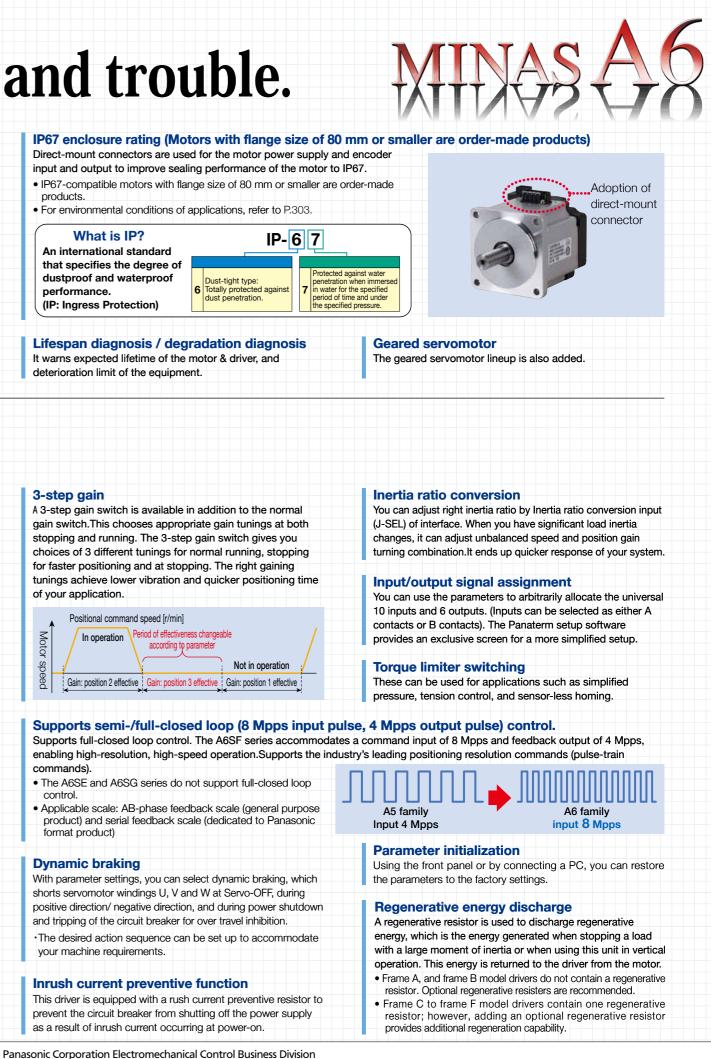


### Block operation function

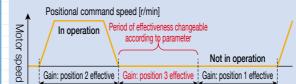
255 block patterns can be created. Easy control is possible because the instruction can be given to block No. by Modbus (RS232, RS485) or interface (IO) signal.



# and trouble.



# It warns expected lifetime of the motor & driver, and



shorts servomotor windings U, V and W at Servo-OFF, during positive direction/ negative direction, and during power shutdown and tripping of the circuit breaker for over travel inhibition.

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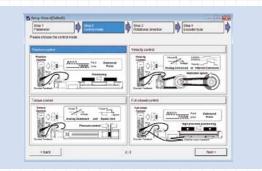
# Multifunctional software for quick adjustment support

## **PANATERM** set-up support software

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

### Setup wizard

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

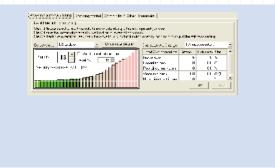


### The fit gain function for setting Two-degree-of-freedom control.

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



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



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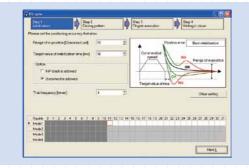
### **Trial run**

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

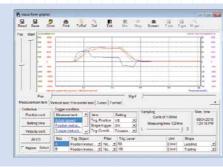


### Fit gain

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



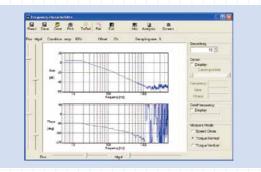
### Significant increase of measuring objects Multi-functional waveform graphic



Please download from our web site and use after install to the PC. https://industrial.panasonic.com/ww/products/motors-compressors/fa-motors/ac-servo-motors/minas-a5-panaterm

### Frequency characteristics measurement function

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



### 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.



Other features It has convenient functions such as motor / driver information such as load factor, power supply voltage, driver temperature etc, logging function capable of recording interface recording, display function of non-rotating factors etc ●Deterioration diagnosis ●Block action editor / monitor (A6SE, A6SG, A6SF series) ●Battery refresh ●Object editor (A6BE, A6BF series)

<ul> <li>Hardware con</li> </ul>	nfiguration	
Personal	CPU	800 MHz or more
computer	Memory	System memory 512 MB or m
	Hard disk capacity	Vacancy of 512MB or more re-
	OS	Windows <sup>®</sup> Vista SP1 (32 bit), V Windows <sup>®</sup> 10 (32 bit, 64 bit)
	Serial communication function	USB port, COM port (Commune * A COM port is required to use RS
Display	Resolution	1024 × 768 pix or more
	Number of colors	24 bit colors (TrueColor) or mo
<caution> Thi</caution>	s software is applicabl	e only to A5 family, A6 family. To a

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### **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.

Name	Value	Unit	Status
Power supply on integrated time	3.0	h	
Driver temperature	34	degrees	
Number of times of irruptive resistance	0	times	
Number of times ob DB relay changing	0	times	
Fan operation time	0.0	h	
Fan life time integrated value	0.0	%	
Condenser life time integrated value	0.0	36	
Mekeruses	0		

### **Deterioration diagnosis**

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



nore Graphics memory 32 MB or more

ecommended

Windows<sup>®</sup> 7 (32 bit, 64 bit), Windows<sup>®</sup> 8 (32 bit, 64 bit), Japanese, English, Chinese (Simplified), Korean version

inication speeds: 2400 bps to 115200 bps)

S232 communications. A 9600 bps or higher baud rate is recommended

### ore

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apply this software to A, AIII, E or A4 series, consult our distributors.

# Adjustment of the industrial machinery is possible by smartphone. **Contributing to IoT by remote support.**



# **Wireless connection with PC, smartphone and** other devices by only connecting to servo driver.

For initial setting of the servo driver, a USB mini-B cable (communication cable) is required.

## Wireless LAN Dongle DV0PM20105 (Option)

Newly developed "wireless LAN dongle" which connects AC servo driver wirelessly with PC, smartphone, tablet devices etc. It has become surprisingly easy to adjust automatic drone carriers and devices installed at heights, which had previously been difficult to connect by wire. In addition, we plan to develop a "remote support service" that can adjust and monitor the status of equipment installed overseas in real time via the Internet.

## Wireless connection to the servo driver. It can be adjusted from smartphones and tablets, even for devices where wired connections are difficult.

## Connect to the internet and get the IoT servo driver. Equipment at overseas factories also gets real-time adjustment support from Japan. [Under development]

 Specifications DC 5V (Supplied from USB) 500 mA Power supply Max.2500 mW Power consumption Outline dimensions 9.9 mm (width) x 13 mm (height) x 39.4 mm (depth) Weight Appr. 4 g Ambient temperature for use 0 °C – 55 °C (Shall be no freeze Ambient humidity for use 20 %RH – 85 %RH (Shall be no freeze) USB mini-B Interface Available Countries\* Japan, China, United States of America\*, Korea\*, Taiwan\* Standards IEEE802.11b, IEEE802.11g, IEEE802.11n

\*1 The use in a country that is not listed, will be violation of the law and regulations of that country \*2 This is the theoretical speed and the actual communica- tion speed differs due to the usage circumstances or the connected equipment \* Coming soon

Please download setup support software "PANATERM" and setup support software (app) from the home page (https://industrial.panasonic.com/ww/products/motors-compressors/fa-motors /ac-servo-motors/minas-a5-panaterm)

 Setup support software (app) for smartphones and tablet devices is charged. •If Android smartphones and tablet devices are in an environment where PANATERM operates, and if USB host connection is possible, wired connection using a USB cable is also possible.

### **Cautions when using Wireless LAN Dongle**

In the frequency band for use of this equipment, the in-plant radio stations for the mobile identification which is used on the manufacturing lines in factories (Radio station that needs the license), specified low power radio stations (Radio station that needs no license) and amateur radio stations (Radio station that needs the license) are operated in addition to the industrial/scientific/medical equipment like microwave ovens.

- 1. Check that the in-plant radio stations for the mobile identification, specified low power radio stations and amateur radio stations are not operated in the vicinity prior to use this equipment.
- 2. If harmful radio wave interference occurred from this equipment to the in-plant radio stations for the mobile identification, immediately change the location or stop the use of electric wave and then contact our company (Described on back cover) to discuss the action to avoid interference (e.g. the installation of partitions).
- 3. If you have any problem, for example; when harmful radio wave interference occurred from this equipment to the in-plant radio stations for the mobile identification or the amateur radio stations, please contact our company (Described on back cover).

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A6 Series

A6N Series

A6B

Series

Series

Imformation

Frequency range	2.412 GHz – 2.472 GHz
Chan-nels (Center frequency)	1 – 13 ch
Data transfer speed	IEEE802.11b: Max.11 Mbps
(Value of standard <sup>*2</sup> )	IEEE802.11g: Max.54 Mbps
	IEEE802.11n: Max.300 Mbps
Access system	Infrastructure mode
Security	WPA-PSK (TKIP/AES)/
	WPA2-PSK (TKIP/AES)
Max. transmission	Indoors: Appr. 20 m (Varies depending
distance (Prospect)	on the installation circumstances)
Applicable equipment	MINAS A6 family (Since October 2016 production)

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# Absolute system can be configured without the battery.

## Battery-less absolute encoder motor is coming soon

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

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

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

# Battery-less absolute encoder motor list

50 W       100 W       200 W       400 W       750 W       1000 W       1.0 kW       1.5 kW       2.0 kW       3.0 kW       4.0 kW       5.0 kW         Low inertia MSMF       000 V			80 mm	sq. or les	s Leadw	ire type		100 mm	sq. or more	Encoder	connector (	Small size	JN2) type
MSMF         (200 y)         (		50 W	100 W	200 W	400 W	750 W	1000 W	1.0 kW	1.5 kW	2.0 kW	3.0 kW	4.0 kW	5.0 kW
MQMF         (200 y)         (		100 V 200 V		(100 V) 200 V		200 V	200 V	200 V	200 V	200 V	200 V	200 V	200 V
MDMF         Table description         (200 V)         (200 V)				100 V 200 V	100 V 200 V								
Middle inertia         Wolkage         \$200 y         1.3 kW         1.3 kW         2.4 kW         4.4 kW           MGMF         200 y			60					200 V	200 V	200 V	200 V	200 V	200 V
								$\square$	$\frown$	$\neg$	$\sim$		$\frown$
	•					200 V	200 V	200 V	200 V	200 V	200 V	200 V	200 V

### DC 24 V / 48 V type Special order product

DC24 V / DC48 V power supply support, ultra-compact motor and driver. Rated output : DC24 V: 100 W, 200 W

DC48 V: 200 W, 400 W (Both have a flange size of 60 mm)





# **Compliance** with international st



			Driver	INIOLOI		
	EMC Directiv	es	EN55011 EN61000-6-2 EN61000-6-4 EN61800-3	_		
EU Directives	Low-Voltage Directives		EN61800-5-1 EN50178	EN60034-1 EN60034-5		
EU Directives	Machinery Di Functional sa			_		
UL Standards			UL508C(E164620)	UL1004-1, UL 1004-6 (E327868)		
CSA S	tandards		C22.2 No.274	C22.2 No.100		
Radio Waves Act	(South Korea) (	(KC) <sup>*</sup> 2	KN11 KN61000-4-2,3,4,5,6,8,11	-		
IEC : International Electrotechnical Comm UL : Underwriters Laboratories Safety parameters		nission	EN : Europaischen Normen CSA : Canadian Standards Associa	EMC : Electromagnetic Compatibility		
Surety parameters		With dia	gnosis by EMD	Without diagnosis by EMD		
Safety level		EN6150	8 (SIL3) 1 (SILCL3)	EN61508 (SIL2) EN62061 (SILCL2)		
Performance level		ISO138	49-1 PL e (Cat.3)	ISO13849-1 PL d (Cat.3)		
Safety function		EN6180	0-5-2 (SIL 3, STO)	EN61800-5-2 (SIL 2, STO)		
Dangerous failure rate	e per unit time	PFH = 1.34 × 10 <sup>8</sup> (% SIL3 = 13.4 %) <for and="" g="" h="" size=""></for>		<for a,b,c,d,e,f="" size=""> PFH = 1.40×10<sup>-8</sup> (% SIL2 = 1.40 %) <for and="" g="" h="" size=""> PFH = 1.85×10<sup>-8</sup> (% SIL2 = 1.85 %)</for></for>		
Dangerous side avera	ge failure time		: High (100 years)	MTTFd : High (100 years)		
Average self-diagnosi	s rate	DC : Me	edium	DC : Low		
Mission time		15 year	S	15 years		
<ul> <li>*1 A6SE, A6SG, A6NE standard.</li> <li>*2 Information related to</li> </ul>	and A6BE series o the Korea Rad a Class A comme	s doesn't o lio Law	ions of the destination country. correspond to the functional safety dcasting radio wave generator not	A 급 기기 (업무용 방송통신기자제) 이 기기는 업무용(A 급) 전자파적합기기로서 판마 또는 사용자는 이 점을 주의하시기 바라며, 가정: 지역에서 사용하는 것을 목적으로 합니다. (대상기종 : Servo Driver )		
The user and dealer		e of this fa	ict.			

s not an object of china compulsory certification (CCC).

### Low noise, compliant with EMC directives

Radiated noise is minimized to meet EMC directives and to support international standards.

### Compliance with EU safety standards.

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

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W	UL : Underwriters La
)	Safety paramete
	Safety level
	Performance level
	Safety function
	Dangerous failure
	Dangerous side av
	Average self-diagr
	Mission time
	When export this p     *1 A6SE, A6SG, A6     standard.
	*2 Information relate This servo driver designed for hon The user and dea
	This products is

h 🖡	XINAS	78
tan	dards	
And APPROVED	(A6SF series)	
Driver	Motor	

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	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.
	<ul> <li>Excluding the single-phase 100-V type.</li> </ul>
	<ul> <li>Please verify the actual compliance with your machine</li> </ul>
er	checking the F47 standard for voltage sag immunity.

### MINAS A6 series Motor Line-up

### Motor Line-up

	N	lotor	Rated output (kW)	Rated rotational speed (Max. speed) (r/min)	Rotary encoder 23-bit absolute	Enclosure	Motor lead-out configuration	Features	Applications
		80 mm sq. or less	0.050.10.20.40.751.0	3000 (6000)	0	IP65	Leadwire	<ul> <li>Small capacity</li> <li>Suitable for high speed application</li> </ul>	<ul> <li>Bonder</li> <li>Semicon- ductor production</li> </ul>
Low inertia	MSMF	80 mm sq. or less	0.05 0.1 0.2 0.4 0.75 1.0	3000 (6000)	0	IP67	Connector	Suitable for all applications	equipment · Packing machines etc
			1.01.52.03.0	3000 (5000)	0	IP67	Connector	<ul> <li>Middle capacity</li> <li>Suitable for the machines directly coupled with ball screw and high</li> </ul>	SMT machines Food machines LCD production
		100 mm sq. or more	4.0 5.0	3000 (4500)				stiffness and high repetitive application	production equipment etc
	MQMF	80 mm sq. or less	0.1 0.2 0.4	3000 (6500)	0	IP65	Leadwire	Small capacity     Flat type and suit- able for low stiffness machines with belt driven	<ul> <li>SMT machines</li> <li>Inserter machines</li> </ul>
	(Flat type)	80 mm sq. or less	0.1 0.2 0.4	3000 (6500)	0	IP67	Connector	Motors with gear reducers are also available. (See. P.293)	<ul> <li>Belt drive machines</li> <li>unloading robot</li> </ul>
Middle inertia	MDMF	130 mm sq. or more	1.01.52.03.04.05.0	2.0 3.0 2000 (3000) 4.0 5.0		IP67	Connector	Middle capacity     Suitable for low stiff-	<ul> <li>Conveyors</li> <li>Robots</li> <li>Machine</li> </ul>
Mi			7.5 11.0 15.0 22.0	1500 (3000) 1500 (2000)	0	(22.0 kW) ( : IP44 )	(22.0 kW (: Terminal)	ness machines with belt driven	tool etc
	MGMF (Low speed/ High torque type	130 mm sq. or more	0.85 1.3 1.8 2.4 2.9 4.4 5.5	1500 (3000)	0	IP67	Connector	<ul> <li>Middle capacity</li> <li>Suitable for low speed and high torque application</li> </ul>	<ul> <li>Conveyors</li> <li>Robots</li> <li>Textile machines etc</li> </ul>
			0.05 0.1 0.2 0.4 0.75 1.0	3000 (6500) 3000	0	IP65	Leadwire	Small capacity     Suitable for low stiffness machines with	· Conveyors
High inertia	MHMF	80 mm sq. or less	0.05 0.1 0.2 0.4	(6000) 3000 (6500) 3000	0	IP67	Connector	belt driven • Motors with gear reducers are also available. (See. P.293)	Robots     etc
High		80 mm sq. or less 80 mm sq. or less 130 mm sq. or more	0.75 1.0 1.0 1.5 2.0 3.0 4.0 5.0 7.5	(6000) 2000 (3000) 1500 (3000)	0	IP67	Connector	<ul> <li>Middle capacity</li> <li>Suitable for low stiffness machines with belt driven, and large load moment of inertia</li> </ul>	<ul> <li>Conveyors</li> <li>Robots</li> <li>LCD manufacturing equipment etc</li> </ul>
		o P.303 for protection	sys batt • Wh sys	tem (using m tery to the ab en using a ro tem (not usin	tary encoder as an ab ulti-turn data), connec solute encoder. tary encoder as an inc g multi-turn data), do r y for absolute encoder	t a remental not			

MHM High inertia (50 W to 7.5 kW) **③ Motor rated output** Symbol Rated output Symbol Rated output Symbol Rated output 50 W 5A 13 1.3 kW 4.4 kW 44 01 100 W 15 1.5 kW 50 5.0 kW 02 200 W 18 1.8 kW 55 5.5 kW 04 2.0 kW 75 7.5 kW 400 W 20 08 750 W 24 2.4 kW C1 11.0 kW 2.9 kW 0.85 kW 1000 W 29 C5 15.0 kW 09 (130 mm sq.) (80 mm sq.) 30 3.0 kW D2 22.0 kW 10 1.0 kW 40 4.0 kW 4 Voltage specifications 6 Design order Symbol Specifications Symbol Specifications 100 V Standard 1 200 V 2 100 V/ 200 V common <Note> Ζ (50 W only) When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder. **(5) Rotary encoder specifications** Symbol Format Pulse counts Resolution Wires 23-bit 8388608 L Absolute 7 ⑦ Motor specifications: IP67<sup>2</sup> 100 mm sq. to 220 mmsq. MSMF, MHMF, MDMF, MGMF Shaft Holding brake Oil seal Encoder terminal with With protective Up (Small size) (Large size)<sup>-3</sup> Symbol Key-way without with Round C 5 • ٠ • • C 6 ● • • C 7 • • •

MINAS A6 Series

Servo Motor

1) Type

Symbol

Refer to P.29 to P.42 for motor and driver combinations.

Туре

MSM Low inertia (50 W to 5.0 kW)

MQM Middle inertia (100 W to 400 W)

MDM Middle inertia (1.0 kW to 22.0 kW)

MGM Middle inertia (0.85 kW to 5.5 kW)

(2)

2 Series

(3)

Symbol Series name

F A6 family

С	8	•		•					
D	5	•			•	•		•	
D	6	•			•	•			•
D	7	•			•		•	•	
D	8	•			•		•		•
G	5		•	٠		٠		•	
G	6		•	•		•			•
G	7		•	•			•	•	
G	8		•	•			•		•
Н	5		•		٠	٠		•	
Н	6		•		•	•			
Н	7		•		•		•	•	
Н	8		•		•		•		•

															_					
			Μ	Α	D	L	Ν	1 5	5	S	Ε	*	* * *  Special specifications							
				1		2	3	4	)	6	$\bigcirc$									
1) Fra	me symb	loo			3 S	afety	/ Functi	on					(5) SL	ipply	y voltage sp	ecificat	ions			
Symbol	Frame	Symbol	Fram	ne	Sym	loc	Spec	ification	IS				Symbo	ol	Specification	ons				
MAD	A-Frame	MED	E-Fra	me	N	w	ithout the	safety	func	tion			1	5	Single phase 10	00 V 00				
MBD	B-Frame	MFD	F-Fra	me	Т	w	ith the sa	fety fun	ctior	n			3	3	3-phase 200 V					
MCD	C-Frame	MGD	G-Fra	me									5	5	Single/3-phase	200 V				
MDD	D-Frame	MHD	H-Fra	me	(4) N	lax. o	current	rating					6) <b>[/f</b>	spe	cifications	7) Cla	ssification of type			
					Sym	ool Cu	urrent rating	g Symb	ool C	Current	rating		Symbo							
(2) Ser	ies				0		6 A	9		80	A (				cification)	Symbol	Specification			
Symbol	Series	namo			1		8 A	A		100	A (				-	Basic type				
-					2		12 A	В		120	A (					E	(Pulse train only)			
L	A6 fa	mily			3		22 A	C		160	A (				S	F	Multi fanction type			
					4		24 A	E		240	A (		(Analog/Pulse)		F	(Pulse, analog, full-closed)				
				5		40 A	F		360	A (			G	RS485 communication type						
				8		60 A									u	(Pulse train only)				

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connect a battery for absolute encoder.

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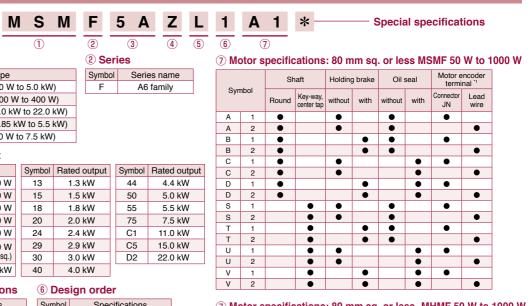
Servo Driver

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### Model Designation

4

•



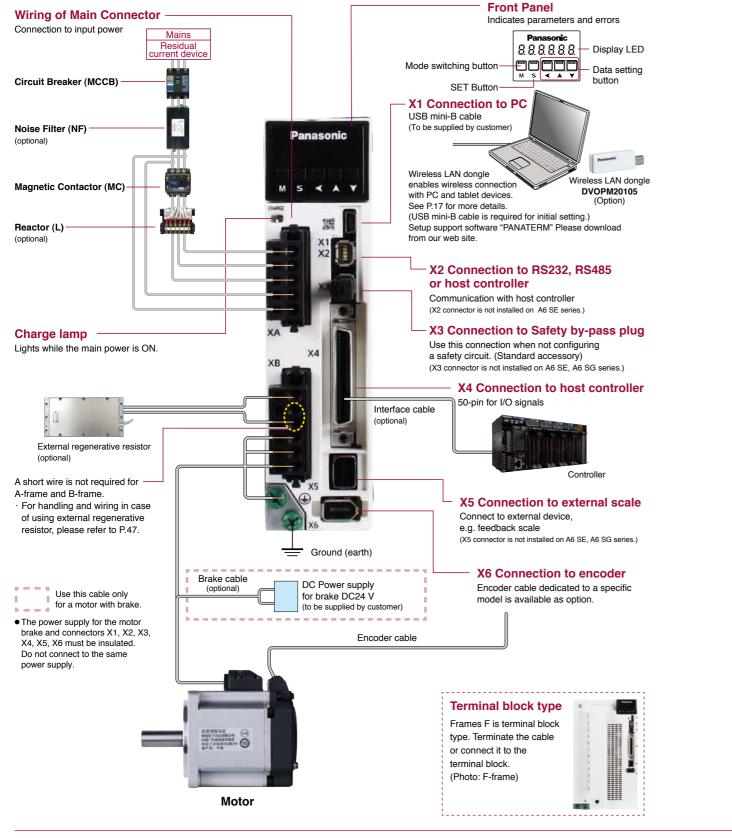
\* For combination of elements of model number, refer to Index P.448.

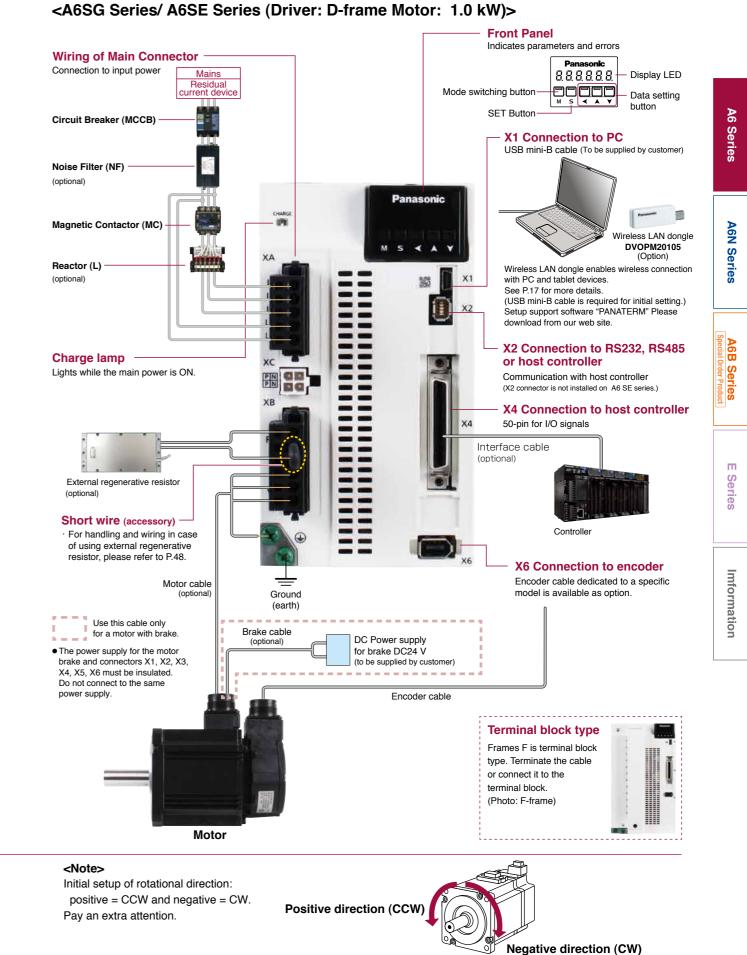
⑦ Motor specifications: 80 mm sq. or less MHMF 50 W to 1000 W MQMF 100 W to 400 W

	Shaft			Holding	g brake		Oil sea	I	Motor encoder terminal *1		
Sym	lod	Round	Key-way, center tap	without	with	without	with	With protective lip	Connector JN	Lead wire	
Α	1	•		•		•			•		
А	2	•		•		•				•	
В	1	•			•	•			•		
В	2	•			•	•				•	
С	1	•		•			•		•		
С	2	•		•			•			•	
С	3	•		•				•	•		
С	4	•		•				•		•	
D	1	•			•		•		•		
D	2	•			•		•			•	
D	3	•			•			•	•		
D	4	•			•					•	
S	1		•	•		•			•		
S	2		•	•		•				•	
Т	1		•		٠	•			•		
Т	2		•		٠	•				٠	
U	1		•	•			•		•		
U	2		•	•			•			•	
U	3		•	•				•	•		
U	4			•						۲	
V	1		•		٠		•		•		
V	2		•		•		•			•	
V	3		•		•			•			
V	4		•		•			•		•	

\*1 Connector type: IP67, Lead wire type: IP65 \*2 22.0 kW: IP44 \*3 Connector on the motor side encoder. (Also applicable to screwed type.) A6 Series

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



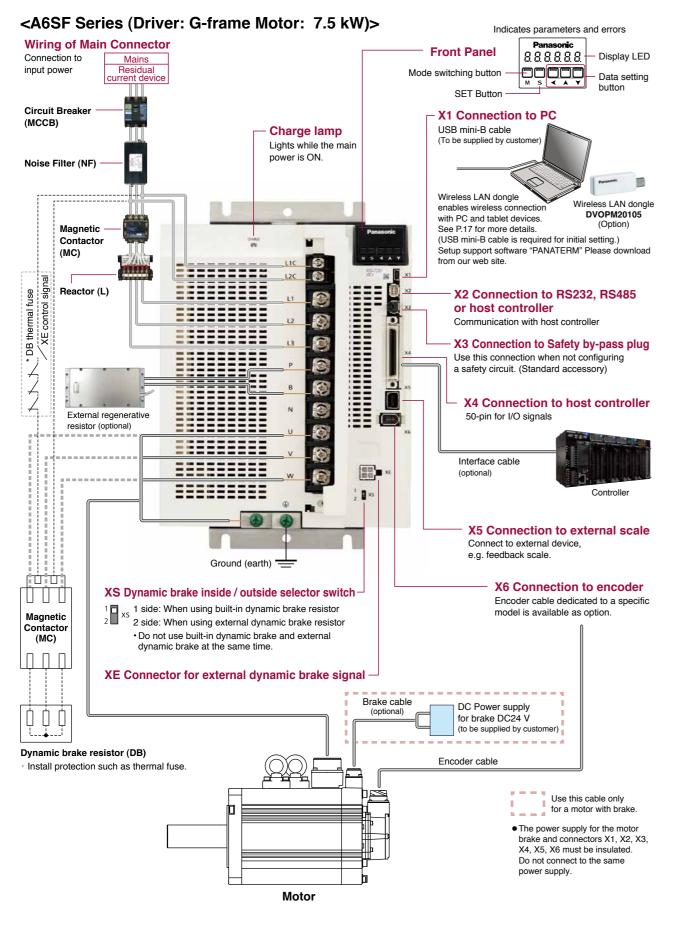


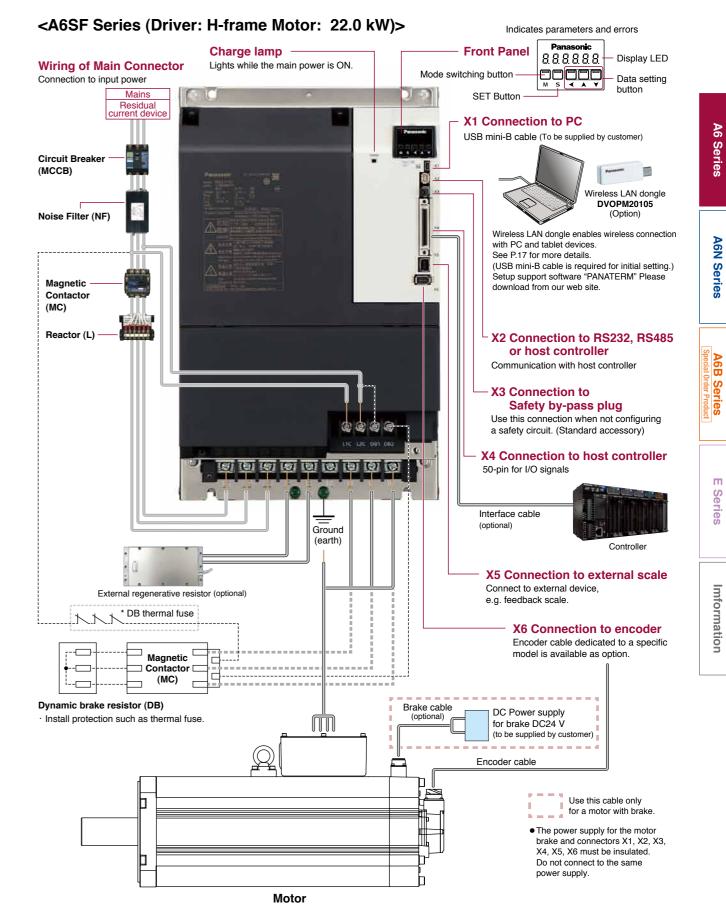
### <Caution>

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

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

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

### MINAS A6 Series Driver and List of Applicable Peripheral Equipments

Driver	Applicable motor	Voltage (V) *1	Rated output (kW)	Required Power (at the (rated load) (kVA)	Circuit breaker (rated (current) (A)	Noise filter (Single phase 3-phase	Surge absorber (Single phase) 3-phase	Ferrite core	Rated operating current of magnetic contactor contact configuration *2	Diameter and withstand voltage of main circuit cable	Crimp terminal for main circuit terminal block *3	Diameter and withstand voltage of control power supply cable	Crimp terminal for control power supply terminal block	Diameter and withstand voltage of motor cable *4	Diameter and withstand voltage of brake cable	
	MSMF MHMF	Single	0.05	approx.												
MADL	MSMF MQMF MHMF	phase, 100	0.1	0.4		DV0P4170	DV0P4190									
NI LE L	MSMF MHMF	Single/	0.05			DV0P4170	DV0P4190								0.28 mm <sup>2</sup>	
	MSMF MQMF MHMF	3-phase 200	0.1, 0.2	approx. 0.5	10	DV0PM20042	DV0P1450								to 0.75 mm²/	
	MSMF	Single phase, 100	0.2			DV0P4170	DV0P4190		20 A (3P+1a)						AWG22 to AWG18	
MBDL	MQMF MHMF	Single/ 3-phase 200	0.4	approx. 0.9		DV0P4170 DV0PM20042	DV0P4190 DV0P1450			0.75 mm²/ AWG18				0.75 mm²/ AWG18	100 VAC or more	
	MSMF MQMF	Single phase,	0.4	approx. 0.9			DV0P4190			600 VAC or more to	Q		Q	600 VAC or more to		
MCDL	MHMF MSMF MHMF	100 Single/ 3-phase	0.75	approx.	15	DV0PM20042	DV0P4190 DV0P1450			2.0 mm²/ AWG14	onnecti		onnection to e	Connection to exclusive connector	2.0 mm <sup>2</sup> / AWG14	
	MGMF	200	0.85	approx. 2.0			DV01 1450			600 VAC or more	600 VAC Since Sinc				on to e	on to e
	MSMF		1.0 (80 mm sq.)								exclus		exclus			
	MDMF MHMF		1.0	approx.							ve co		ve co			
MDDL	MHMF	Single/ 3-phase 200	1.0 (80 mm sq.) 1.0	2.4	20	DV0P4220	DV0P4190 DV0P1450	DV0P1460	30 A (3P+1a)		Connection to exclusive connector		nnector			
	MGMF		1.3	approx. 2.6												
	MSMF MDMF MHMF		1.5	approx. 2.9												
	MGMF		1.8	approx. 3.4						2.0 mm <sup>2</sup> / AWG14		0.75 mm²/ AWG18		2.0 mm <sup>2</sup> / AWG14 600 VAC		
MEDL	MSMF MDMF MHMF	3-phase	2.0	approx. 3.8	30	DV0PM20043	DV0P1450		60 A	600 VAC or more to 3.5 mm <sup>2</sup> / AWG12		600 VAC or more		or more to 3.5 mm <sup>2</sup> / AWG12 600 VAC or more	0.75 mm <sup>2</sup> / AWG18 100 VAC or more	
	MGMF		2.4	approx. 4.5					(3P+1a)	600 VAC or more						
	MGMF		2.9	approx. 5.0												
	MSMF MDMF MHMF		3.0	approx. 5.2						0.5	11 mm or		11 mm or	3.5 mm²/ AWG12		
MFDL	MSMF MDMF MHMF	3-phase 200	4.0	approx. 6.5	50	DV0P3410	DV0P1450			3.5 mm²/ AWG12 600 VAC	smaller		smaller	600 VAC or more		
	MGMF		4.4	approx. 7.0					100 A (3P+1a)	or more	/└_ 		<u></u> 			
	MSMF MDMF MHMF		5.0	approx. 7.8							Terminal block M5		Terminal block M5			
	MGMF	3-phase	5.5	approx. 8.5		HF3080C-SZA			100 A	8.0 mm <sup>2</sup> / AWG8	1113		IVIJ	14 mm <sup>2</sup> / AWG6		
MGDL	MDMF MHMF	200	7.5	approx. 11	60	(Recommended) components	DV0P1450		(3P+1a)	600 VAC or more				600 VAC or more		
			11.0	approx. 15	405			DV0P1460		22 mm <sup>2</sup> / AWG4				22 mm <sup>2</sup> / AWG4		
			15.0	approx. 20	125			RJ8095 (Recommended components)		600 VAC or more	16 mm or smaller		10 mm or smaller	600 VAC or more *6	0.75 mm <sup>2</sup> / AWG18 100 VAC	
MHDL	MDMF	- 3-phase 200	22.0	approx. 28	175	HF3100C-SZA (Recommended) components	DV0P1450	( components ) T400-61D *5	150 A (3P+1a)	38 mm²/ AWG2 600 VAC or more M6		I	Terminal block M4	22.8 mm or smaller ↓↓↓ ↓↓↓ ↓↓↓↓ ↓↓↓↓↓ ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓	or more	

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

\*2 The magnetic contactor used for the external dynamic brake resistor should have the same rating as the magnetic contactor used for the main circuit. \*3 For the ground screw, use the same crimp terminal as that for the main circuit terminal block.

\*4 The thickness of the grounding wire and the thickness of the external dynamic brake resistor should be the same as or larger than the thickness of the motor wire. The motor wire is a shielded wire that complies with the European Union Directive / UL standard. (G and H frame only)

\*5 Please use all to comply with international standards.

\*6 22.0 kW The connection of the motor power line is a terminal block. In order to comply with the CSA standard, it is necessary to use a CSA standardcertified power wire round terminal.

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### Related page

Noise filter	P.412 "Composition of P
	P.413 "Composition of P
Ferrite core	P.414 "Composition of P
Motor/brake connector	P.307 "Specifications of

About circuit breaker and magnetic contactor (h) marked).

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

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

### <Caution>

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

### Terminal block and protective earth terminals

- · Use a copper conductor cables with temperature rating of 75 °C or higher.

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

	Driver	Termina	I block screw	Terminal cover fastening screw		
Frame	Terminal name	Nominal size	Fastening torque (N·m) Note)1	Nominal size	Fastening torque (N⋅m) Note)1	
MFDL	L1, L2, L 3, L1C, L2C, P, RB, B, N, U, V, W	M5 1.0 to 1.7		M3	0.19 to 0.21	
MGDL	L1C, L2C	M4	0.7 to 1.0	МЗ	0.19 to 0.21	
NIGDL	L1, L2, L3, P, B, N, U, V, W	M5	2.0 to 2.4	IVIS	0.19100.21	
MHDL	L1C, L2C, DB1, DB2	M4	0.7 to 1.0	M5	2.0 to 2.5	
	L1, L2, L3, P, B, N, U, V, W	M6	2.2 to 2.5	M3	0.19 to 0.21	

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

	Grou	und screw	Connector to host controller (X4)		
Driver frame	Nominal size	Fastening torque (N·m) Note)1	Nominal size	Fastening torque (N⋅m) Note)1	
MADL, MBDL, MCDL, MDDL, MEDL	M4	1.0 to 1.2			
MFDL	M5	1.8 to 2.0	M2.6	0.3 to 0.35	
MGDL	M5	1.8 to 2.0	1012.0	0.3 10 0.35	
MHDL	M6	2.4 to 2.6			

### Motor: Fastening torque

		W terminal terminal screw	Terminal box cover fastening screw		
Motor	Nominal size	Fastening torque (N·m) Note)1	Nominal size	Fastening torque (N·m) Note)1	
MDMF 22.0 kW	M8	12.0	M5	4.4	

Note)1 <Caution>

- Applying fastening torque larger than the maximum value may result in damage to the product.
- generate heat (smoking, firing) .

### <Remarks>

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

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Peripheral Equipments" Peripheral Equipments" Peripheral Equipments" Motor connector"

### 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

· Use the attached exclusive connector for A-frame to E-frame, and maintain the peeled off length of 8 mm to 9 mm.

· Do not turn on power without tightening all terminal block screws properly, otherwise, loose contacts may

A6B Series Special Order Product

A .	Series
	Sariae
	JULIUS

MSMF, MQMF, MHMF: Leadwire type IP65

			Motor				Driver					Optional parts  Frefer to P.306						
						A6SF series	A6SG series		Power		Encoder Cab	,	Motor Cab	• • ·	ote)3			
N	lotor series	Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	Multi fanction type (Pulse, analog, full-closed)	RS485 communication A6SE series Basic (Pulse signal input)	Frame	capacity (at (rated) load) (kVA)	23-bit Use in the absolute system (with battery box) Note)5	solute system vith battery box)	solute Use in the Incremental system without battery box)	without Brake	with Brake	Brake Cable Note)3	External Regenerative Resistor	Reactor (Single phase) 3-phase	Noise Filter (Single phase) 3-phase
							Note)2, Note)4			Fixe	Fixed c	able	Movabl	e cable	Movable cable			
			50	MSMF5AZL1 🗌 2	63, 119	MADLT01SF	MADLN01S◇	A-frame	Approx.							DV0P4280	DV0P227	
		Single phase	100	MSMF011L1 🗌 2	65, 120	MADLT11SF	MADLN11S	*	0.4							5701 4200	DV01 227	DV0P4170
		100 V	200	MSMF021L1 🗌 2	67, 121	MBDLT21SF	MBDLN21S	B-frame ★	Approx. 0.5							DV0P4283	DV0P228	
	MSMF		400	MSMF041L1 2	69, 123	MCDLT31SF	MCDLN31S	C-frame	Approx. 0.9			MFECA				DV0P4282	DV0F220	DV0PM20042
	/Leadwire\		50	MSMF5AZL1 🗌 2	64, 119	MADLT05SF	MADLN05S			MFECA	-		MEN	ICA	MFMCB	DV0P4281		
	( type / 3000 r/min		100	MSMF012L1 🗌 2	66, 120	MADLT05SF	MADLN05S	A-frame ★	Approx. 0.5	0 * * 0EAE (For fixed)		0 * * 0EAD (For fixed)	0**)		0 * * 0GET Note)6	DV0F4201	DV0P227 DV0P220	DV0P4170
<u>سر</u>	IP65	Single phase/	200	MSMF022L1 2	68, 121	MADLT15SF	MADLN15S◇								1010/0			DV0PM20042
		3-phase 200 V	400	MSMF042L1 2	70, 123	MBDLT25SF	MBDLN25S	B-frame ★	Approx. 0.9							DV0P4283	DV0P228	
		200 V	750	MSMF082L1 🗌 2	71, 124	MCDLT35SF	MCDLN35S	C-frame	Approx. 1.8								DV0P220	DV0PM20042
			1000	MSMF092L1 🗌 2	72, 125	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 2.4							DV0P4284	DV0P228	DV0P4220
0			100	MQMF011L1  2 MQMF011L1 4	79, 135	MADLT11SF	MADLN11S	A-frame ★	Approx. 0.4							DV0P4280	DV0P222 DV0P227	
		Single phase	200	MQMF021L1 2 MQMF021L1 4	81, 139	MBDLT21SF	MBDLN21S	B-frame ★	Approx. 0.5							DV0P4283		DV0P4170
	MQMF	100 V	400	MQMF041L1 2	83, 143	MCDLT31SF	MCDLN31S	C-frame	Approx.	MFECA		MFECA	MFMC/ 0 * * 0EE			DV0P4282	DV0P228	DV0PM20042
inertia	(Leadwire type		100	MQMF041L1	80, 135	MADLT05SF	MADLN05S		0.9	0 * * 0EAE (For fixed)	0**0EAE	0 * * 0EAD (For fixed)		MFMCA )* *0EED	MFMCB 0 * *0GET Note)6			
Flat ty	3000 r/min IP65	Single phase/		MQMF012L1			•	A-frame ★	Approx. 0.5	(For fixed)							DV0P227 DV0P220	DV0P4170
type		3-phase 200 V	200	MQMF022L1  4	82, 139	MADLT15SF	MADLN15S									DV0P4283	DV0P228	DV0PM20042
		200 1	400	MQMF042L1 2 MQMF042L1 4	84, 143	MBDLT25SF	MBDLN25S	B-frame ★	Approx. 0.9								DV0P220	
			50	MHMF5AZL1 🗌 2 MHMF5AZL1 🗌 4	85, 147	MADLT01SF	MADLN01S	A-frame	Approx.							DV0P4280	DV0P227	
		Single phase	100	MHMF011L1 2 MHMF011L1 4	87, 151	MADLT11SF	MADLN11S	*	0.4									DV0P4170
		100 V	200	MHMF021L1 2 MHMF021L1 4	89, 155	MBDLT21SF	MBDLN21S	B-frame ★	Approx. 0.5							DV0P4283	DV0P228	
	MHMF		400	MHMF041L1 2 MHMF041L1 4	91, 159	MCDLT31SF	MCDLN31S	C-frame	Approx. 0.9							DV0P4282		DV0PM20042
High i	(Leadwire) type		50	MHMF5AZL1 2 MHMF5AZL1 4	86, 147	MADLT05SF	MADLN05S			MFECA	-	MFECA	MFN	ICA	MFMCB	DV0P4281		
inertia	3000 r/min		100	MHMF012L1 2 MHMF012L1 4	88, 151	MADLT05SF	MADLN05S	A-frame ★	Approx. 0.5	0 * *0EAE (For fixed)		0 * * 0EAD (For fixed)	0 * * (	DEED	0 * * 0GET Note)6		DV0P227 DV0P220	DV0P4170
	IP65	Single phase/	200	MHMF022L1  2 MHMF022L1  4	90, 155	MADLT15SF	MADLN15S											DV0PM20042
		3-phase 200 V	400	MHMF042L1  2 MHMF042L1  4	92, 159	MBDLT25SF	MBDLN25S	B-frame ★	Approx. 0.9							DV0P4283	DV0P228	
			750	MHMF082L1  2 MHMF082L1  4	93, 163	MCDLT35SF		C-frame	Approx. 1.8								DV0P220	DV0PM20042
			1000	MHMF092L1	94, 167	MDDLT55SF	MDDLN55S $\diamondsuit$	D-frame	Approx. 2.4							DV0P4284	DV0P228	DV0P4220

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

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

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

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

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

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

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

<b>A</b> 6	Series	Ta

able of Part Numbers and Options 80 mm sq. or less 50 W to 1000 W

MSMF, MQMF: Connector type IP67

			Motor				Driver						Optional parts	refer to P.306			
						A6SF series	A6SG series		Power	Encoder	ncoder Cable Note)3	Motor	Cable Note)3				
Μ	lotor series	Power supply	Output (W)	<b>Part No.</b> Note)1	Rating/ Spec. Dimensions (page)	Multi fanction type (Pulse, analog, full-closed)	RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)5	Frame	capacity ( at (rated load ) (kVA)	23-bit Use in the absolute system (with battery box) Note)6	e system ttery box) (without batte	I without Brak	e with Brake	Brake Cable Note)3	External Regenerative Resistor	Reactor (Single phase) 3-phase	Noise Filter (Single phase) 3-phase)
			50	MSMF5AZL1 🗌 1	63, 119	MADLT01SF	MADLN01S	A-frame	Approx.						DV0P4280	DV0P227	
		Single phase	100	MSMF011L1 🗌 1	65, 121	MADLT11SF	MADLN11S	*	0.4								DV0P4170
		100 V	200	MSMF021L1 🗌 1	67, 122	MBDLT21SF	MBDLN21S	B-frame ★	Approx. 0.5	MFECA 0 * * 0MJE /For movable,)	0MJE 0**0M	0: /F	IFMCA * * 0NJD or movable, irection of	MFMCB 0 * * 0PJT (For movable,) direction of	DV0P4283	DV0P228	
	MONE		400	MSMF041L1 🗌 1	69, 123	MCDLT31SF	MCDLN31S	C-frame	Approx. 0.9	(direction of motor shaft) MFECA	ction of direction of or shaft direction shaft		notor shaft) /IFMCA □ ★ 0NKD	\ motor shaft /	DV0P4282		DV0PM20042
Low in	MSMF (Connector type		50	MSMF5AZL1 🗌 1	64, 119	MADLT05SF	MADLN05S			0 * * 0MKE For movable, opposite direction of motor shaft	e direction For movable		or movable, site direction motor shaft	0* *0PKT For movable, opposite direction of motor shaft	DV0P4281		
inertia	3000 r/min IP67		100	MSMF012L1 🗌 1	66, 121	MADLT05SF	MADLN05S	A-frame ★	Approx. 0.5	MFECA 0* * 0TJE (For fixed, direction of)	¢ OTJE 0**0T	0:	IFMCA * * 0RJD For fixed, irection of	MFMCB 0 * * 0SJT (For fixed, direction of		DV0P227 DV0P220	DV0P4170
		Single phase/ 3-phase 200 V	200	MSMF022L1 🗌 1	68, 122	MADLT15SF	MADLN15S			MFECA 0**0TKE	r shaft/ \motor sha ECA MFEC/		IFECION OF Notor shaft/ IFMCA * * 0RKD	\motor shaft/ MFMCB 0 * *0SKT			DV0PM20042
			400	MSMF042L1 🗌 1	70, 123	MBDLT25SF	MBDLN25S	B-frame ★	Approx. 0.9	(opposite direction of motor shaft	fixed, e direction For fixed opposite dire		For fixed, solite direction motor shaft Note)4	For fixed, opposite direction of motor shaft Note)7	DV0P4283	DV0P228	
			750	MSMF082L1 🗌 1	71, 125	MCDLT35SF	MCDLN35S	C-frame	Approx. 1.8							DV0P220	DV0PM20042
			1000	MSMF092L1 🗌 1	72, 126	MDDLT45SF	MDDLN45S	D-frame	Approx. 2.4						DV0P4284	DV0P228 DV0P222	DV0P4220
			100	MQMF011L1 [] 1 MQMF011L1 [] 3	79, 137	MADLT11SF	MADLN11S	A-frame ★	Approx. 0.4	MFECA 0 * * 0MJE		MFMCA 0	MFMCA 0 * * 0VFD		DV0P4280	DV0P227	DV0P4170
Mi		Single phase 100 V	200	MQMF021L1 [] 1 MQMF021L1 [] 3	81, 141	MBDLT21SF	MBDLN21S	B-frame ★	Approx. 0.5	(For movable, direction of motor shaft)	tor shaft ) (For movable, direction of motor shaft )	(For movable, direction of motor shaft	(For movable, direction of motor shaft)		DV0P4283	DV0P228	2:01 4170
Middle inertia	MQMF (Connector) type		400	MQMF041L1 [] 1 MQMF041L1 [] 3	83, 145	MCDLT31SF	MCDLN31S	C-frame	Approx. 0.9	MFECA 0 * * 0MKE For movable, opposite direction of motor shaft	OMKE 0**0M	on For movable, opposite direction	/ For movable, \		DV0P4282	DV0P228	DV0PM20042
tia Flat type	3000 r/min IP67		100	MQMF012L1   1 MQMF012L1   3	80, 137	MADLT05SF	MADLN05S		Approx.	MFECA 0 * * 0TJE (For fixed, direction of)	ECA MFEC	MFMCA 0 * * 0WFE / For fixed, )	MFMCA	_	DV0P4281	DV0P227	
ype		Single phase/ 3-phase	200	MQMF022L1 [] 1 MQMF022L1 [] 3	82, 141	MADLT15SF	MADLN15S	A-frame ★	0.5	(motor shaft)	FECA MFEC	direction of motor shaft	(motor shaft)			DV0P220	DV0P4170 DV0PM20042
		200 V	400	MQMF042L1 🗌 1 MQMF042L1 🔲 3	84, 145	MBDLT25SF	MBDLN25S	B-frame ★	Approx. 0.9	0* *0TKE For fixed, opposite direction of motor shaft	sontke fixed, e direction tor shaft $0 * * 0TIFor fixed,opposite directionof motor sh$	on For fixed, opposite direction	/ For fixed, \		DV0P4283	DV0P228	

external regenerative resistor.

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

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

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

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

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

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

Fixed : For application where the cable is fixed.

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

	Series	
AD	Series	

able of Part Numbers and Options 80 mm sq. or less 50 W to 1000 W

MHMF: Connector type IP67

			Motor				Driver					c	Optional parts ► r	efer to P.306			
						A6SF series	A6SG series		Power	Encoder	Cable Note)3	Motor Cal	ole Note)3				
					Rating/	Multi fanction type /Pulse, analog, \	RS485 communication		capacity	23-bit	Absolute	-		Brake	External	Deset	Noise Fill
M	otor series	Power supply	Output (W)	Part No. Note)1	Spec. Dimensions (page)	(full-closed)	A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	(at (rated) load) (kVA)	Use in the absolute system (with battery box) Note)5	System	without Brake	with Brake	Cable Note)3	Regenerative Resistor	Reactor (Single phase) (3-phase)	Noise Filter (Single phase) 3-phase
			50	MHMF5AZL1 🗌 1 MHMF5AZL1 🗌 3	85, 149	MADLT01SF	MADLN01S	<b>A</b> <i>c</i>	Approx.			MFMCA 0 * * 7UFD (Movable/fixed common-use, direction of motor shaft	MFMCA 0 * * 7VFD (Movable/fixed common-use, direction of motor shaft		DV0D4290	DV0P227	
			100	MHMF011L1 [] 1 MHMF011L1 [] 3	87, 153	MADLT11SF	MADLN11S	A-frame ★	0.4			MFMCA 0 * * 7UGD Movable/fixed common-use, opposite direction of motor shaft	MFMCA 0 * * 7VGD Movable/fixed common-use, opposite direction of motor shaft		DV0P4280	DV0F227	DV0P4170
		Single phase	200		89, 157	MBDLT21SF	MBDLN21S	B-frame	Approx. 0.5			MFMCA 0 * * 0UFD (For movable, direction of motor shaft)	MFMCA 0* *0VFD (For movable, direction of motor shaft		DV0P4283		
	MHMF (Connector type –	100 V		MHMF021L1 🗌 3				*	0.0			MFMCA 0 * * 0UGD (opposite direction of motor shaft	MFMCA 0 * * 0VGD For movable, opposite direction of motor shaft			DV0P228	
			400	MHMF041L1 [] 1 MHMF041L1 [] 3	91, 161	MCDLT31SF	MCDLN31S	C-frame	Approx. 0.9	MFECA 0 * * 0MJE (For movable, direction of motor shaft)	MFECA 0**0MJD (For movable, direction of motor shaft)	MFMCA 0 * *0WFD (For fixed, direction of motor shaft) MFMCA	MFMCA 0 * * 0XFD (For fixed, direction of motor shaft) MFMCA		DV0P4282		DV0PM20042
										MFECA 0**0MKE (opposite direction of motor shaft	MFECA 0 * * 0MKD (opposite direction of motor shaft	0 * * 0WGD For fixed, opposite direction of motor shaft MFMCA	0**0XGD For fixed, opposite direction of motor shaft	_			
	3000 r/min IP67		50	MHMF5AZL1 🗌 1 MHMF5AZL1 🗌 3	86, 149	MADLT05SF	MADLN05S◇	-		MFECA 0 * * 0TJE (For fixed, direction of motor shaft)	MFECA 0 * * 0TJD (For fixed, direction of motor shaft)	0**7UFD (Movable/fixed) common-use, direction of motor shaft	0**7VFD /Movable/fixed common-use, direction of motor shaft		DV0P4281		
			100	MHMF012L1 🗌 1 MHMF012L1 🗌 3	88, 153	MADLT05SF	MADLN05S	A-frame ★	Approx. 0.5	MFECA 0 * * 0TKE For fixed, opposite direction of motor shaft	MFECA 0 * * 0TKD For fixed, opposite direction of motor shaft	MFMCA 0 * * 7UGD Movable/fixed common-use, opposite direction of motor shaft	MFMCA 0**7VGD Movable/fixed common-use, opposite direction of motor shaft			DV0P227 DV0P220	DV0P4170
		Single phase/	200	MHMF022L1 🗌 1 MHMF022L1 🗌 3	90, 157	MADLT15SF	MADLN15S					MFMCA 0 * * 0UFD (For movable, direction of motor shaft	MFMCA 0 * * 0VFD (For movable, direction of motor shaft				DV0PM20042
		3-phase 200 V	400	MHMF042L1 🗌 1 MHMF042L1 🗌 3	92, 161	MBDLT25SF	MBDLN25S	B-frame ★	Approx. 0.9			MFMCA 0**0UGD For movable, opposite direction of motor shaft	MFMCA 0 * * 0VGD For movable, opposite direction of motor shaft		DV0P4283	DV0P228	
			750	MHMF082L1 🗌 1 MHMF082L1 🗌 3	93, 165	MCDLT35SF	MCDLN35S	C-frame	Approx. 1.8			MFMCA 0 * * 0WFD (For fixed, direction of motor shaft)	MFMCA 0 * * 0XFD (For fixed, direction of motor shaft)			DV0P220	DV0PM20042
			1000	MHMF092L1 🗌 1 MHMF092L1 🗌 3	94, 169	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.4			MFMCA 0**0WGD For fixed, opposite direction of motor shaft	MFMCA 0 * * 0XGD For fixed, opposite direction of motor shaft		DV0P4284	DV0P228	DV0P4220

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

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

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

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

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

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

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### A6 Series

			Motor				Driver				Op	tional parts 🕨 re	fer to P.306		
									-	Encoder Cable Note)3,5	-	le Note)3,5			
		_		<b>-</b>	Rating/	A6SF series Multi fanction type (Pulse, analog,)	A6SG series RS485 communication		Power capacity	JL10 (Large size) (One-touch lock type N/MS screwed type)	(One-touc	-10 h lock type ewed type )			
N	lotor series	Power supply	Output (W)	Part No. Note)1	Spec. Dimensions (page)	(full-closed)	A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	(rated load) (kVA)	23-bit Absolute       Use in the absolute system (with battery box) Note)7     Use in the Incremental system (without battery box)	without Brake	with Brake	External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter
		<b></b>								Fixed cable	Movab	le cable			
		Single phase/ 3-phase	1000	MSMF102L1	73, 127	MDDLT55SF MDDLT55SF	MDDLN55S	D-frame	Approx. 2.4 Approx.		MFMCD 0 * * 2EUD	MFMCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220
5	MSMF	200 V	1500	MSMF152L1	74, 128				2.9 Approx.	MFECA MFECA	MFMCD	MFMCA	DV0P4285	DV0PM20047 / DV0P222	
Low in	Large size JL10 type		2000	MSMF202L1 🗌 8	75, 129	MEDLT83SF	MEDLN83S	E-frame	3.8	0**0EPE 0**0EPD	0 * * 2ECD	0 * * 2FCD	Note)6	DV0P223	DV0PM20043
inertia	3000 r/min	3-phase	3000	MSMF302L1  6 MSMF302L1 8	76, 131	MFDLTA3SF	MFDLNA3S	_	Approx. 5.2	MFECA MFECA 0**0ESE 0**0ESD	MFMCA 0 * * 3EUT	MFMCA 0 * * 3FUT		DV0P224	
	IP67	200 V	4000	MSMF402L1	77, 132	MFDLTB3SF	MFDLNB3S	F-frame	Approx. 6.5		MFMCA	MFMCA	DV0P4285 ×2 in parallel	DV0P225	DV0P3410
			5000	MSMF502L1 🗌 6 MSMF502L1 🗌 8	78, 133	MFDLTB3SF	MFDLNB3S		Approx. 7.8		0**3ECT	0 * * 3FCT		D VOI 220	
		Single phase/	1000	MDMF102L1 🗌 6 MDMF102L1 🗌 8	102, 180	MDDLT45SF	MDDLN45S	D.	Approx. 2.4		MFMCD	MFMCA	DV0D4004	DV0P228 / DV0P222	DV0D4000
	MDMF	3-phase 200 V	1500	MDMF152L1 🗌 6 MDMF152L1 🗌 8	103, 181	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.9		0 * * 2EUD	0**2FUD	DV0P4284	DV0PM20047 / DV0P222	DV0P4220
	Large size JL10 type		2000	MDMF202L1	104, 183	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8	MFECA MFECA 0**0EPE 0**0EPD	MFMCD 0 * *2ECD	MFMCA 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043
	2000 r/min	3-phase	3000	MDMF302L1 🗌 6 MDMF302L1 🗌 8	105, 184	MFDLTA3SF	MFDLNA3S		Approx. 5.2	MFECA MFECA	MFMCA	MFMCA		DV0P224	
	IP67	200 V	4000	MDMF402L1	106, 185	MFDLTB3SF	MFDLNB3S	F-frame	Approx. 6.5	0 * * 0ESE 0 * * 0ESD	0 * * 3EUT	0 * * 3FUT	DV0P4285 ×2 in parallel	DV0P225	DV0P3410
Mio			5000	MDMF502L1 🗌 6 MDMF502L1 🗌 8	107, 187	MFDLTB3SF	MFDLNB3S		Approx. 7.8		0 * * 3ECT	0 * * 3FCT		DV0F223	
Middle ir		Single phase/	850	MGMF092L1 🗌 6 MGMF092L1 🗌 8	112, 193	MDDLT45SF	MDDLN45S	2	Approx. 2.0		MFMCD	MFMCA		DV0P228 / DV0P221	D)/0D (000
inertia		3-phase 200 V	1300	MGMF132L1 🗌 6 MGMF132L1 🗌 8	113, 195	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.6		0 * * 2EUD	0 * * 2FUD	DV0P4284	DV0PM20047 / DV0P222	DV0P4220
	MGMF Large size		1800	MGMF182L1	114, 196	MEDLT83SF	MEDLN83S		Approx. 3.4	MFECA MFECA	MFMCD 0 * * 2ECD	MFMCA 0 * * 2FCD		DV0P223	
	JL10 type (Low speed/ High torque type	3-phase	2400	MGMF242L1 🗌 6 MGMF242L1 🗌 8	115, 197	MEDLT93SF	MEDLN93S	E-frame	Approx. 4.5	0 * * 0EPE 0 * * 0EPD 	MFMCE 0 * * 3EUT MFMCE	MFMCD 0 * * 3FUT MFMCD	DV0P4285	DV0P224	DV0PM20043
	1500 r/min IP67	200 V	2900	MGMF292L1	116, 199	MFDLTB3SF	MFDLNB3S		Approx. 5.0		0 * * 3ECT MFMCA 0 * * 3EUT	0 * * 3FCT MFMCA 0 * * 3FUT	DV0D4005	-	
			4400	MGMF442L1	117, 200	MFDLTB3SF	MFDLNB3S	F-frame	Approx. 7.0		MFMCA 0 * * 3ECT	MFMCA 0 * * 3FCT	DV0P4285 ×2 in parallel	DV0P225	DV0P3410
		Single phase/	1000	MHMF102L1	95, 171	MDDLT45SF	MDDLN45S		Approx. 2.4		MFMCD 0 * * 2EUD	MFMCA 0**2FUD		DV0P228 / DV0P222	
		3-phase 200 V	1500	MHMF152L1	96, 172	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.9		MFMCD 0 * * 2ECD	MFMCA 0 * * 2FCD	DV0P4284	DV0PM20047 / DV0P222	DV0P4220
High inertia	MHMF Large size JL10 type 2000 r/min		2000	MHMF202L1 □ 6 MHMF202L1 □ 8	97, 173	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8	MFECA MFECA 0 * * 0EPE 0 * * 0EPD MFECA MFECA	MFMCE 0**2EUD MFMCE 0**2ECD	MFMCE 0**2FUD MFMCE 0**2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043
tia	IP67	3-phase 200 V	3000	MHMF302L1	98, 175	MFDLTA3SF	MFDLNA3S		Approx. 5.2	0 * * 0ESE 0 * * 0ESD	MFMCA	MFMCA		DV0P224	
			4000	MHMF402L1	99, 176	MFDLTB3SF	MFDLNB3S	F-frame	Approx. 6.5		0 * * 3EUT	0 * * 3FUT MFMCA	DV0P4285 ×2 in parallel	DV0P225	DV0P3410
			5000	MHMF502L1	100, 177	MFDLTB3SF	MFDLNB3S		Approx. 7.8		0 * * 3ECT	0 * * 3FCT		DV0F225	

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

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

Note)3 \*\*: Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030EPE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification,

only incremental system can be used in combination.

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

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

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

A6 Family

A6N Series

A6B Series Special Order Product

E Series

### A6 Series

			Motor				Driver					Onti	onal parts Frefe	ar to P 306		
			MOLOI				Briver		-	Encoder Cable	Note)3	Motor Cable	•			
		Power	Output	Part No.	Rating/ Spec.	A6SF series Multi fanction type (Pulse, analog, full-closed)	A6SG series RS485 communication		Power capacity	JN2 (Small si (One-touch lock 23-bit Absolu	size) k type)	JL1 (One-touch JL04 scree	0 lock type	External		
	Motor series	supply	(W)	Note)1	Dimensions (page)		A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	(rated) load) (kVA)	Use in the absolute system (with battery box) Note)7 (with	Use in the Incremental system hout battery box)	without Brake	with Brake	Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter
		Single		MSMF102L1   5					Approx	Fixed cable	le	Movable	e cable			
		Single phase/ 3-phase	1000	MSMF102L1 _ 5 MSMF102L1 _ 7 MSMF152L1 _ 5	73, 127	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.4 Approx.			MFMCD 0 * * 2EUD	MFMCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220
Low	MSMF Small size	200 V	1500	MSMF152L1	74, 129	MDDLT55SF		_	2.9 Approx.			MFMCD 0 * * 2ECD	MFMCA 0 * * 2FCD	DV0P4285	DV0PM20047 / DV0P222	
w inertia	JN2 type		2000	MSMF202L1	75, 130	MEDLT83SF	MEDLN83S	E-frame	3.8 Approx.		MFECA 0 * * 0ETD			Note)6	DV0P223	DV0PM20043
rtia	3000 r/min IP67	3-phase 200 V	3000	MSMF302L1	76, 131	MFDLTA3SF	MFDLNA3S	_	5.2 Approx.			MFMCA 0 * * 3EUT	MFMCA 0 * * 3FUT	DV0P4285	DV0P224	
			4000	MSMF402L1	77, 133	MFDLTB3SF	MFDLNB3S	F-frame	6.5 Approx.			MFMCA 0 * * 3ECT	MFMCA 0 * * 3FCT	×2 in parallel	DV0P225	DV0P3410
		Single	5000	MSMF502L1	78, 134	MFDLTB3SF	MFDLNB3S		7.8 Approx.			0**3EC1				
		phase/ 3-phase	1000	MDMF102L1	102, 181	MDDLT45SF		D-frame	2.4 Approx.			MFMCD 0 * * 2EUD	MFMCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220
	MDMF Small size	200 V	1500	MDMF152L1	103, 182	MDDLT55SF		<b>F</b> .	2.9 Approx.			MFMCD 0 * * 2ECD	MFMCA 0 * * 2FCD	DV0P4285	DV0PM20047 / DV0P222	D)/0D1/000/0
	JN2 type		2000	MDMF202L1	104, 183	MEDLT83SF MFDLTA3SF	MEDLN83S	E-frame	3.8 Approx.		MFECA 0 * * 0ETD			Note)6	DV0P223	DV0PM20043
	2000 r/min IP67	3-phase 200 V	3000 4000	MDMF302L1	105, 185	MFDLTASSF	MFDLNB3S	- F-frame	5.2 Approx.			MFMCA 0 * * 3EUT	MFMCA 0 * * 3FUT	DV0P4285	DV0F224	DV0P3410
-			5000	MDMF402L1	106, 186 107, 187	MFDLTB3SF	MFDLNB3S	r -trame	6.5 Approx.			MFMCA 0 * * 3ECT	MFMCA 0 * * 3FCT	×2 in parallel	DV0P225	DV0F3410
Middle		Single	850	MDMF502L1	112, 194	MDDLT45SF	MDDLN45S		7.8 Approx.			MFMCD	MFMCA		DV0P228 / DV0P221	
inertia		phase/ 3-phase	1300	MGMF092L1	113, 195	MDDLT55SF	MDDLN55S	D-frame	2.0 Approx.			0 * * 2EUD	0 * * 2FUD	DV0P4284	DV0PM20047 / DV0P222	DV0P4220
ā	MGMF Small size	200 V	1800	MGMF132L1  7 MGMF182L1  5 MGMF182L1  7	114, 197	MEDLT83SF	MEDLN83S		Approx. 2.6 Approx. 3.4			MFMCD 0 * * 2ECD	MFMCA 0 * * 2FCD		DV0P223	
	JN2 type			MGMF182L1				E-frame			MFECA	MFMCE 0 * * 3EUT	MFMCD 0 * * 3FUT	DV0P4285		DV0PM20043
	(Low speed/ High torque type	3-phase	2400	MGMF242 L1 🗌 5 MGMF242 L1 🗌 7	115, 198	MEDLT93SF	MEDLN93S◇		Approx. 4.5	0**0ETE 0	0 * * 0ETD	MFMCE	MFMCD		DV0P224	
	1500 r/min IP67	200 V	2900	MGMF292L1  5	116, 199	MFDLTB3SF	MFDLNB3S		Approx. 5.0		-	0 * * 3ECT MFMCA	0 * * 3FCT MFMCA			
	11 07		4400	MGMF292L1	117, 201	MFDLTB3SF	MFDLNB3S	F-frame	Approx. 7.0			0**3EUT MFMCA	0 * * 3FUT MFMCA	DV0P4285 ×2 in parallel	DV0P225	DV0P3410
		Single	1000	MGMF442L1	95, 171	MDDLT45SF	MDDLN45S		Approx.			0 * * 3ECT MFMCD	0 * * 3FCT MFMCA		DV0P228 / DV0P222	
		phase/ 3-phase	1500	MHMF102L1	96, 173	MDDLT55SF	MDDLN55S	D-frame	2.4 Approx.			0 * * 2EUD MFMCD	0 * * 2FUD MFMCA	DV0P4284	DV0PM20047 / DV0P222	DV0P4220
	MHMF	200 V		MHMF152L1 🗌 7	.,		•		2.9		-	0 * * 2ECD MFMCE	0 * * 2FCD MFMCE			
High inertia	Small size JN2 type		2000	MHMF202L1   5 MHMF202L1 7	97, 174	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8		MFECA	0 * * 2EUD  MFMCE	0 * * 2FUD  MFMCE	DV0P4285 Note)6	DV0P223	DV0PM20043
nertia	2000 r/min IP67	3-phase		MHMF302L1 🗌 5					Approx.	0 * * 0ETE 0	0 * * 0ETD	0 * * 2ECD	0 * * 2FCD		<b>B</b> 107-5-5	
	1507	200 V	3000	MHMF302L1	98, 175	MFDLTA3SF	MFDLNA3S	_	5.2 Approx.			MFMCA 0 * * 3EUT	MFMCA 0 * * 3FUT	DV0P4285	DV0P224	
			4000	MHMF402L1	99, 177	MFDLTB3SF		F-frame	6.5 Approx.			MFMCA 0 * * 3ECT	MFMCA 0 * * 3FCT	×2 in parallel	DV0P225	DV0P3410
			5000	MHMF502L1  7	100, 178	MFDLTB3SF	MFDLNB3S		7.8				U T T J L I			

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

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

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification,

only incremental system can be used in combination.

be used.

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

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

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

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A6 Family

A6N Series

A6B Series Special Order Product

E Series

### Table of Part Numbers and Options 176 mm sq. or more 5.5 kW to 22.0 kW IP67 motor Encoder connector (Large size JL10) type A6 Series

			Motor				Driver					Opt	ional parts 🕨 refe	r to P.306		
					Rating/	A6SF series Multi fanction type	A6SG series RS485 communication		Power capacity	JL10 (L One-tour	able Note)2,3 .arge size) ch lock type rewed type	Motor		External		
I	Motor series	Power supply	Output (W)	Part No. Note)1	Spec. Dimensions (page)	(Pulse, analog, full-closed)	A6SE series Basic (Pulse signal input)	Frame	(at (rated) load) (kVA)	Use in the absolute system (with battery box) Note)4	system (without battery box)	without Brake	with Brake	Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter
			7500	MDMF752L1 🗌 6	108 188	MGDLTC3SF	_	G-frame	Approx. 11	Fixe	d cable			DV0P4285 ×3 in parallel		HF3080C-SZA (Recommended) components) P.413
Middle inertia	MDMF Large size JL10 type 1500 r/min	3-phase	11000	MDMFC12L1 🗌 6	109 189	MHDLTE3SF	_		Approx. 15	MFECA 0 * * 0EPE	MFECA 0 * * 0EPD	Note)6	Note)6			
	1500 r/min IP67 IP44 (22000 W)	··· 200 ∨ /)	15000	MDMFC52L1 🗌 6	110 191	MHDLTE3SF	_	H-frame	Approx. 20	MFECA 0 * *0ESE	MFECA 0 * * 0ESD			DV0P4285 ×6 in parallel	— Note)5	HF3100C-SZA (Recommended) components P.413
inertia			22000	MDMFD22L1 🗌 6	111 192	MHDLTF3SF	_		Approx. 28			Note)6 (U, V, W, Ground : M8 terminal block)	Note)6 (U, V, W, Ground : M8 terminal block)			
	MGMF Large size JL10 type (Low speed/) High torque type 1500 r/min IP67	3-phase 200 V	5500	MGMF552L1 🗌 6	118 201	MGDLTC3SF	_	G-frame	Approx. 8.5	MFECA 0 * * 0EPE  MFECA 0 * * 0ESE	MFECA 0**0EPD  MFECA 0**0ESD	Note)6	Note)6	DV0P4285	— Note)5	HF3080C-SZA (Recommended) components P.413
High inertia	MHMF Large size JL10 type 1500 r/min IP67	3-phase 200 V	7500	MHMF752L1 🗌 6	101 179	MGDLTC3SF	_	G-frame	Approx. 11	MFECA 0 * * 0EPE  MFECA 0 * * 0ESE	MFECA 0 * * 0EPD  MFECA 0 * * 0ESD	Note)6	Note)6	x3 in parallel	 Note)5	HF3080C-SZA (Recommended) components P.413

### About dynamic brake

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

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

Recommended resistance: 1.2  $\Omega$  400 W or more x 3 pieces

For inquiries: Iwaki Musen Kenkyusho Co.,Ltd. Tel: +81-44-833-4311

Note)1	: Repres	ents the r	notor sp	pecifications.	(refer to	"Model	designation" P	.22.)

Note)2 \*\*: Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE

Note)3 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.

Note)4 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Note)5 The reactor has to be prepared by the customer.

Note)6 We recommend purchasing an optional connector kit.

### Connector kit (option) components Note)6

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

### Table of Part Numbers<br/>and Options176 mm sq. or more5.5 kW to 22.0 kWIP67 motorEncoder connector (Small size JN2) type A6 Series

			Motor				Driver						Opti	ional parts 🕨 refe	r to P.306			
					Rating/	A6SF series Multi fanction type	A6SG series RS485 communication		Power capacity / at \	JN2 (S (One-tou	Encoder Cab JN2 (Smal (One-touch lo	ll size) ock type)	Motor ( Note		External			
N	lotor series	Power supply	Output (W)	Part No. Note)1	Spec. Dimensions (page)	(Pulse, analog, full-closed)	A6SE series Basic (Pulse signal input)	Frame	(rated load) (kVA)	Use in the absolute system (with battery box) Note)3	th battery box)	Use in the Incremental system without battery box)	without Brake	with Brake	Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter	
			7500	MDMF752L1 🗌 5	108 189	MGDLTC3SF	_	G-frame	Approx. 11	Fixe	Fixed G	able			DV0P4285 ×3 in parallel		HF3080C-SZA (Recommended) components P.413	
	MDMF Small size JN2 type 1500 r/min IP67 IP44 (22000 W)	3-phase	11000	MDMFC12L1 🗌 5	109 190	MHDLTE3SF	_		Approx. 15	MFECA		MFECA	Note)5	Note)5				
Middle inertia		200 V	15000	MDMFC52L1 🗌 5	110 191	MHDLTE3SF	—	H-frame	Approx. 20	0 * *0ETE	)* *0ETE	0 * *0ETD			DV0P4285 ×6 in parallel	— Note)4	HF3100C-SZA (Recommended) components P.413	
			22000	MDMFD22L1 🗌 5	111 193	MHDLTF3SF	_		Approx. 28				Note)5 (U, V, W, Ground : M8 terminal block)	Note)5 (U, V, W, Ground : M8 terminal block)				Special Order Product
	MGMF Small size JN2 type (Low speed/ High torque) type 1500 r/min IP67	3-phase 200 V	5500	MGMF552L1 🗌 5	118 202	MGDLTC3SF	_	G-frame	Approx. 8.5	MFECA 0 * * 0ETE		MFECA 0 * *0ETD	Note)5	Note)5	DV0P4285	— Note)4	HF3080C-SZA (Recommended) components P.413	
High inertia	MHMF Small size JN2 type 1500 r/min IP67	3-phase 200 V	7500	MHMF752L1 🗌 5	101 179	MGDLTC3SF	_	G-frame	Approx. 11	MFECA 0 * * 0ETE		MFECA 0 * * 0ETD	Note)5	Note)5	x3 in parallel	_ Note)4	HF3080C-SZA (Recommended components) P.413	

### About dynamic brake

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

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

Recommended resistance: 1.2  $\Omega$  400 W or more x 3 pieces

For inquiries: Iwaki Musen Kenkyusho Co., Ltd. Tel: +81-44-833-4311

Note)2 \*\*: Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE Note)3 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Note)4 The reactor has to be prepared by the customer.

Note)5 We recommend purchasing an optional connector kit.

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### Connector kit (option) components Note)5

	D	river	Option No.	Encoder C	able	Motor	Cable	Brake	Cable
Motor	Frame	Connection terminal	Connector Kit for motor, encoder connection	Motor side	Driver side	Motor side	Driver side	Motor side	Power supply for brake
MDMF 7.5 kW	6	M5	DV0PM20056	Small size connector	For	Connector	(to be supplied) by customer	not included	(to be supplied)
MHMF 7.5 kW	MGMF 5.5 kW G MHMF 7.5 kW		DV0PM20057	Screwed type	Connector X6	Screwed type	M5 Round terminal	Connector Screwed type	(by customer)
MDMF 11.0 kW	н	M6	DV0PM20056	Small size connector	For	Connector	(to be supplied) by customer	not included	(to be supplied)
MDMF 11.0 kW MDMF 15.0 kW	п	OIVI	DV0PM20057	Screwed type	Connector X6	Screwed type	M6 Round terminal	Connector Screwed type	(by customer)
	н	M6	DV0PM20115	Small size connector	For	Terminal block (to be supplied)	(to be supplied) by customer	not included	(to be supplied)
MDMF 22.0 kW	п	OIVI	DV0PM20116	Screwed type	Connector X6	( by customer ) M8 Round terminal	M6 Round terminal	Connector Screwed type	(by customer)

## A6 Series Driver Specifications A6SF series (Multifanction type)

Position, Speed, Torque, Full-closed type

		(00.)(	Mai	n circuit	Single phase 100 V $^{+10}_{-15}$ % to 120 V $^{+10}_{-15}$ % 50 Hz / 60 Hz								
		100 V	Cont	rol circuit	Single phase 100 V $^{+10}_{-15}$ % to 120 V $^{+10}_{-15}$ % 50 Hz / 60 Hz								
	Input		Main	A-frame to D-frame	Single/3-phase 200 V <sup>+10 %</sup> <sub>-15 %</sub> to 240 V <sup>+10 %</sup> <sub>-15 %</sub> 50 Hz / 60 Hz								
	Input power	200 V	circuit	E-frame to H-frame	3-phase 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ % 50 Hz / 60 Hz								
		200 V	Control		Single phase 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ % 50 Hz / 60 Hz								
			circuit	E-frame to H-frame	Single phase 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ % 50 Hz / 60 Hz								
			temp	perature	Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation <sup>*1</sup> )								
	Env	vironment	hu	midity	Both operating and storage : 20 %RH to 85 %RH (free from condensation <sup>*1</sup> )								
			AI	titude	Lower than 1000 m								
			Vit	oration	5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz								
	Co	ntrol metho	bd		IGBT PWM Sinusoidal wave drive								
	End	coder feedt	back		<ul> <li>23-bit (8388608 resolution) absolute encoder, 7-wire serial</li> <li>* When using it as an incremental system (not using multiturn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to "1" (factory settings).</li> </ul>								
Basic Spe	Ext	ernal scale	e feedba	ck	A/B phase, homing signal differential input. Serial communication is also supported. Manufacturers that support serial communication scale: Fagor Automation S.Coop., HEIDENHAIN, Magnescale Co., Ltd., Mitutoyo Corporation Nidec Sankyo Corporation, Renishaw plc								
Specifications		Control si	anal	Input	General purpose 10 inputs The function of general-purpose input is selected by parameters.								
ons	T	Control Si	gnai	Output	General purpose 6 outputs The function of general-purpose output is selected by parameters.								
	Iterfa	Analog ai	anal	Input	3 inputs (16-bit A/D : 1 input, 12-bit A/D : 2 inputs)								
	ace	Analog si	griai	Output	2 outputs (Analog monitor: 2 output)								
	Interface connector	Pulse sigr		Input	2 inputs (Photo-coupler input, Line receiver input) Both open collector and line driver interface can be connected. High speed line driver interface can be connected.								
		i uise sigi		Output	4 outputs (Line driver: 3 output, open collector: 1 output) Line driver output for encoder pulses (A/B/Z signal) or external feedback pulses (EXA/ EXB/EXZ signal) open collector output also available for Z or EXZ signal.								
				USB	USB interface to connect to computers for parameter setting or status monitoring.								
		mmunicatio ction	on	RS232	1:1 communication								
				RS485	1: n communication (max 31) (Supports Modbus)								
	Sat	fety functio	n		A dedicated connector is provided for Functional Safety.								
	Fro	ont panel			(1) 5 keys (2) LED (6-digit)								
	Re	generation			A-frame, B-frame, G-frame, H-frame: no built-in regenerative resistor (external resistor only) C-frame to F-frame: Built-in regenerative resistor (external resistor is also enabled.)								
	Dyı	namic brak	е		A-frame to G-frame: Built-in H-frame: External resistor only								
	Co	ntrol mode			Switching among the following 7 mode is enabled, (1) Position control (2) Speed control (3) Toque control (4) Position/Speed control (5) Position/Torque control (6) Speed/Torque control (7) Full-closed control								
L													

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

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Сс	ontrol input			<ul> <li>(1) servo-ON input</li> <li>(2) Alarm clear input</li> <li>(3) Gain switch input</li> <li>(4) Positive direction drive inhibit input</li> <li>(5) Negative direction drive inhibit input</li> <li>(6) Forced alarm input</li> <li>(7) Inertia ratio switch input</li> </ul>
Сс	ontrol outpu	t		<ul> <li>(1) Servo-alarm output</li> <li>(2) Servo-ready output</li> <li>(3) External brake off output</li> <li>(4) At-speed output</li> <li>(5) Torque in-limit output</li> <li>(6) Zero speed detection output</li> <li>(7) Warning output</li> <li>(8) Alarm clear attribute output</li> <li>(9) Servo on status output</li> </ul>
	Control input			<ul> <li>(1) Deviation counter clear input</li> <li>(2) Command pulse inhibit input</li> <li>(3) Command division/multiplication switch input</li> <li>(4) Anti-vibration switch input</li> <li>(5) Torque limit switch input</li> <li>(6) Control mode switch input</li> </ul>
	Control or	utput		(1) In-position output (2) Position command ON/OFF output
		Max. command pulse frequency		500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by 4)
Pos	Pulse	Input pulse s	ignal format	Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)
Position control	input	Electronic ge (Division/Mul command pu	tiplication of	Applicable scaling ratio: $1/1000$ times to 8000 times Any value of $1 - 2^{30}$ can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution per motor revolution), but the combination has to be within the range shown above.
ntro		Smoothing fi	iter	Primary delay filter or FIR type filter is adaptable to the command input
⊻	Analog		command input	Individual torque limit for both positive and negative direction is enabled.
	input Torque feed forward input		forward input	Analog voltage can be used as torque feed forward input.
	Two-degree-of-freedom control		control	Available
	Anti-vibra	tion control		Available
	Load variation suppression control			Available
	Block ope	eration		Modbus (RS 232, RS 485) or interface is selectable
	Control in	put		(1) Internal command velocity selection input (2) Speed zero clamp input
				(3) Velocity command sign input (4) Control mode switch input
- F	Control or	ntrol output		(1) Speed coincidence output (2) Velocity command ON/OFF output
ĝ		Velocity com	mand input	Velocity command input with analog voltage is possible. Scale setting and com-
Speed	Analog input	Torquo limit (	command input	mand polarity vary depending on parameters. (6 V/Rated rotational speed: Default) Individual torque limit for both positive and negative direction is enabled.
	input	· ·	forward input	Analog voltage can be used as torque feed forward input.
control	Internal v		· · · · ·	Switching the internal 8 speed is enabled by command input.
ō	Internal velocity command			Individual setup of acceleration and deceleration is enabled,
	Soft-start/	down function	1	with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled.
	Speed ze	ro clamp		Internal velocity command can be clamped to 0 with speed zero clamp input.
		ee-of-freedom	control	Available
러	Control in			Speed zero clamp input, torque command sign input, control mode switch input.
Torque	Control output			(1) Speed coincidence output (2) Speed in-limit output
le c	Analog Torque command input			Torque command input with analog voltage is possible. Scale setting and com-
contro	input · ·			mand polarity vary depending on parameters. (3 V/rated torque Default)
<u></u>	Speed lim	nit function		Speed limit value with parameter is enabled.
	Control input			<ul> <li>(1) Deviation counter clear input</li> <li>(2) Command pulse inhibit input</li> <li>(3) Command division/multiplication switch input</li> <li>(4) Anti-vibration switch input</li> <li>(5) Torque limit switch input</li> </ul>
	Control output			(1) In-position output (2) Position command ON/OFF output
		Max. command pulse frequency		500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by 4)
		Input pulse s	ignal format	Differential input. Selectable by parameter.
	Pulse		-	([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)
Full-closed control	input	Electronic ge (Division/Mul command pu	tiplication of	Applicable scaling ratio: $1/1000$ times to 8000 times Any value of $1 - 2^{30}$ can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution per motor revolution), but the combination has to be within the range shown above.
sec		Smoothing filter Primary delay filter or FIR type filter is adaptable to the	Primary delay filter or FIR type filter is adaptable to the command input	
ğ	Analog	· ·	command input	Individual torque limit for both positive and negative direction is enabled.
ň	input	input Torque feed forward input		Analog voltage can be used as torque feed forward input.
<u>o</u>		Setting range of external scale division/multiplication		1/40 times to 1280 times Although ratio of the encoder pulse (numerator) and external scale pulse (de- nominator) can be arbitrarily set in the range of 1 to $2^{23}$ for the numerator and in the range of 1 to $2^{23}$ for the denominator, this product should be used within the aforementioned range.
		ee-of-freedom	control	Available
		tion control		Available
		ation suppress	sion control	Available
	Block ope	eration		Modbus (RS 232, RS 485) or interface is selectable
0	Auto tunir	ng		The load inertia is identified in real time by the driving state of the motor operating ac- cording 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.
ğ	Division of	f encoder fee	dback pulse	Set up of any value is enabled (encoder pulses count is the max.).
Common	Protective		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.

A6SG series (RS485 communication type) A6SE series (Besic type)

Position control only type

		100 V	Mai	n circuit	Single phase 100 V $^{+10 \%}_{-15 \%}$ to	120 V <sup>+10 %</sup> -15 %	50 Hz / 60 Hz	
		100 V	Control circuit		Single phase 100 V $^{+10}_{-15}$ % to	120 V <sup>+10 %</sup> –15 %	50 Hz / 60 Hz	
	Input		Main	A-frame to D-frame	Single/3-phase 200 V $^{+10}_{-15}$ % to	240 V <sup>+10 %</sup> –15 %	50 Hz / 60 Hz	
	Input power	200 V	000.14	circuit	E-frame to F-frame	3-phase 200 V <sup>+10 %</sup> to _15 %	240 V <sup>+10 %</sup> –15 %	50 Hz / 60 Hz
			Control	A-frame to D-frame	Single phase 200 V $^{+10}_{-15}$ % to	240 V <sup>+10 %</sup> –15 %	50 Hz / 60 Hz	
			circuit	E-frame to F-frame	Single phase 200 V $^{+10 \%}_{-15 \%}$ to	240 V <sup>+10 %</sup> –15 %	50 Hz / 60 Hz	
		temperature			Ambient temperature: 0 °C to 55 °C (free from Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 ho		condensation <sup>*1</sup> )	
	En	vironment	humidity		Both operating and storage : 20 %RH to 85 s	%RH (free from	condensation <sup>*1</sup> )	
			Altitude		Lower than 1000 m			
			Vibration		5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz			
	Cor	Control method			IGBT PWM Sinusoidal wave drive			
Basic Specifications	End	Encoder feedback			<ul> <li>23-bit (8388608 resolution) absolute encoder</li> <li>* A6SG series</li> <li>When using it as an incremental system (not battery for absolute encoder. Parameter Print * A6SE series</li> <li>Since it can be used only as an incremental absolute encoder. Parameter Pr. 0.15 must</li> </ul>	ot using multitur r. 0.15 must be I system, do no	set to "1" (factory settings). t connect the battery for	
		Control si	gnal Output		General purpose 10 inputs The function of general-purpose input is selected by parameters.			
	Interfac	Control of			General purpose 6 outputs The function of general-purpose input is selected by parameters.			
	e con	Analog si	Input		None			
	ace connector	Analog Si	Output		2 outputs (Analog monitor: 2 output)			
	Ť	Pulse sigr	nal	Input	2 inputs (Photo-coupler input, Line receiver input)			
				Output	4 outputs (Line driver: 3 output, open collector: 1 output)			
				USB	USB interface to connect to computers for pa	arameter setting	g or status monitoring.	
		mmunicatio ction	on	RS232	1:1 communication		232 connector is not installed	
				RS485	1: n communication (max 31)	on A6 SE s	eries.	
	Fro	nt panel			(1) 5 keys (2) LED (6-digit)			
	Re	generation			A-frame, B,-frame: no built-in regenerative re C-frame to F-frame: Built-in regenerative res			
	Dyr	namic brak	е		A-frame to F-frame: Built-in			
	Cor	ntrol mode			(1) Position control (2) Internal velocity com	mand (3) Positi	ion/Internal velocity command	

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

Control input

Control output

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

(1) servo-ON input (2) Alarm clear input (3) Gain switch input
(4) Positive direction drive inhibit input (5) Negative direction drive inhibit input
(6) Forced alarm input (7) Inertia ratio switch input

(1) Servo-alarm output (2) Servo-ready output (3) External brake off output (4) At-speed output (5) Torque in-limit output (6) Zero speed detection output (7) Warning output (8) Alarm clear attribute output (9) Servo on status output

A6 Family

A6N Series

A6B Series Special Order Product

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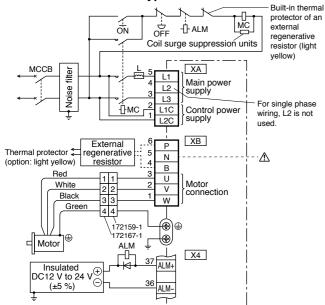
Series

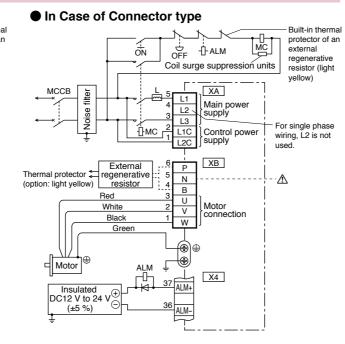
Imformation

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

### In Case of Leadwire type

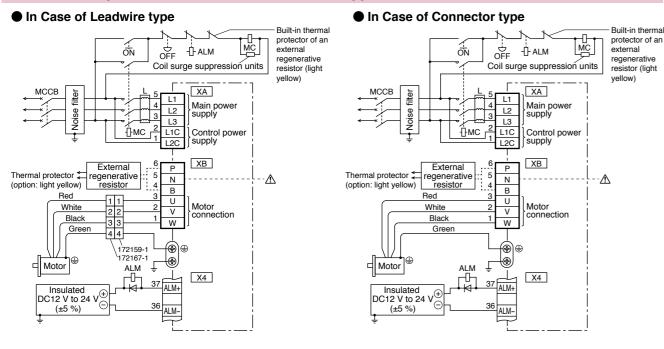




• The pin number of X4 is based on the factory setting parameters.

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

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



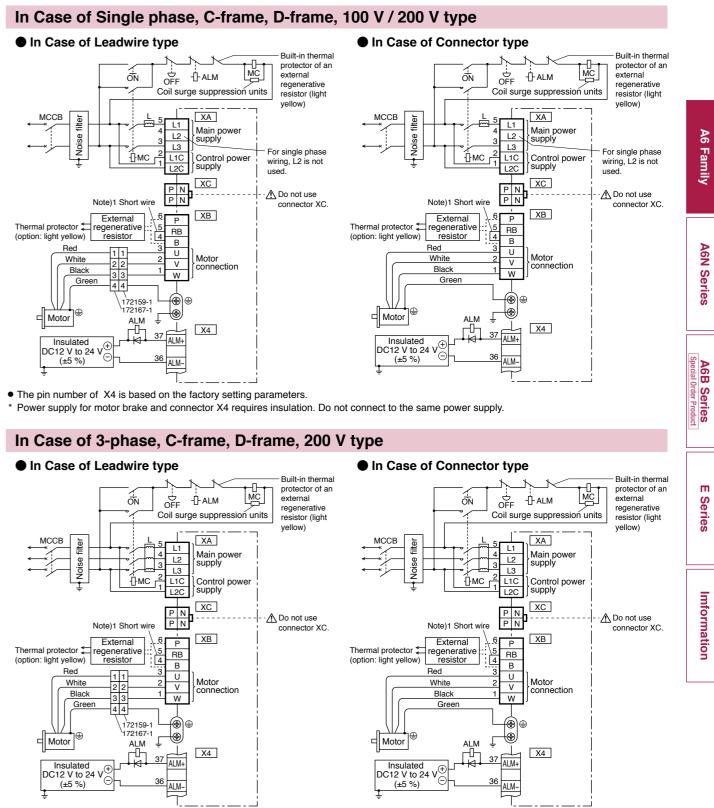
### • The pin number of X4 is based on the factory setting parameters.

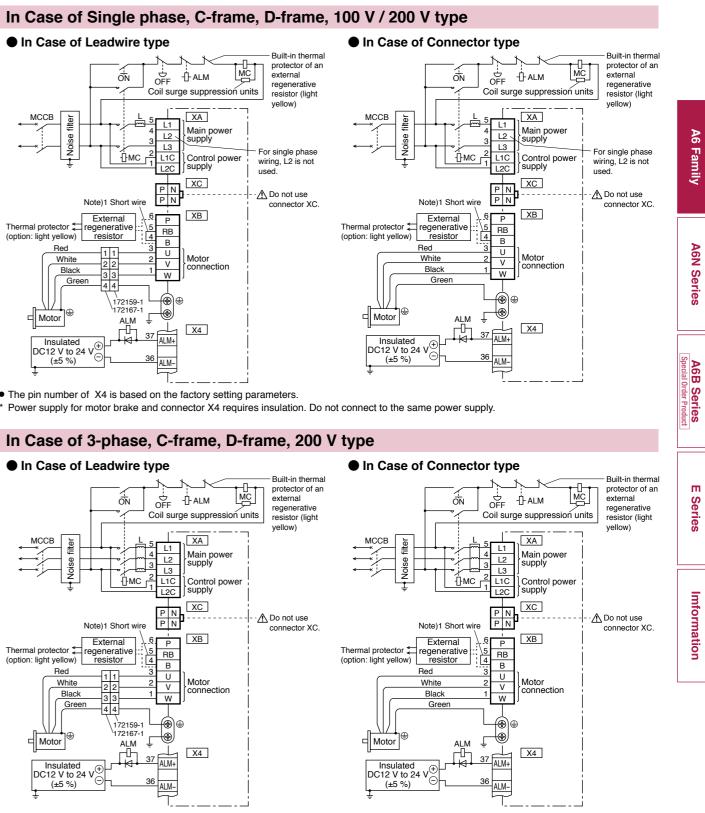
\* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

Connect an external regenerative resistor.

		Built-in	Connection of the connector XB  A Do not connect anything to N.	
Frame No.	Short wire (Accessory)	regenerative In case of using resistor an external regenerative resistor	In case of not using an external regenerative resistor	
A-frame B-frame	without	without	<ul> <li>Connect an external regenerative resistor between P-B.</li> </ul>	Always open between P-B.

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





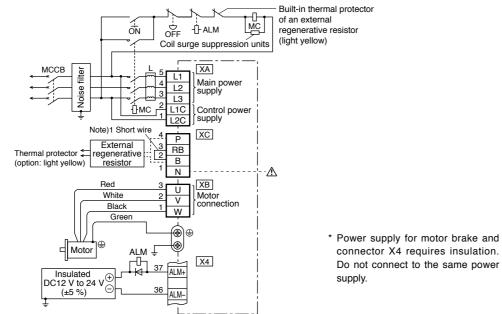
• The pin number of X4 is based on the factory setting parameters.

\* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply. Note)1

Frame	Short wire	Built-in regenerative resistor	Connection of the connector XB	▲ Do not connect anything to N.
No.	(Accessory)		In case of using an external regenerative resistor	In case of not using an external regenerative resistor
C-frame D-frame	with	with	<ul> <li>Remove the short wire accessory from between RB-B.</li> <li>Connect an external regenerative resistor between P-B.</li> </ul>	Shorted between RB-B with an attached short wire

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

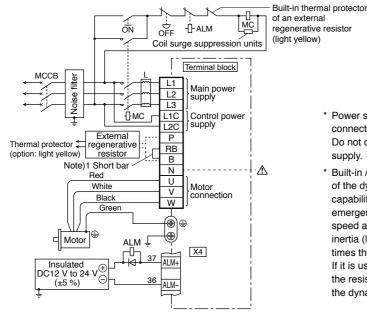


• The pin number of X4 is based on the factory setting parameters.

### Note)1

Frame	Short wire	Built-in	Connection of the connector XC	▲ Do not connect anything to N.
No.	(Accessory)	regenerative resistor	In case of using an external regenerative resistor	In case of not using an external regenerative resistor
E-frame	with	with	<ul> <li>Remove the short wire accessory from between RB-B.</li> <li>Connect an external regenerative resistor between P-B.</li> </ul>	Shorted between RB-B with an attached short wire

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



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

### Note)1

Frame	Short bar	Built-in regenerative resistor	Connection of terminal block A Do not connect anything to N.		
No.	(Accessory)		In case of using	In case of not using	
NO.			an external regenerative resistor	an external regenerative resistor	
F-frame	with	with	<ul> <li>Remove the short bar accessory from between RB-B.</li> <li>Connect an external regenerative resistor between P-B.</li> </ul>	Shorted between RB-B with an attached short bar	

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

\* Power supply for motor brake and

connector X4 requires insulation.

\* Built-in / {external} The standard

of the dynamic brake resistance's

emergency stops from the rated

speed at the maximum allowable

times the rotor inertia moment).

If it is used under more conditions

the resistance may be broken and

the dynamic brake may not operate.

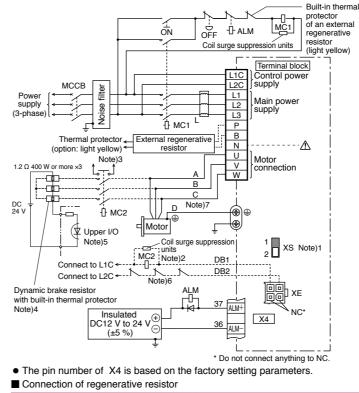
capability is up to three consecutive

inertia (load inertia moment ratio 10

supply.

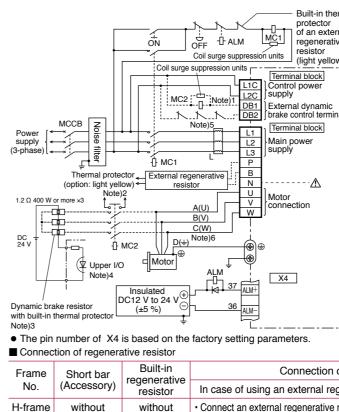
Do not connect to the same power

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



Frame	Short bar	rogonorativo	Connection of terminal block	
No.	(Accessory)		In case of using an external regenerative resistor	In case of not using an external regenerative resistor
G-frame	without	without	${\boldsymbol{\cdot}}$ Connect an external regenerative resistor between P-B.	<ul> <li>Always open between P-B.</li> </ul>

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



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

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Series

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### About the Dynamic Brake

G frame has built-in dynamic brake resistor. When using built-in dynamic brake, set switch XS to "1" side

When exceeding the capacity of built-in dynamic brake resistor, set switch XS to "2" side and use external dynamic brake resistor.

### When using external dynamic brake

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

### About motor wiring

Note 7) This is the terminal symbol of the connector.

- \* Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.
- \* Do not use built-in dynamic brake and external dynamic brake at the same time.

ermal mal ve w)	The H fr will be in	It the Dynamic Brake ame does not have a built-in dynamic brake resistor, so it n a free run state when the motor does emergency stop. external dynamic brake resistor if it may cause a machine
	When	n using external dynamic brake
	Note 1)	Make the electromagnetic contactor (MC2) the same as the
nal	Note 2)	electromagnetic contactor (MC1) of the main circuit. Provide an auxiliary contact, and configure protection so that the servo will not turn on in the external sequence if the main contact is welded.
	Note 3)	Mount the dynamic brake resistor on incombustible material such as metal.
	Note 4)	Install a thermal protector on the dynamic brake resistor and monitor it with the upper I / O, and configure protection so that the servo is not turned on in the external sequence when the thermal protector is operating.
	Note 5)	If the upper I / O cannot monitor the thermal protector, input the output of the thermal protector between L2C and DB2 so that the dynamic brake does not operate when the temperature protection works.
	Abou	It motor wiring
1	Note 6)	This is the terminal symbol of the connector. () Is the terminal symbol of 22.0 kW motor.
		ot use built-in dynamic brake and external dynamic brake at ame time.
of tern	ninal blo	ck A Do not connect anything to N.
aonora	tivo roci	stor In case of not using an external regenerative resistor

of terminal block	<u>ZN</u> Do not connect anything to N.
generative resistor	In case of not using an external regenerative resistor
resistor between P-B.	Always open between P-B.

### A6 Series Wiring to the Connector, X3 \* Excluding A6SE, A6SG Series Safety Function

Connecting the host controller can configure a safety circuit that controls the safety functions. When not constructing the safety circuit, use the supplied safety bypass plug.

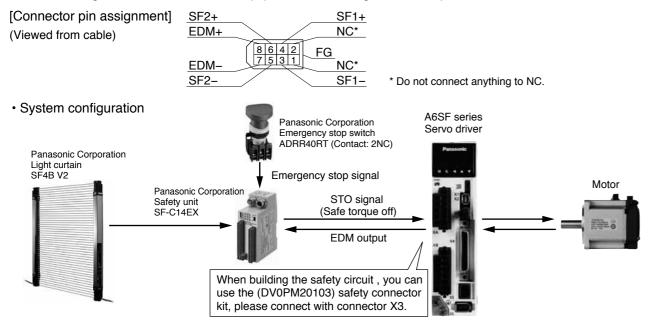
### Outline Description of Safe Torque Off (STO)

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

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

### Safety Precautions

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

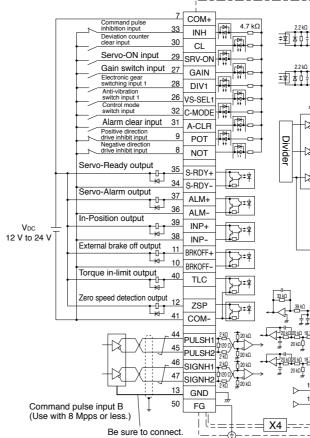


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### Wiring to the Connector, X4

### Wiring Example of Position Control Mode



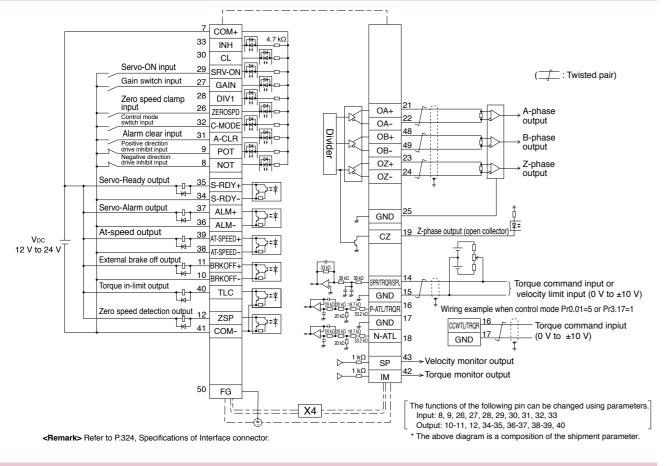
In case of open collector I/F (1) When you use the external resistor with 12 V and 24 V power supply PULS1 Command pulse input A SIGN1 ≖■本中† 220Ω (Use with SIGN2 500 knns or les A6 Family GND OA+ A-phase VDC VDC-1.5 R+220 ≒10 mA juqtuo 1 OAof R V 820 01/2 W B-phase OB+ 49 output 24 V 2 kΩ1/2 W OB-2) When you do not use the externa Z-phase OZ+ resistor with 24 V power supply output OZ-A6N Series ¥: GND F Z-phase output (open collector) CZ ( \_\_\_\_\_ : Twisted pair) <Note> Do not connect anythig to Pin No.14 15, 16, 18, A6 SE series and A6 SG series can not be used A6B - GND Positive direction torque limit input (0 V to +10 V) Series Negative direction torque limit input (-10 V to 0 V) 1 kΩ Velocity monitor output SP Torque monitor output IM The functions of the following pin can be changed using parameters. ===**X**4 -----<sup>;;</sup> Input: 8, 9, 26, 27, 28, 29, 31, 32 Output: 10-11, 12, 34-35, 36-37, 38-39, 40 <Remark> Refer to P.324, Specifications of Interface connector The above diagram is a composition of the shipment parar ш Series Wiring Example of Velocity Control Mode \* Excluding A6SE, A6SG Series 7 COM+ nternal command speed election 1 input 33 INTSPD1 4.7 kΩ 1 sneed election 2 input 30 INTSPD2 Servo-ON input 29 SRV-ON Imformation (\_\_\_\_: Twisted pair) Gain switch input 27 GAIN Internal command speed selection 3 input 28 INTSPD3 Zero speed clamp input 26 ZEROSPD OA+ **₽** A-phase output 22 Control mode switch input 32 C-MODE OA-48 Alarm clear input 31 A-CLR OB+ B-phase output OB-Positive direction drive inhibit input 9 POT 23 OZ+ ∣ [<del>r</del>₩ drive inhibit inpu 8 Z-phase output NOT Servo-Ready output 35 S-RDY+ 34 S-RDY-OZ-Servo-Alarm output \_\_\_\_ ₽=‡ GND 19 Z-phase output (open collecto 39 AT-SPEED+ 38 AT-SPEED-CZ At-speed output VDC 12 V to 24 V External brake off output 11 BRKOFF+ Torque in-limit output \_\_\_\_\_ ₽=≠ elocity command GND 15 ∫ input (0 V to ± 10 V) Zero speed detection output 12 + 20 kn/20 kn 187 kn + 20 kn/20 kn 187 kn ↓ 20 kn/0 332 kn ↓ 20 kn/0 332 kn ↓ 20 kn/0 332 kn ↓ 20 kn/0 187 kn ↓ 20 kn/0 177 kn ↓ 20 kn ↓ 20 kn/0 177 kn ↓ 20 kn ↓ 2 ₽ ZSP Positive direction torque limit input (0 V to +10 V) GND COM-1-20 kg 20 kg 18.7 kg N-ATL Negative direction torque limit input (-10 V to 0 V) 1 <u>kΩ</u> SP Velocity monitor output Torque monitor output IM 50 FG 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 The above diagram is a composition of the shipment parameter

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

### **Control Circuit Diagram**

A6 Series

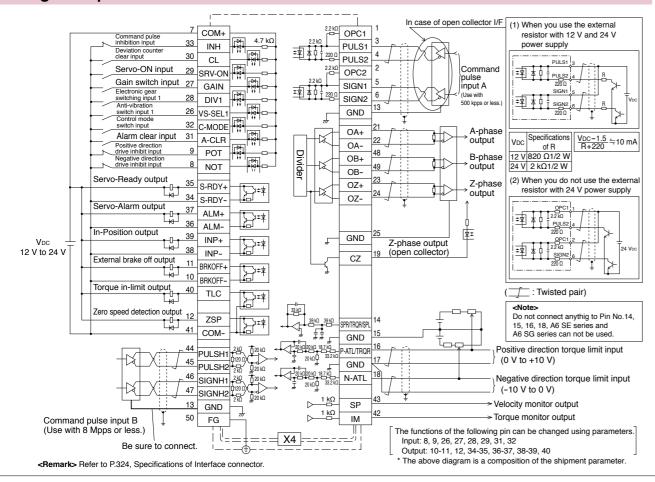
### Wiring Example of Torque Control Mode



Wiring Example of Full-closed Control Mode

\* Excluding A6SE, A6SG Series

\* Excluding A6SE, A6SG Series



### Wiring to the Connector, X5 \* Excluding A6SE, A6SG Series

### Applicable External Scale

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S

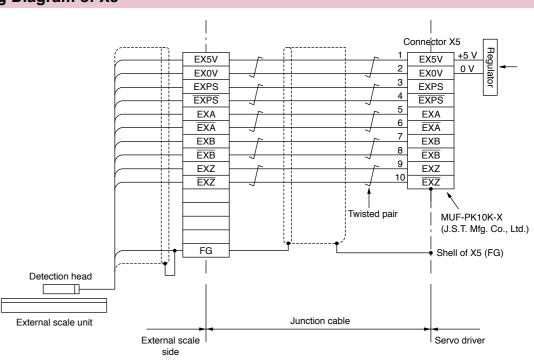
(A

Applicable External Scale	Manufacturer	Model No.	Resolution [µm]	Maximum speed (m/s) <sup>*1</sup>	
Parallel type (AB-phase)	General	_		fter 4 × multiplication : Mpps	
		SL700-PL101RP/RHP SL710-PL101RP/RHP	0.1	10	
	Magnagagia Ca. 1 td	SR75 / SR85	0.01 to 1	3.3	
	Magnescale Co., Ltd.	BF1	0.001/0.01	0.4/1.8	
Serial type Incremental system)		SQ10	0.05/0.1/ 0.5/1	3	
	NIDEC SANKYO CORPORATION	PSLH041 + PSLG	0.1	6	
		TONIC	0.001 to 5	0.40	
	Renishaw plc	ATOM	0.001 to 10	6.48 m/s @ 1 μm 0.648 m/s @ 0.1 μm	
		VIONIC	0.0025 to 5	0.048 m/s @ 0.1 μr	
		S2AP/SV2AP/G2AP	0.01/0.05	3	
		LAP	0.01/0.05	3	
	Fagor Automation S.Coop	EXA/ EXG/ EXT	0.01/0.05	8	
		H2AP-D200/H2AP-D90	29 bit/23 bit	750 r/min, 1500 r/min	
		S2AP-D170,/S2AP-D90	23 bit	1500 r/min	
		LIC2197P/LIC2199P	0.05/0.1	10	
		LIC4193P/LIC4195P LIC4197P/LIC4199P	0.001/0.005/0.01	10	
		LC195P/LC495P	0.001/0.01	3	
Serial type	HEIDENHAIN	ECA 4490P	27 bits to 29 bits	7000 r/min to 550 r/mir (Depends on drum size	
Absolute system)		RCN 2x90P/RCN 5x90P	26 bits/28 bits	1500 r/min	
		RCN 8x90P	29 bit	500 r/min	
	RSF Electronik	MC 15P MP/MC 15P MK	0.05/0.1	10	
	Magnescale Co., Ltd.	SR77 / SR87	0.01 to 1	3.3	
		AT573-SC/H	0.05	2.5	
	Mitutoyo Corporation	ST700	0.1	5	
		ST1300	0.001/0.01	8	
			0.001	A5/0.4, A6/4	
	Renishaw plc	RESOLUTE	0.05	A5/20, A6/100	
			0.1	1	

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

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

### Wiring Diagram of X5



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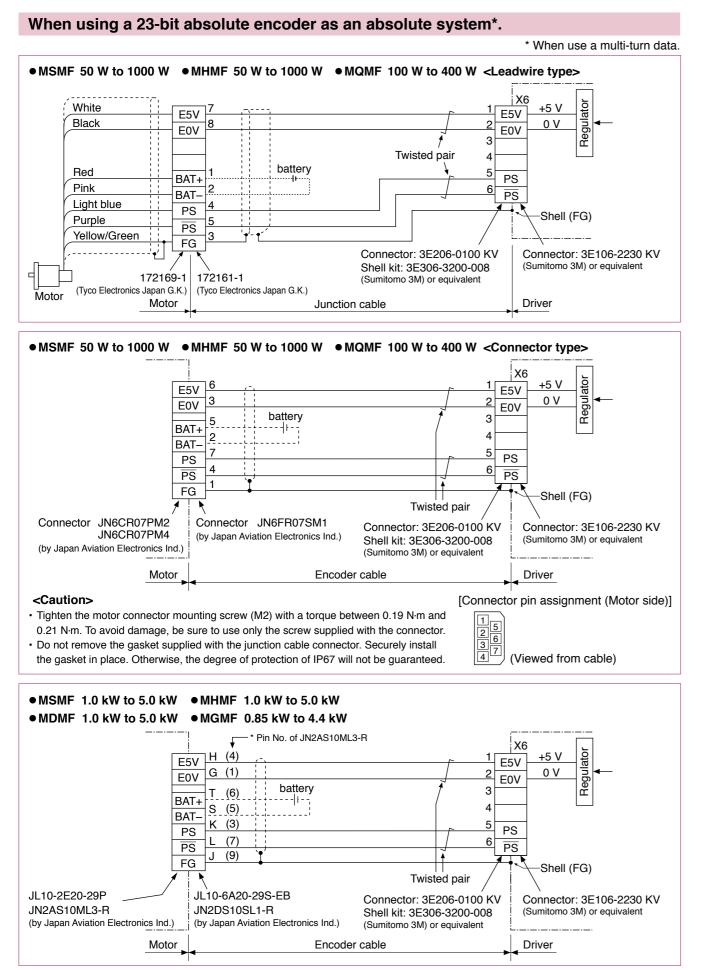
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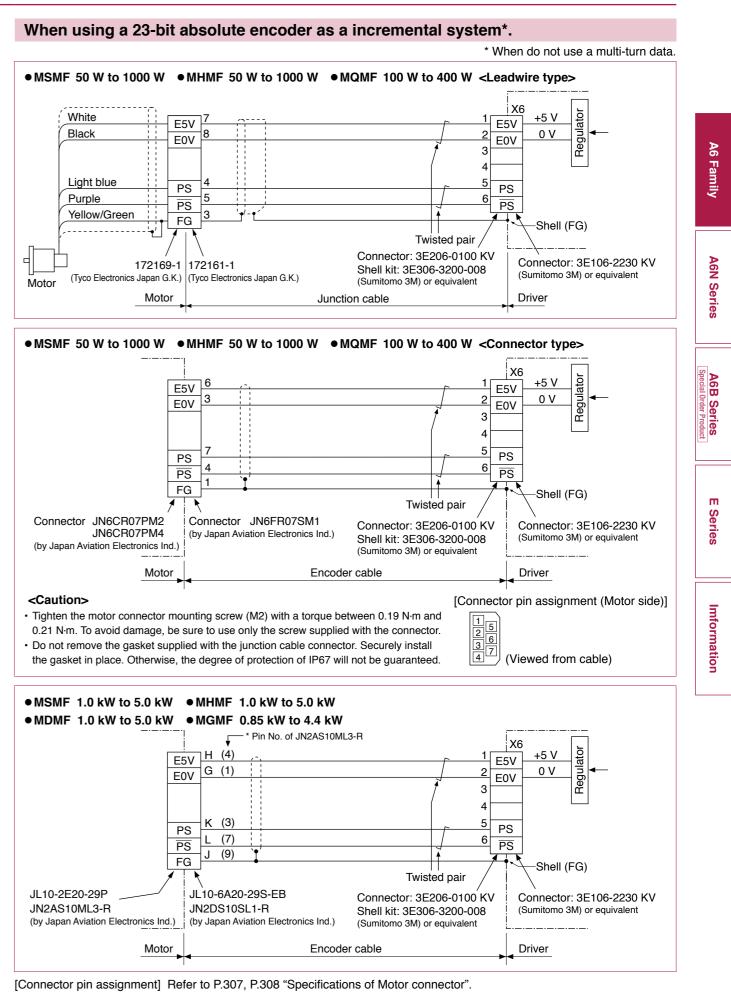


A6B Series Special Order Product

Ш Series



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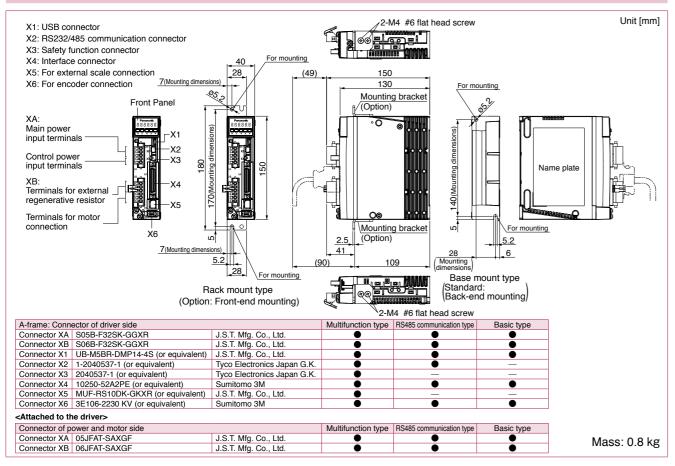


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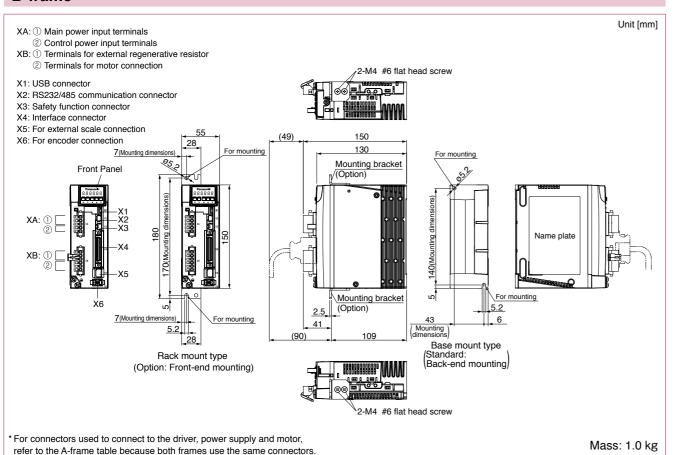
<sup>[</sup>Connector pin assignment] Refer to P.307, P.308 "Specifications of Motor connector".

A6 Series **Dimensions of Driver**  \* All dimensions shown in this catalog are for the A6SF series, but outer dimensions are the same as the A6SE series. For appearance, refer to P.23 and P.24.

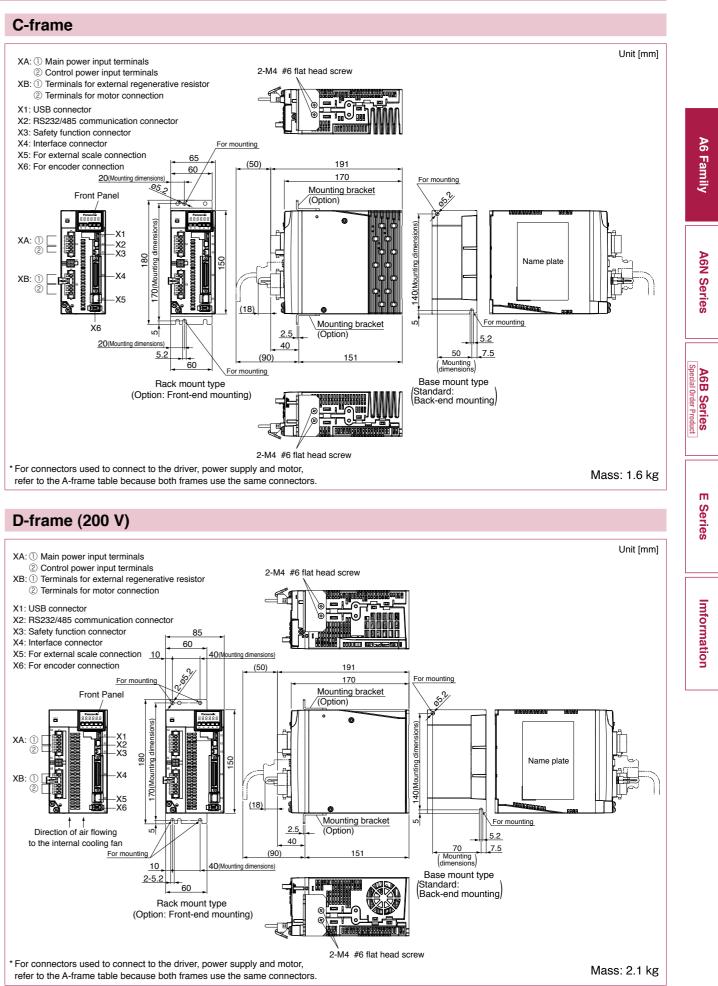
### A-frame



### **B-frame**



### XA: ① Main power input terminals ② Control power input terminals XB: 1) Terminals for external regenerative resistor 2 Terminals for motor connection X1: USB connector X2: RS232/485 communication connector X3: Safety function connector X4: Interface connector For mounting X5: For external scale connection 65 (50) X6: For encoder connection 60 / 20(Mounting di 05.2 Front Pane XA -X3 XB: ( XF **%** XF 2.5 20(Mounting dim 40 ensions 5.2 (90)60 For mounting Rack mount type (Option: Front-end mounting) For connectors used to connect to the driver, power supply and motor,



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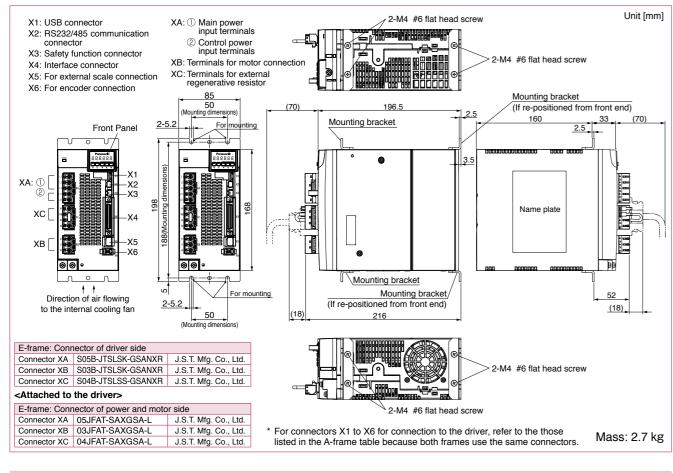
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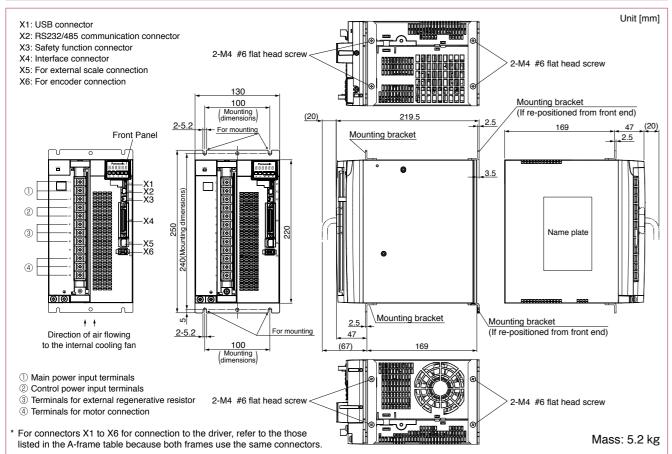
A6 Series Dimensions of Driver

\* All dimensions shown in this catalog are for the A6SF series, but outer dimensions are the same as the A6SE series. For appearance, refer to P.23 and P.24.

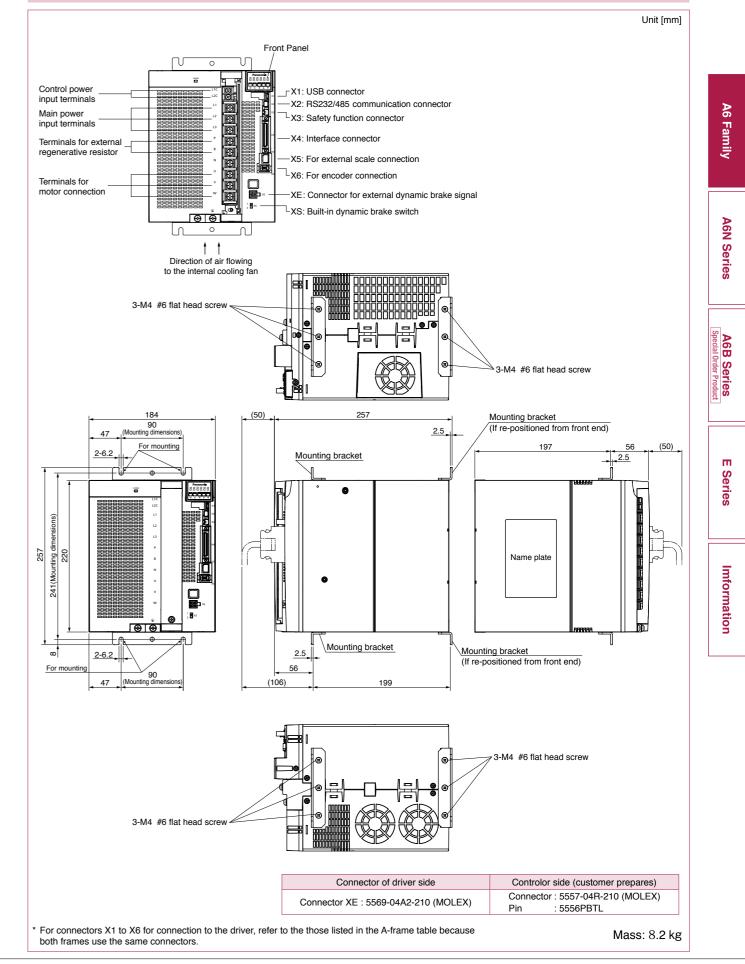
### E-frame (200 V)



### F-frame (200 V)



### G-frame (200 V) (The A6SE series is not line up)



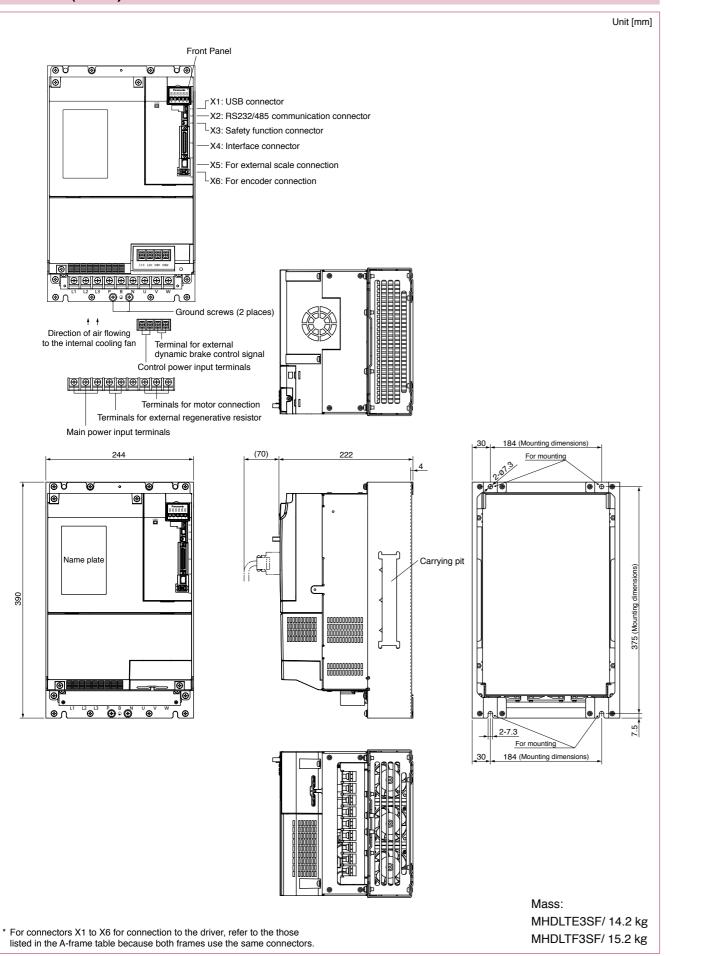
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### H-frame (200 V) (The A6SE series is not line up)



### Features/ Lineup

### Features

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

### Motor Lineup



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### Motor Specifications A6 Series



High inertia 6000 r/min (750 W,1000 W) Rated speed : 3000 r/min 50 W to 1000 W IP65: Leadwire type



: 2000 r/min (11.0 kW to 22.0 kW) : 1500 r/min (11.0 kW to 22.0 kW)

### Motor Contents

ISMF 50 W to 5.0 kW P.63
IQMF 100 W to 400 WP.79
IHMF 50 W to 7.5 kW P.85
IDMF 1.0 kW to 22.0 kW P.102
IGMF 0.85 kW to 5.5 kW P.112
imensions
MSMF (50 W to 1000 W)P.119
MSMF (1.0 kW to 5.0 kW)P.127
MQMF (100 W to 400 W)P.135
MHMF (50 W to 1000 W)P.147
MHMF (1.0 kW to 7.5 kW)P.171
MDMF (1.0 kW to 22.0 kW)P.180
MGMF (0.85 kW to 5.5 kW)P.193
pecial Order ProductP.203

**Motors with Gear** 

Reducer. ..P.293

### **Motor Specification** Description

Environmental ConditionsP.303	
Notes on [Motor specification]	
pageP.303	
Permissible Load at	
Output ShaftP.304	
Built-in Holding Brake P.305	

A6N Series

A6 Family

A6B Series Special Order Product

m Series

### 100 V MSMF 50 W [Low inertia 38 mm sq.]

### Specifications

		AC100 V		
Motor model *1		MSMF5AZL1		
		Multi	function type	MADLT01SF
Applicable	Model No.	RS48	5 communication type *2	MADLN01SG
driver		Basic	c type *2	MADLN01SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.4
Rated output			(W)	50
Rated torque			(N·m)	0.16
Continuous sta	all torqu	0.16		
Momentary Ma	ax. peal	k torqu	ue (N·m)	0.48
Rated current			(A(rms))	1.1
Max. current		4.7		
Regenerative brake Without opt			Without option	No limit Note)2
frequency (times/min) Note)1		Note)1	DV0P4280	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.026
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With br			With brake	0.029
Recommended moment of inertia ratio of the load and the rotor Note)3				30 times or less
Rotary encode	er speci	ficatio	ns⁺³	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

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

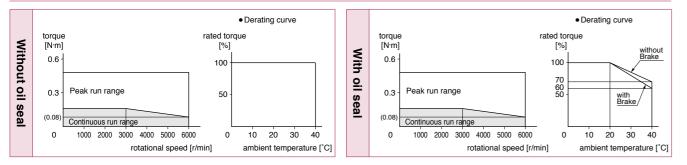
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

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

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



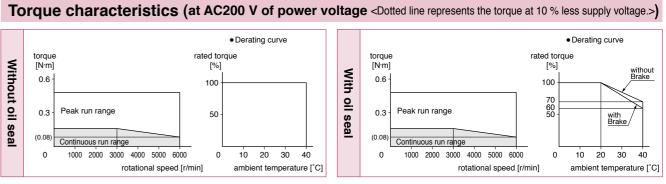
### Dimensions

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

### 200 V MSMF 50 W [Low inertia 38 mm sq.]

### Specifications

				AC200 V		specifications (For detail	,
Motor model *1		MSMF5AZL1	(This brake will be released when it is energized. Do not use this for braking the motor in motion.				
			unction type	MADLT05SF	Static fri	ction torque (N·m)	0.294 or more
Applicable	Model No.	RS485	communication type *2	MADLN05SG	Engagin	g time (ms)	35 or less
driver	110.	Basic	type <sup>*2</sup>	MADLN05SE	Releasir	ng time (ms) Note)4	20 or less
	Fram	e syml	loc	A-frame	Exciting	current (DC) (A)	0.30
Power supply	capacit	у	(kVA)	0.5	Releasir	ng voltage (DC) (V)	1 or more
Rated output			(W)	50	Exciting	voltage (DC) (V)	24±1.2
Rated torque			(N·m)	0.16	• Dormi	ssible load (For details, ref	er to P304)
Continuous st	all torqu	ie	(N·m)	0.16	• Fermi		,
Momentary M	Nomentary Max. peak torque (N·m)		0.48	During	Radial load P-direction (N)	147	
Rated current	Rated current (A(rms))		1.1	assembly	Thrust load A-direction (N)	88.0	
Max. current			(A(o-p))	4.7	,	Thrust load B-direction (N)	117.6
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	68.6
frequency (time		Note)1	DV0P4281	No limit Note)2	operation	Thrust load A, B-direction (N)	58.8
Rated rotation	al spee	d	(r/min)	3000	<ul> <li>For detail</li> </ul>	For details of Note)1 to Note)4, refer to P.303.	
Max. rotationa	al speed		(r/min)	6000		Dimensions of Driver, refer to P.57.	
Moment of ine	ertia		Without brake	0.026		n the motor part number repre	esents the moto
of rotor ( $\times 10^{-4}$ kg·m <sup>2</sup> ) With brake		0.029		specifications. *2 Basic type and RS485 communication type are			
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	"Position control type". Detail of model designation, refer to P.22.				
Rotary encode	er speci	ficatio	າຣ <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an increment		
Resolution per single turn				8388608	system (not using multi-turn data), do not connect a battery for absolute encoder.		



### **Dimensions**

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

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

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### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

### 100 V MSMF 100 W [Low inertia 38 mm sq.]

### **Specifications**

				AC100 V
Motor model *1		MSMF011L1		
		Multif	function type	MADLT11SF
Applicable	Model No.	RS48	5 communication type *	<sup>2</sup> MADLN11SG
driver		Basic	type *2	MADLN11SE
	Fram	e sym	lod	A-frame
Power supply	capacit	у	(kVA)	0.4
Rated output		100		
Rated torque			(N·m)	0.32
Continuous sta	all torqu	0.32		
Momentary Ma	ax. peal	0.95		
Rated current			(A(rms))	1.6
Max. current		6.9		
Regenerative brake Without option			Without option	No limit Note)2
frequency (times/min) Note)1			DV0P4280	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.048
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake			With brake	0.051
Recommender ratio of the loa		30 times or less		
Rotary encode	er speci	ficatio	ns*3	23-bit Absolute
	Re	solutio	n per single turn	8388608

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

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

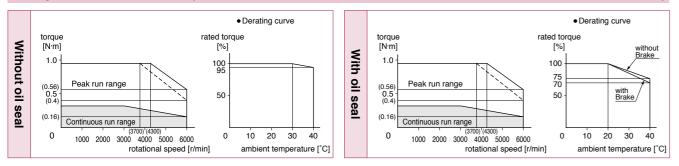
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

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

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



### Dimensions

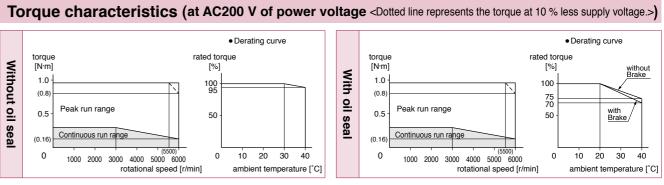
	Round shaft/ Key way, center tap shaft							
Motor specifications	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.120		—	P.1	20	_		
Connector type (IP67)	P.121		—	P.121		—		

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### 200 V MSMF 100 W [Low inertia 38 mm sq.]

### Specifications

				AC200 V		specifications (For detail	. ,	
Motor model*	Motor model <sup>*1</sup>			MSMF012L1	This brake will be released when it is energized Do not use this for braking the motor in motion.			
		Multifunction type		MADLT05SF Static friction torque (N·m)		ction torque (N·m)	0.294 or more	
Applicable	Model No.	RS485	communication type *2	MADLN05SG	Engagin	g time (ms)	35 or less	
driver	110.	Basic	type *2	MADLN05SE	Releasir	ng time (ms) Note)4	20 or less	
	Fram	e syml	lool	A-frame	Exciting	current (DC) (A)	0.30	
Power supply	capacit	у	(kVA)	0.5	Releasir	ng voltage (DC) (V)	1 or more	
Rated output			(W)	100	Exciting	voltage (DC) (V)	24±1.2	
Rated torque			(N·m)	0.32	• Dormi	• Permissible load (For details, refer to P.304)		
Continuous st	all torqu	le	(N·m)	0.32	• Fermi	•		
Momentary Max. peak torque (N·m)		0.95	During	Radial load P-direction (N)	147			
Rated current (A(rms))		1.1	assembly	Thrust load A-direction (N)	88.0			
Max. current			(A(o-p))	4.7		Thrust load B-direction (N)	117.6	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	68.6	
frequency (time		Note)1	DV0P4281	No limit Note)2	operation	Thrust load A, B-direction (N)	58.8	
Rated rotation	al spee	d	(r/min)	3000	For deta	For details of Note)1 to Note)4, refer to P.303.		
Max. rotationa	al speed		(r/min)	6000		Dimensions of Driver, refer to P.57.		
Moment of ine	ertia		Without brake	0.048		n the motor part number repre	esents the moto	
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	0.051		type and RS485 communicat	ion type are	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	"Position control type". Detail of model designation, refer to P.22.					
Rotary encode	er speci	fication	າຣ <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an increment			
	Resolution per single turn		8388608	system (not using multi-turn data), do not conner a battery for absolute encoder.				



### **Dimensions**

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

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

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### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

### 100 V MSMF 200 W [Low inertia 60 mm sq.]

### **Specifications**

				AC100 V
Motor model *1		MSMF021L1		
		Multif	unction type	MBDLT21SF
Applicable	Model No.	RS48	5 communication type	<sup>2</sup> MBDLN21SG
driver		Basic	type *2	MBDLN21SE
	Fram	e sym	lod	B-frame
Power supply	capacit	0.5		
Rated output		200		
Rated torque			(N·m)	0.64
Continuous sta	all torqu	ie	(N·m)	0.64
Momentary Ma	ax. peal	k torqu	ue (N·m)	) 1.91
Rated current			(A(rms))	2.5
Max. current			(A(o-p))	) 10.6
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4283	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.14
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	0.17
Recommender ratio of the loa		30 times or less		
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutio	n per single turn	8388608

• Brake specifications (For details, refer to P.305) /This brake will be released when it is energized.

(Do not use this for braking the motor in motion. )						
Static friction torque (N·m)	1.27 or more					
Engaging time (ms)	50 or less					
Releasing time (ms) 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					

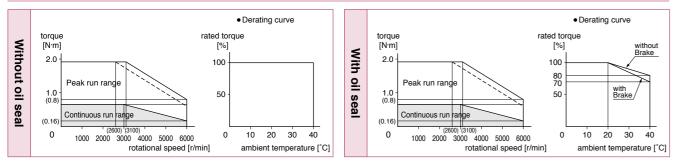
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

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

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



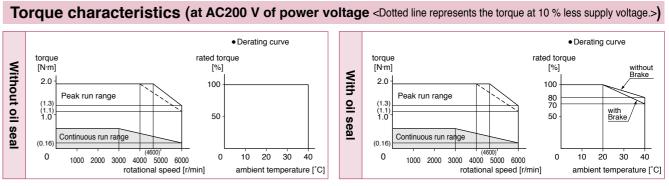
### Dimensions

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

### 200 V MSMF 200 W [Low inertia 60 mm sq.]

### Specifications

				AC200 V		specifications (For details		
Motor model*	Motor model 1			MSMF022L1	(This brake will be released when it is energized. Do not use this for braking the motor in motion.			
		Multif	unction type	MADLT15SF Static friction torque (N·m)		ction torque (N·m)	1.27 or more	
Applicable	Model No.	RS485	communication type *2	MADLN15SG	Engagin	g time (ms)	50 or less	
driver	140.	Basic	type <sup>*2</sup>	MADLN15SE	Releasir	ng time (ms) Note)4	15 or less	
	Fram	ie symbol		A-frame	Exciting	current (DC) (A)	0.36	
Power supply	capacit	у	(kVA)	0.5	Releasir	ng voltage (DC) (V)	1 or more	
Rated output			(W)	200	Exciting	voltage (DC) (V)	24±1.2	
Rated torque			(N·m)	0.64	• Dormi	Permissible load (For details, refer to P.304		
Continuous st	all torqu	e	(N·m)	0.64	• Perili			
Momentary Max. peak torque (N·m)		1.91	During	Radial load P-direction (N)	392			
Rated current (A(rms))		1.5	assembly	Thrust load A-direction (N)	147			
Max. current			(A(o-p))	6.5		Thrust load B-direction (N)	196	
Regenerative	brako		Without option	No limit Note)2	During	Radial load P-direction (N)	245	
frequency (time		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	98.0	
Rated rotation	nal spee	d	(r/min)	3000	For deta	For details of Note)1 to Note)4, refer to P.303.		
Max. rotationa	al speed		(r/min)	6000		Dimensions of Driver, refer to P.57.		
Moment of ine	ertia		Without brake	0.14		the motor part number repre cations.	sents the moto	
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	0.17		type and RS485 communicati	on type are	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	"Position control type". Detail of model designation, refer to P.22.					
Rotary encode	er speci	ficatio	າຣ <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incremen		
	Resolution per single turn		8388608	system (not using multi-turn data), do not conne a battery for absolute encoder.				



### **Dimensions**

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

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

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### Motor Specifications A6 Series

<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. A6N Series

A6 Family

A6B Series Special Order Product

m Series

### 100 V MSMF 400 W [Low inertia 60 mm sq.]

### **Specifications**

		AC100 V		
Motor model *1		MSMF041L1		
		Multif	iunction type	MCDLT31SF
Applicable	Model No	RS48	5 communication type *2	MCDLN31SG
driver		Basic	type <sup>∗</sup> ²	MCDLN31SE
	Fram	e sym	bol	C-frame
Power supply	capacit	0.9		
Rated output		400		
Rated torque			(N·m)	1.27
Continuous sta	all torqu	le	(N·m)	1.27
Momentary Ma	ax. peal	3.82		
Rated current			(A(rms))	4.6
Max. current			(A(o-p))	19.5
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4282	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.27
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With b			With brake	0.30
Recommender ratio of the loa		30 times or less		
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutio	n per single turn	8388608

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

Static friction torque (N·m)	1.27 or more				
Engaging time (ms)	50 or less				
Releasing time (ms) 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				

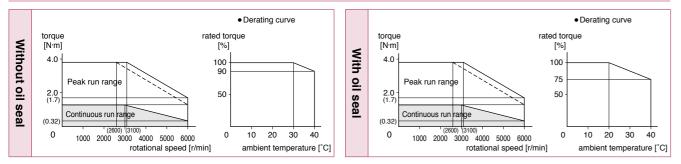
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

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

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



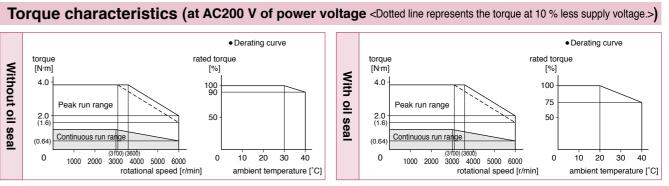
### Dimensions

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

### 200 V MSMF 400 W [Low inertia 60 mm sq.]

### Specifications

-			1							
				AC200 V		specifications (For details ake will be released when it is e				
Motor model 1				MSMF042L1	(Do not use this for braking the motor in motion. )					
Applicable driver	Model No.	Multifunction type		MBDLT25SF	Static friction torque (N·m)		1.27 or mo			
		RS485 communication type $^{^{\ast}2}$		MBDLN25SG	Engaging time (ms)		50 or less			
		Basic type *2		MBDLN25SE	Releasing time (ms) Note)4		15 or less			
	Fram	e sym	bol	B-frame	Exciting	0.36				
Power supply capacity (kVA)				0.9	Releasir	1 or more				
Rated output (W)				400	Exciting	24±1.2				
Rated torque (N·m)			(N·m)	1.27	• Permi	• Permissible load (For details, refer to P.304)				
Continuous stall torque (N·m)			(N·m)	1.27	During	Radial load P-direction (N)	392			
Momentary Max. peak torque (N·m)			ue (N·m)	3.82		( )				
Rated current (A(rms))			(A(rms))	2.4	assembly	Thrust load A-direction (N)	147			
Max. current (A(o-p))			(A(o-p))	10.2	]	Thrust load B-direction (N)	196			
Regenerative brake Without option			Without option	No limit Note)2	During	Radial load P-direction (N)	245			
		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	98.0			
Rated rotational speed (r/min)			(r/min)	3000	• For details of Note)1 to Note)4, refer to P.303.					
Max. rotational speed (r/min)			(r/min)	6000	• Dimensions of Driver, refer to P.57.					
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			Without brake	0.27		*1 in the motor part number represents the mo specifications.				
			With brake	0.30		*2 Basic type and RS485 communication type are				
Recommended moment of inertia ratio of the load and the rotor Note)3				30 times or less	Detail	<ul> <li>"Position control type".</li> <li>Detail of model designation, refer to P.22.</li> <li>*3 When using a rotary encoder as an incremen system (not using multi-turn data), do not conn</li> </ul>				
Rotary encoder specifications *3			ns <sup>*3</sup>	23-bit Absolute						
	Resolution per single turn			8388608		a battery for absolute encoder.				



### **Dimensions**

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

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

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### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

Imformation

<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.

## 200 V MSMF 750 W [Low inertia 80 mm sq.]

# **Specifications**

				AC200 V
Motor model *1		MSMF082L1		
		Multif	function type	MCDLT35SF
Applicable	Model No	RS48	5 communication type *2	MCDLN35SG
driver		Basic	c type <sup>∗</sup> ²	MCDLN35SE
	Fram	e sym	bol	C-frame
Power supply	capacit	у	(kVA)	1.8
Rated output			(W)	750
Rated torque			(N·m)	2.39
Continuous sta	all torqu	2.39		
Momentary Ma	ax. pea	k torqu	ue (N·m)	7.16
Rated current			(A(rms))	4.1
Max. current			(A(o-p))	17.4
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4283	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.96
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake	1.06
Recommended moment of inertia ratio of the load and the rotor Note				20 times or less
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutio	on per single turn	8388608

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

(De not dee this for braking the motor in motor).						
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					

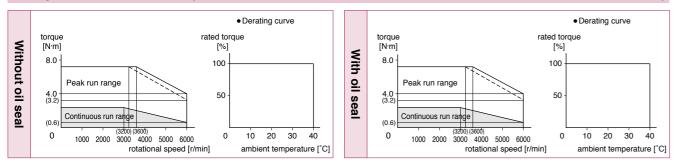
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

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

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



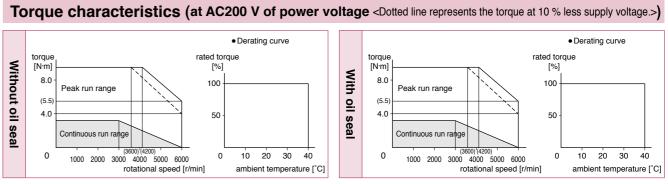
# Dimensions

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

# 200 V MSMF 1000 W [Low inertia 80 mm sq.]

# **Specifications**

				AC200 V
Motor model	1	MSMF092L1		
		Multi	function type	MDDLT45SF
Applicable	Model No	RS48	5 communication type $^{+2}$	MDDLN45SG
driver		Basic	c type *2	MDDLN45SE
	Frame	e sym	bol	D-frame
Power supply	capacity	/	(kVA)	2.4
Rated output			(W)	1000
Rated torque			(N·m)	3.18
Continuous st	all torqu	е	(N·m)	3.18
Momentary M	ax. peak	torqu	ue (N·m)	9.55
Rated current (A(rms)			(A(rms))	5.7
Max. current			(A(o-p))	24.2
Regenerative	brake		Without option	No limit Note)2
frequency (tim	es/min) 1	Note)1	DV0P4284	No limit Note)2
Rated rotation	nal speed	ł	(r/min)	3000
Max. rotationa	al speed		(r/min)	6000
Moment of ine	ertia		Without brake	1.26
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )		With brake	1.36	
Recommended moment of in ratio of the load and the roto				15 times or less
Rotary encod	er specif	icatio	ns <sup>*3</sup>	23-bit Absolute
Resolution per sir			on per single turn	8388608



# Dimensions

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

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

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#### **Motor Specifications** A6 Series

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

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

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

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

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

<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. A6N Series

A6 Family

A6B Series

> Ш Series

# Motor Specifications 200 V MSMF 1.0 kW [Low inertia 100 mm sq.]

# **Specifications**

					AC200 V	
Motor model *1		IP67			MSMF102L1	
		Multif	iunction type		MDDLT55SF	
Applicable	Model No.	RS48	5 communication type	*2	MDDLN55SG	
driver		Basic	type <sup>*2</sup>		MDDLN55SE	
	Fram	e sym	lod		D-frame	
Power supply	capacit	у	(kVA	۹)	2.4	
Rated output			(V)	/)	1000	
Rated torque			(N·m	ו)	3.18	
Continuous sta	Continuous stall torque (N·m)				3.82	
Momentary Ma	ax. peal	k torqu	ue (N·m	ו)	9.55	
Rated current			(A(rms)	))	6.6	
Max. current			(A(o-p)	))	28	
Regenerative	brake		Without option		No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4284		No limit Note)2	
Rated rotation	al spee	d	(r/mir	ו)	3000	
Max. rotationa	l speed		(r/mir	ו)	5000	
Moment of ine	rtia		Without brake		2.15	
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake		2.47	
Recommended moment of inertia ratio of the load and the rotor Note)					15 times or less	
Rotary encode	er speci	ficatio	ns⁺³		23-bit Absolute	
	Re	solutio	n per single turn		8388608	

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

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

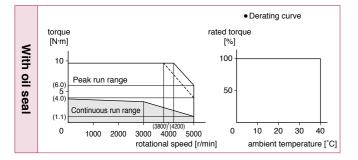
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

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

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



## Dimensions

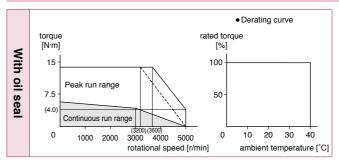
	Motor specifications	Key way shaft/ Round shaft							
		without brake			with brake				
		without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
	Encoder connector Large size (JL10) type		P.127 P.127			P.127			
	Encoder connector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

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# 200 V MSMF 1.5 kW [Low inertia 100 mm sq.]

### Specifications

				AC200 V		specifications (For details			
Motor model <sup>*1</sup> IP67		MSMF152L1		(This brake will be released when it is energized.) Do not use this for braking the motor in motion.					
			unction type	MDDLT55SF	Static fri	Static friction torque (N·m)			
Applicable	Model No.	RS48	5 communication type *2	MDDLN55SG	Engagin	g time (ms)	50 or less		
driver	110.	Basic	type <sup>*2</sup>	MDDLN55SE	Releasir	ng time (ms) Note)4	15 or less		
	Fram	e syml	loc	D-frame	Exciting	current (DC) (A)	0.81		
Power supply	capacit	у	(kVA)	2.9	Releasir	ng voltage (DC) (V)	2 or more		
Rated output			(W)	1500	Exciting	voltage (DC) (V)	24±2.4		
Rated torque			(N·m)	4.77	• Dormi	Permissible load (For details, refer to P.304)			
Continuous sta	all torqu	e	(N·m)	5.72	• Fermi				
Momentary Ma	ax. peal	k torqu	ıe (N·m)	14.3	During	Radial load P-direction (N)	980		
Rated current			(A(rms))	8.2	assembly	Thrust load A-direction (N)	588		
Max. current			(A(o-p))	35		Thrust load B-direction (N)	686		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	490		
frequency (time		Note)1	DV0P4284	No limit Note)2	operation	Thrust load A, B-direction (N)	196		
Rated rotation	al spee	d	(r/min)	3000	For deta	ails of Note)1 to Note)4, refer t	to P.303.		
Max. rotationa	l speed		(r/min)	5000		ons of Driver, refer to P.58.			
Moment of ine	rtia		Without brake	3.10		the motor part number repre cations.	sents the moto		
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	3.45		type and RS485 communicati	on type are		
	Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less	Detail	"Position control type". Detail of model designation, refer to P.22.			
Rotary encode	er speci	ficatio	ns <sup>⁺3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incremen			
	Re	solutio	n per single turn	8388608		system (not using multi-turn data), do not conne a battery for absolute encoder.			



### **Dimensions**

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

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

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#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

E Series

Imformation

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

# Motor Specifications 200 V MSMF 2.0 kW [Low inertia 100 mm sq.]

# **Specifications**

					AC200 V
Motor model *1			IP67	MSMF202L1	
		Multif	function type		MEDLT83SF
Applicable	Model No.	RS48	5 communication type	e*²	MEDLN83SG
driver		Basic	type *2		MEDLN83SE
	Fram	e sym	lod		E-frame
Power supply	capacit	у	(kV/	A)	3.8
Rated output			(V	V)	2000
Rated torque			(N·n	n)	6.37
Continuous sta	all torqu	ie	(N·n	n)	7.64
Momentary Ma	ax. peal	k torqu	ue (N·n	n)	19.1
Rated current			(A(rms	;))	11.3
Max. current			(A(o-p	(A(o-p)) 48	
Regenerative	brake		Without option		No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285		No limit Note)2
Rated rotation	al spee	d	(r/mi	n)	3000
Max. rotationa	l speed		(r/mi	n)	5000
Moment of ine	rtia		Without brake		4.06
of rotor (×10 <sup>-4</sup>		With brake		4.41	
Recommended moment of inertia ratio of the load and the rotor Note)3					15 times or less
Rotary encode	er speci	ficatio	ns <sup>*3</sup>		23-bit Absolute
	Re	solutio	n per single turn		8388608

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

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

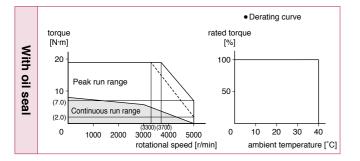
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

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

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



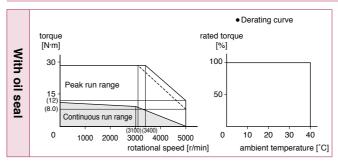
## Dimensions

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

# 200 V MSMF 3.0 kW [Low inertia 120 mm sq.]

### Specifications

				AC200 V		specifications (For details			
Motor model *1	IP67		IP67	MSMF302L1	(This brake will be released when it is energized Do not use this for braking the motor in motion.				
		Multif	unction type	MFDLTA3SF	Static fri	Static friction torque (N·m)			
Applicable	Model No.	RS48	communication type *2	MFDLNA3SG	Engagin	g time (ms)	80 or less		
driver	110.	Basic	type <sup>*2</sup>	MFDLNA3SE	Releasir	ng time (ms) Note)4	15 or less		
	Fram	e syml	loc	F-frame	Exciting	current (DC) (A)	0.81		
Power supply	capacit	у	(kVA)	5.2	Releasir	ng voltage (DC) (V)	2 or more		
Rated output			(W)	3000	Exciting	voltage (DC) (V)	24±2.4		
Rated torque			(N·m)	9.55	• Dormi	• Permissible load (For details, refer to P.304)			
Continuous sta	all torqu	le	(N·m)	11.0	• Fermi	•	,		
Momentary Ma	ax. pea	k torqu	ie (N·m)	28.6	During	Radial load P-direction (N)	980		
Rated current			(A(rms))	18.1	assembly	Thrust load A-direction (N)	588		
Max. current			(A(o-p))	77		Thrust load B-direction (N)	686		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	490		
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	196		
Rated rotation	al spee	d	(r/min)	3000	For deta	For details of Note)1 to Note)4, refer to P.303.			
Max. rotationa	l speed		(r/min)	5000		ons of Driver, refer to P.59.			
Moment of ine	rtia		Without brake	7.04		*1			
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	7.38		type and RS485 communicati	on type are		
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less		"Position control type". Detail of model designation, refer to P.22.					
Rotary encode	er speci	ficatio	าร <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incremen			
	Re	Resolution per single turn			system (not using multi-turn data), do not conne a battery for absolute encoder.				



### **Dimensions**

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

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

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<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.

#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

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

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 200 V MSMF 4.0 kW [Low inertia 130 mm sq.]

# **Specifications**

					AC200 V
Motor model *1			IP67	MSMF402L1	
		Multif	function type		MFDLTB3SF
Applicable	Model No	RS48	5 communication ty	pe <sup>∗</sup> 2	MFDLNB3SG
driver		Basic	type *2		MFDLNB3SE
	Fram	e sym	lod		F-frame
Power supply	capacit	у	(k	VA)	6.5
Rated output				(W)	4000
Rated torque			(N	ŀm)	12.7
Continuous sta	all torqu	ie	(N	ŀm)	15.2
Momentary Ma	ax. pea	k torqu	ie (N	(N·m) 38	
Rated current	Rated current				19.6
Max. current			(A(o	-p))	83
Regenerative	brake		Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4285×2		No limit Note)2
Rated rotation	al spee	d	(r/n	nin)	3000
Max. rotationa	l speed		(r/n	nin)	4500
Moment of ine	rtia		Without brake		14.4
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake		15.6
Recommender ratio of the loa				ote)3	15 times or less
Rotary encode	er speci	ficatio	ns *3		23-bit Absolute
	Re	solutio	n per single turr	ו	8388608

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

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

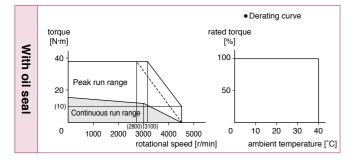
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

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

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



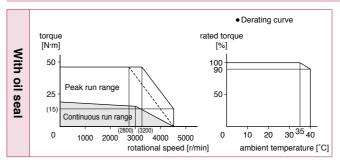
### Dimensions

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

# 200 V MSMF 5.0 kW [Low inertia 130 mm sq.]

#### Specifications

				AC200 V		specifications (For details	-	
Motor model *1			IP67	MSMF502L1	(This brake will be released when it is energized.) Do not use this for braking the motor in motion.			
		Multif	unction type	MFDLTB3SF	Static fri	ction torque (N·m)	22.0 or more	
Applicable	Model No.	RS48	5 communication type *2	MFDLNB3SG	Engagin	g time (ms)	110 or less	
driver	110.	Basic	type <sup>*2</sup>	MFDLNB3SE	Releasir	ng time (ms) Note)4	50 or less	
	Fram	e syml	loc	F-frame	Exciting	current (DC) (A)	0.90	
Power supply	capacit	у	(kVA)	7.8	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	5000	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	15.9	• Pormi	• Permissible load (For details, refer to P.304)		
Continuous sta	all torqu	le	(N·m)	19.1	1		,	
Momentary Ma	ntary Max. peak torque (N·m)		47.7	During	Radial load P-direction (N)	980		
Rated current			(A(rms))	24.0	assembly	Thrust load A-direction (N)	588	
Max. current			(A(o-p))	102		Thrust load B-direction (N)	686	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	784	
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	343	
Rated rotation	al spee	d	(r/min)	3000	For deta	ails of Note)1 to Note)4, refer to P.303. ons of Driver, refer to P.59.		
Max. rotationa	l speed		(r/min)	4500				
Moment of ine	rtia		Without brake	19.0		Im in the motor part number represents the moto pecifications.		
of rotor (x10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake Recommended moment of inertia ratio of the load and the rotor Note)3		With brake	20.2		*2 Basic type and RS485 communication type are			
		15 times or less	Detail	"Position control type". Detail of model designation, refer to P.22.				
Rotary encode	er speci	ficatio	ns <sup>∗3</sup>	23-bit Absolute		using a rotary encoder as		
Resolution per single turn		n per single turn	8388608		system (not using multi-turn data), do not connect a battery for absolute encoder.			



### **Dimensions**

	Key way shaft/ Round shaft							
Motor specifications	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.133		—	P.1	134		
Encoder connector Small size (JN2) type		P.134			P.134			

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

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#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

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

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

## **Specifications**

					AC100 V
Motor model *1		MQMF011L1			
		Multif	Multifunction type		MADLT11SF
Applicable	Model No	RS48	5 communication ty	pe <sup>*2</sup>	MADLN11SG
driver		Basic	type *2		MADLN11SE
	Fram	e sym	lod		A-frame
Power supply	capacit	у	(k'	VA)	0.4
Rated output				(W)	100
Rated torque			(N	ŀm)	0.32
Continuous sta	all torqu	ie	(N	ŀm)	0.33
Momentary Ma	ax. peal	k torqu	ie (N	ŀm)	1.11
Rated current			(A(rm	ns))	1.6
Max. current			(A(o	-p))	7.9
Regenerative	brake		Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4280		No limit Note)2
Rated rotation	al spee	d	(r/n	nin)	3000
Max. rotationa	l speed		(r/n	nin)	6500
Moment of ine	rtia		Without brake		0.15
of rotor (×10 <sup>-4</sup> kg·m²)     With brake       Recommended moment of inertia ratio of the load and the rotor     Note)3		With brake		0.18	
		20 times or less			
Rotary encode	er speci	ficatio	ns <sup>∗3</sup>		23-bit Absolute
	Re	solutio	n per single turr	า	8388608

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

(Bo not use this for braining the motor i	
Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

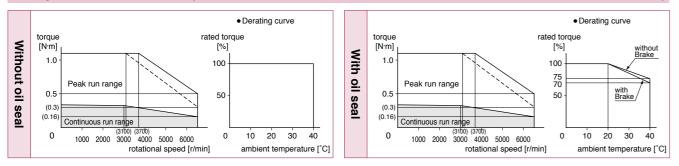
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

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

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



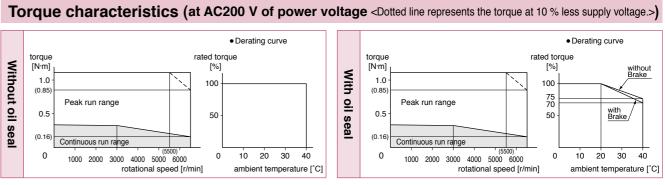
## Dimensions

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

## 200 V MQMF 100 W [Middle inertia Flat type 60 mm so

### Specifications

				AC200 V
Motor model*	1	MQMF012L1		
		Multi	function type	MADLT05SF
Applicable	Model No	RS48	5 communication type *2	MADLN05SG
driver		Basic	type *2	MADLN05SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	100
Rated torque			(N·m)	0.32
Continuous st	all torqu	ie	(N·m)	0.33
Momentary M	nentary Max. peak torque (N·m			1.11
Rated current			(A(rms))	1.1
Max. current			(A(o-p))	5.5
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4281	No limit Note)2
Rated rotation	nal spee	d	(r/min)	3000
Max. rotationa	al speed		(r/min)	6500
Moment of ine	ertia		Without brake	0.15
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) Recommended moment of ratio of the load and the roto		With brake	0.18	
				20 times or less
Rotary encode	er speci	ficatio	ns*3	23-bit Absolute
	Re	solutio	on per single turn	8388608



### Dimensions

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

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

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

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#### **Motor Specifications** A6 Series

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• Brake specifications (For details, refer to P.305)				
(This brake will be released when it is energized.) Do not use this for braking the motor in motion.				
Static friction torque (N·m)	0.39 or more			

Otatic metion torque (NTM)	0.05 01 11010
Engaging time (ms)	15 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

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

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

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



A6B Series

> Ш Series

Imformation

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### 100 V MQMF 200 W [Middle inertia Flat type 80 mm sq.]

## **Specifications**

				AC100 V
Motor model *1		MQMF021L1		
		Multif	function type	MBDLT21SF
Applicable	Model No	RS48	5 communication type*	MBDLN21SG
driver		Basic	type <sup>*2</sup>	MBDLN21SE
	Fram	e sym	bol	B-frame
Power supply capacity (kVA)				0.5
Rated output			(W)	200
Rated torque			(N·m)	0.64
Continuous sta	all torqu	е	(N·m)	0.76
Momentary Ma	ax. peal	< torqu	ue (N·m)	2.23
Rated current			(A(rms))	2.1
Max. current			(A(o-p))	10.4
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4283	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6500
Moment of ine	rtia		Without brake	0.50
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	0.59
	Recommended moment of inertia ratio of the load and the rotor			20 times or less
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutio	on per single turn	8388608

• Brake specifications (For details, refer to P.305) /This brake will be released when it is energized.

Do not use this for braking the motor in motion.					
Static friction torque (N·m)	1.6 or more				
Engaging time (ms)	70 or less				
Releasing time (ms) Note)4	20 or less				
Exciting current (DC) (A)	0.36				
Releasing voltage (DC) (V)	1 or more				
Exciting voltage (DC) (V)	24±2.4				

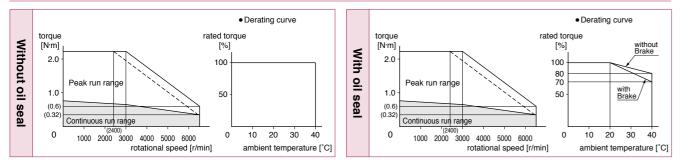
#### Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

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

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



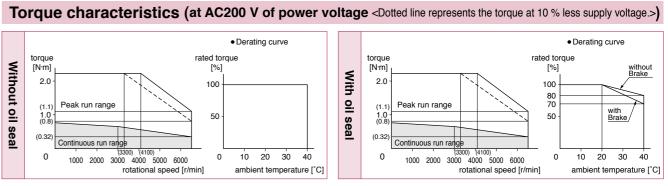
## Dimensions

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

# 200 V MQMF 200 W [Middle inertia Flat type 80 mm so

# Specifications

				AC200 V		specifications (For details			
Motor model	Motor model *1			MQMF022L1		(This brake will be released when it is energized.) Do not use this for braking the motor in motion.			
			unction type	MADLT15SF	MADLT15SF Static friction torque (N·m)		1.6 or more		
Applicable	Model No.	RS48	5 communication type *2	MADLN15SG	Engagin	g time (ms)	70 or less		
driver	110.	Basic	type <sup>*2</sup>	MADLN15SE	Releasir	ng time (ms) Note)4	20 or less		
	Fram	e sym	loc	A-frame	Exciting	current (DC) (A)	0.36		
Power supply	capacit	у	(kVA)	0.5	Releasir	ng voltage (DC) (V)	1 or more		
Rated output			(W)	200	Exciting	voltage (DC) (V)	24±2.4		
Rated torque			(N·m)	0.64	• Dormi	ssible load (For details, refe	$P_{304}$		
Continuous st	tall torqu	ie	(N·m)	0.76	• Fermi	, ,	,		
Momentary M	lax. pea	k torqı	ie (N·m)	2.23	During	Radial load P-direction (N)	392		
Rated current	Rated current (A(rms))		(A(rms))	1.4	assembly	Thrust load A-direction (N)	147		
Max. current			(A(o-p))	6.9		Thrust load B-direction (N)	196		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	245		
frequency (tim		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	98		
Rated rotation	nal spee	d	(r/min)	3000	For deta	<ul> <li>For details of Note)1 to Note)4, refer to P.303.</li> </ul>			
Max. rotationa	al speed		(r/min)	6500		<ul> <li>Dimensions of Driver, refer to P.57.</li> <li>*1 in the motor part number represents the mo specifications.</li> </ul>			
Moment of ine	ertia		Without brake	0.50					
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake			With brake	0.59		*2 Basic type and RS485 communication type are			
Recommended moment of inertia ratio of the load and the rotor Note)3		20 times or less	"Position control type". Detail of model designation, refer to P.22.						
Rotary encod	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an incremen				
	Re	solutio	n per single turn	8388608		system (not using multi-turn data), do not connec a battery for absolute encoder.			



# **Dimensions**

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

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. <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 A6 Series

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### 100 V MQMF 400 W [Middle inertia Flat type 80 mm sq.]

## **Specifications**

				AC100 V
Motor model *1		MQMF041L1		
		Multi	iunction type	MCDLT31SF
Applicable	Model No	RS48	5 communication type *2	MCDLN31SG
driver		Basic	type <sup>*2</sup>	MCDLN31SE
	Fram	e sym	bol	C-frame
Power supply capacity (kVA)				0.9
Rated output			(W)	400
Rated torque			(N·m)	1.27
Continuous sta	all torqu	ie	(N·m)	1.40
Momentary Ma	ax. peal	k torqı	ie (N·m)	4.46
Rated current			(A(rms))	4.1
Max. current			(A(o-p))	20.3
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4282	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6500
Moment of ine	rtia		Without brake	0.98
of rotor (×10 <sup>-4</sup>	of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			1.06
Recommender ratio of the loa				20 times or less
Rotary encode	er speci	ficatio	ns ⁺³	23-bit Absolute
	Re	solutic	n per single turn	8388608

• Brake specifications (For details, refer to P.305) /This brake will be released when it is energized."

(Do not use this for braking the motor in motion. )					
Static friction torque (N·m)	1.6 or more				
Engaging time (ms)	70 or less				
Releasing time (ms) Note)4	20 or less				
Exciting current (DC) (A)	0.36				
Releasing voltage (DC) (V)	1 or more				
Exciting voltage (DC) (V)	24±2.4				

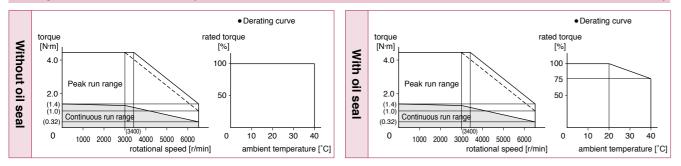
### • Permissible load (For details, refer to P.304)

<b>.</b> .	Radial load P-direction (N)	392
During assembly	Thrust load A-direction (N)	147
accombry	Thrust load A-direction (N) Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A. B-direction (N)	98

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

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

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



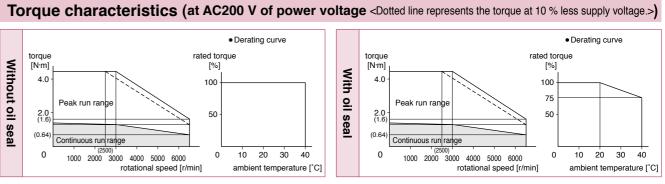
## Dimensions

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

# 200 V MQMF 400 W [Middle inertia Flat type 80 mm so

# Specifications

				AC200 V		specifications (For details		
Motor model	1			MQMF042L1		ake will be released when it is e use this for braking the motor ir		
Multifunction type		unction type	MBDLT25SF Static friction torque (N·m)		ction torque (N·m)	1.6 or more		
Applicable	Model No.	RS48	5 communication type *2	MBDLN25SG	Engagin	g time (ms)	70 or less	
driver	140.	Basic	type <sup>*2</sup>	MBDLN25SE	Releasir	ng time (ms) Note)4	20 or less	
	Fram	e sym	lool	B-frame	Exciting	current (DC) (A)	0.36	
Power supply	capacit	у	(kVA)	0.9	Releasir	ng voltage (DC) (V)	1 or more	
Rated output			(W)	400	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	1.27	• Dormi	ssible load (For details, refe	r to P 304	
Continuous s	tall torqu	ie	(N·m)	1.40	• Fermi		,	
Momentary N	lax. pea	k torqu	ie (N·m)	4.46	During	Radial load P-direction (N)	392	
Rated current	Bated current (A(rms))		(A(rms))	2.1	assembly	Thrust load A-direction (N)	147	
Max. current			(A(o-p))	10.4		Thrust load B-direction (N)	196	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	245	
frequency (tim		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	98	
Rated rotation	nal spee	d	(r/min)	3000	For deta	For details of Note)1 to Note)4, refer to P.303.		
Max. rotation	al speed		(r/min)	6500		ons of Driver, refer to P.57.		
Moment of in	ertia		Without brake	0.98		*1 in the motor part number represents the m specifications.		
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		1.06		*2 Basic type and RS485 communication type are				
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less	Detail	"Position control type". Detail of model designation, refer to P.22.			
Rotary encod	er speci	ficatio	ns <sup>⁺3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incremen		
	Re	solutio	n per single turn	8388608	system (not using multi-turn data), do not connect a battery for absolute encoder.			



# **Dimensions**

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

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

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

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#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

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-1	-	

### 100 V MHMF 50 W [High inertia 40 mm sq.]

# **Specifications**

		AC100 V				
Motor model *1		MHMF5AZL1				
		Multif	function type	MADLT01SF		
Applicable	Model No	RS48	5 communication type *2	MADLN01SG		
driver		Basic	type *2	MADLN01SE		
	Fram	e sym	bol	A-frame		
Power supply	capacit	у	(kVA)	0.4		
Rated output			(W)	50		
Rated torque			(N·m)	0.16		
Continuous sta	all torqu	le	(N·m)	0.18		
Momentary Ma	ax. peal	k torqu	ue (N·m)	0.56		
Rated current			(A(rms))	1.1		
Max. current			(A(o-p))	5.5		
Regenerative brake Wit		Without option	No limit Note)2			
frequency (times/min) Note)1		DV0P4280	No limit Note)2			
Rated rotation	al spee	d	(r/min)	3000		
Max. rotationa	l speed		(r/min)	6500		
Moment of ine	rtia		Without brake	0.038		
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) W			With brake	0.042		
Recommender ratio of the loa		30 times or less				
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute		
	Re	solutio	on per single turn	8388608		

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

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

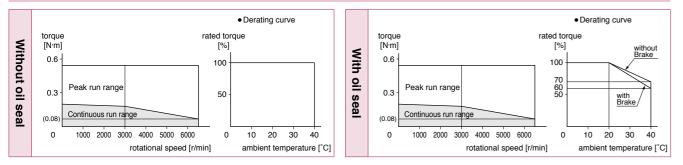
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

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

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



## Dimensions

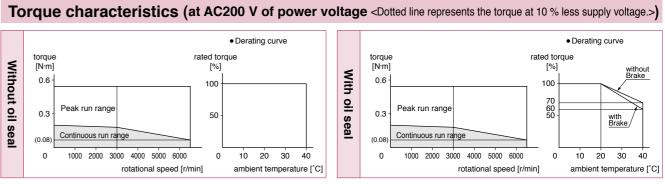
Motor specifications	Round shaft/ Key way, center tap shaft							
	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.147	P.147	P.147	P.148	P.148	P.148		
Connector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

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## 200 V MHMF 50 W [High inertia 40 mm sq.]

### Specifications

		AC200 V		
Motor model	1			MHMF5AZL1
		Multi	function type	MADLT05SF
Applicable	Model No	RS48	5 communication type $^{*2}$	MADLN05SG
driver		Basic	type <sup>*2</sup>	MADLN05SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	50
Rated torque			(N·m)	0.16
Continuous st	tall torqu	e	(N·m)	0.18
Momentary M	lax. pea	k torqu	Je (N·m)	0.56
Rated current (A(rms))			1.1	
Max. current (A(o-p))			5.5	
Regenerative brake With			Without option	No limit Note)2
frequency (times/min) Note)1		DV0P4281	No limit Note)2	
Rated rotation	nal spee	d	(r/min)	3000
Max. rotationa	al speed		(r/min)	6500
Moment of ine	ertia		Without brake	0.038
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )		With brake	0.042	
Recommended moment of inertia ratio of the load and the rotor Note)3				30 times or less
Rotary encod	er speci	ficatio	ns*3	23-bit Absolute
	Re	solutio	on per single turn	8388608



### Dimensions

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

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

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#### **Motor Specifications** A6 Series

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

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

A6 Family

A6N Series

A6B

Series

Ш Series

Imformation

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

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

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

## **Specifications**

		AC100 V			
Motor model *1		MHMF011L1			
		Multif	function type	MADLT11SF	
Applicable	Model No.	RS48	5 communication type *2	MADLN11SG	
driver		Basic	type *2	MADLN11SE	
	Fram	e sym	lod	A-frame	
Power supply	capacit	у	(kVA)	0.4	
Rated output			(W)	100	
Rated torque			(N·m)	0.32	
Continuous sta	all torqu	ie	(N·m)	0.33	
Momentary Ma	ax. peal	k torqu	ue (N·m)	1.11	
Rated current			(A(rms))	1.6	
Max. current			(A(o-p))	7.9	
Regenerative brake			Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4280	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotationa	l speed		(r/min)	6500	
Moment of ine	rtia		Without brake	0.071	
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake	0.074	
Recommender ratio of the loa		30 times or less			
Rotary encode	er speci	ficatio	ns*3	23-bit Absolute	
	Re	solutio	n per single turn	8388608	

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

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

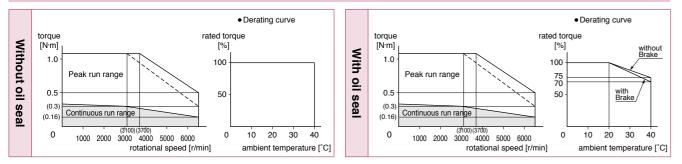
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

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

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



## Dimensions

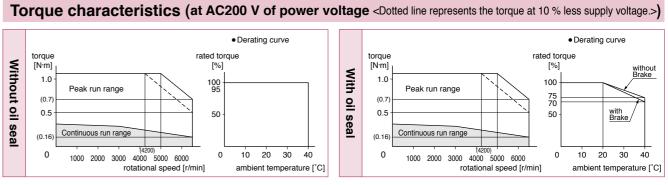
Motor specifications	Round shaft/ Key way, center tap shaft						
	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Leadwire type (IP65)	P.151	P.151	P.151	P.152	P.152	P.152	
Connector type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

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# 200 V MHMF 100 W [High inertia 40 mm sq.]

## **Specifications**

				AC200 V
Motor model <sup>*1</sup>			MHMF012L1	
		Multi	function type	MADLT05SF
Applicable	Model No	RS48	5 communication type *2	MADLN05SG
driver		Basio	type <sup>*2</sup>	MADLN05SE
	Frame	sym	bol	A-frame
Power supply	capacity		(kVA)	0.5
Rated output			(W)	100
Rated torque			(N·m)	0.32
Continuous st	all torque	;	(N·m)	0.33
Momentary Max. peak torque (N·m)		1.11		
Rated current (A(rms))		1.1		
Max. current (A(o-p))		5.5		
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		DV0P4281	No limit Note)2	
Rated rotation	nal speed		(r/min)	3000
Max. rotationa	al speed		(r/min)	6500
Moment of ine	ertia		Without brake	0.071
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	0.074
Recommended moment of inertia ratio of the load and the rotor			30 times or less	
Rotary encode	er specifi	catio	ns*3	23-bit Absolute
Resolution per single turn			8388608	



### Dimensions

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

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

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#### **Motor Specifications** A6 Series

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

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

A6 Family

A6N Series

A6B

Series

Ш Series

Imformation

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

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

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

<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.

#### 100 V MHMF 200 W [High inertia 60 mm sq.]

## **Specifications**

					AC100 V	
Motor model <sup>*1</sup>					MHMF021L1	
		Multi	iunction type		MBDLT21SF	
Applicable	Model No	RS48	5 communication type	*2	MBDLN21SG	
driver		Basic	type <sup>*2</sup>		MBDLN21SE	
	Fram	e sym	lod		B-frame	
Power supply	capacit	y	(kVA	۹)	0.5	
Rated output			(W	/)	200	
Rated torque			(N·m	ו)	0.64	
Continuous sta	all torqu	e	(N·m	ו)	0.76	
Momentary Ma	Momentary Max. peak torque (N·m)			ו)	2.23	
Rated current (A(rms))			))	2.1		
Max. current (A(o-p))		))	10.4			
Regenerative brake W		Without option		No limit Note)2		
frequency (times/min) Note)1		DV0P4283		No limit Note)2		
Rated rotation	al spee	d	(r/mir	(r/min) 3000		
Max. rotationa	l speed		(r/mir	ר)	6500	
Moment of ine	rtia		Without brake		0.29	
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake		0.31	
Recommended moment of inertia ratio of the load and the rotor			)3	30 times or less		
Rotary encode	er speci	ficatio	ns <sup>*3</sup>		23-bit Absolute	
	Re	solutic	n per single turn		8388608	

• Brake specifications (For details, refer to P.305) /This brake will be released when it is energized.

Do not use this for braking the motor in motion.					
Static friction torque (N·m)	1.6 or more				
Engaging time (ms)	50 or less				
Releasing time (ms) Note)4	20 or less				
Exciting current (DC) (A)	0.36				
Releasing voltage (DC) (V)	1 or more				
Exciting voltage (DC) (V)	24±2.4				

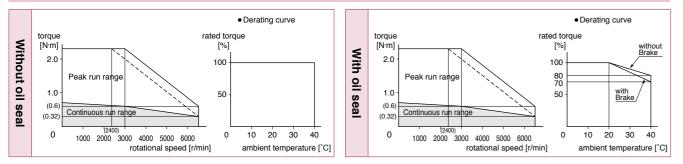
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

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

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



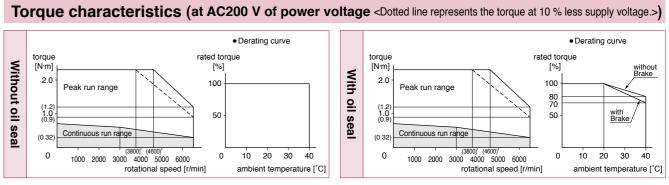
## Dimensions

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

# 200 V MHMF 200 W [High inertia 60 mm sq.]

## Specifications

				AC200 V		specifications (For details	-	
Motor model	Motor model 1			MHMF022L1		(This brake will be released when it is energized.) Do not use this for braking the motor in motion.		
			iunction type	MADLT15SF	Static fri	ction torque (N·m)	1.6 or more	
Applicable	Model No.	RS48	5 communication type *2	MADLN15SG	Engagin	g time (ms)	50 or less	
driver	110.	Basic	type <sup>*2</sup>	MADLN15SE	Releasir	ng time (ms) Note)4	20 or less	
	Fram	e syml	lod	A-frame	Exciting	current (DC) (A)	0.36	
Power supply	capacit	у	(kVA)	0.5	Releasir	ng voltage (DC) (V)	1 or more	
Rated output			(W)	200	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	0.64	• Dermi	Permissible load (For details, refer to P.304)		
Continuous st	all torqu	le	(N·m)	0.76	• Fermi		,	
Momentary M	ax. pea	k torqu	ıe (N⋅m)	2.23	During	Radial load P-direction (N)	392	
Rated current (A(rms))		(A(rms))	1.4	assembly	Thrust load A-direction (N)	147		
Max. current			(A(o-p))	6.9		Thrust load B-direction (N)	196	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	245	
frequency (time		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	98	
Rated rotation	al spee	d	(r/min)	3000	For deta	For details of Note)1 to Note)4, refer to P.303.		
Max. rotationa	al speed		(r/min)	6500		Dimensions of Driver, refer to P.57.		
Moment of inertia Without brake		Without brake	0.29		*1			
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		0.31		*2 Basic type and RS485 communication type are				
Recommended moment of inertia ratio of the load and the rotor Note)3				30 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.22.		
Rotary encode	er speci	ficatio	ns <sup>∗3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment		
	Re	solutio	n per single turn	8388608	system (not using multi-turn data), do not conner a battery for absolute encoder.			



### **Dimensions**

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

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

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

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#### Motor Specifications A6 Series

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

A6 Family

A6N Series

A6B Series Special Order Product

m Series

# **Specifications**

		AC100 V		
Motor model *1		MHMF041L1		
		Multif	function type	MCDLT31SF
Applicable	Model No.	RS48	5 communication type *	MCDLN31SG
driver		Basic	type *2	MCDLN31SE
	Fram	e sym	lod	C-frame
Power supply	capacit	у	(kVA)	0.9
Rated output			(W)	400
Rated torque			(N·m)	1.27
Continuous sta	all torqu	ie	(N·m)	1.40
Momentary Ma	ax. peal	k torqu	ie (N·m)	4.46
Rated current			(A(rms))	4.1
Max. current			(A(o-p))	20.3
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4282	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6500
Moment of ine	rtia		Without brake	0.56
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake	0.58
Recommender ratio of the loa		30 times or less		
Rotary encode	er speci	ficatio	ns*3	23-bit Absolute
	Re	solutio	n per single turn	8388608

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

(Be not use this for braking the motor in motor).					
Static friction torque (N·m)	1.6 or more				
Engaging time (ms)	50 or less				
Releasing time (ms) Note)4	20 or less				
Exciting current (DC) (A)	0.36				
Releasing voltage (DC) (V)	1 or more				
Exciting voltage (DC) (V)	24±2.4				

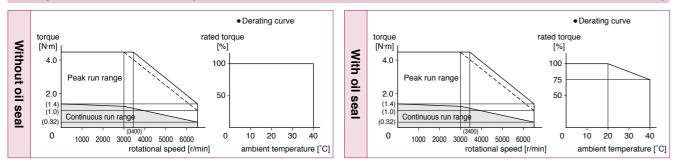
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

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

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



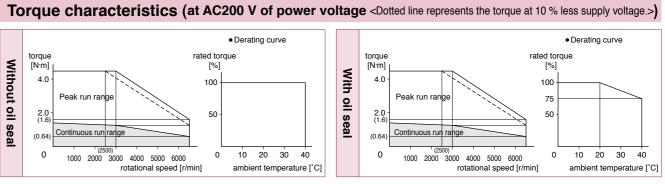
## Dimensions

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

## 200 V MHMF 400 W [High inertia 60 mm sq.]

### Specifications

				AC200 V	Brake	specifications (For details	s, refer to P.30	
Motor model*	Motor model <sup>1</sup>			MHMF042L1	(This brake will be released when it is energized.) Do not use this for braking the motor in motion.			
			unction type	MBDLT25SF	Static friction torque (N·m)		1.6 or more	
Applicable	Model No.	RS48	communication type *2	MBDLN25SG	Engagin	g time (ms)	50 or less	
driver	NO.	Basic	type *2	MBDLN25SE	Releasir	ng time (ms) Note)4	20 or less	
	Fram	e sym	lool	B-frame	Exciting	current (DC) (A)	0.36	
Power supply	capacit	у	(kVA)	0.9	Releasir	ng voltage (DC) (V)	1 or more	
Rated output			(W)	400	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	1.27	• Dormi	Permissible load (For details, refer to P.304)		
Continuous st	all torqu	le	(N·m)	1.40	• Fermi	•		
Momentary Max. peak torque (N·m)		ie (N·m)	4.46	During	Radial load P-direction (N)	392		
Rated current (A(rms))		(A(rms))	2.1	assembly	Thrust load A-direction (N)	147		
Max. current			(A(o-p))	10.4		Thrust load B-direction (N)	196	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	245	
frequency (time		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	98	
Rated rotation	al spee	d	(r/min)	3000	For deta	For details of Note)1 to Note)4, refer to P.303.		
Max. rotational speed (r/min)			(r/min)	6500		Dimensions of Driver, refer to P.57.		
Moment of inertia Without brake		Without brake	0.56		*1 in the motor part number represents the specifications.			
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		With brake	0.58		*2 Basic type and RS485 communication type are			
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less	"Position control type". Detail of model designation, refer to P.22.				
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an incremen			
Resolution per single turn			n per single turn	8388608	system (not using multi-turn data), do not conne a battery for absolute encoder.			



## **Dimensions**

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

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

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

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#### Motor Specifications A6 Series

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

A6 Family

A6N Series

A6B Series Special Order Product

m Series

Imformation

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# Motor Specifications 200 V MHMF 750 W [High inertia 80 mm sq.]

## **Specifications**

		AC200 V			
Motor model *1		MHMF082L1			
		Multi	function type	MCDLT35SF	
Applicable	Model No	RS48	5 communication type *	MCDLN35SG	
driver		Basic	type *2	MCDLN35SE	
	Fram	e sym	bol	C-frame	
Power supply	capacit	у	(kVA)	1.8	
Rated output			(W)	750	
Rated torque			(N·m)	2.39	
Continuous sta	all torqu	ie	(N·m)	2.86	
Momentary Ma	ax. peal	k torqı	ue (N·m)	8.36	
Rated current			(A(rms))	3.8	
Max. current			(A(o-p))	18.8	
Regenerative	brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4283	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotationa	l speed		(r/min)	6000	
Moment of ine	rtia		Without brake	1.56	
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) Wi			With brake	1.66	
Recommende ratio of the loa		20 times or less			
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute	
	Re	solutic	on per single turn	8388608	

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

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

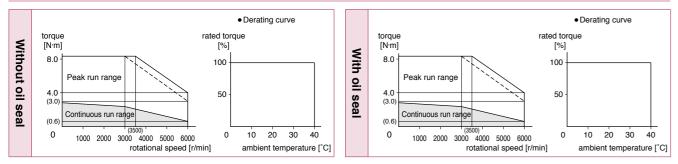
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

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

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



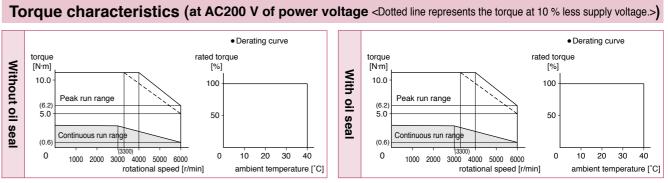
## Dimensions

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

# 200 V MHMF 1000 W [High inertia 80 mm sq.]

# Specifications

				AC200 V		specifications (For details		
Motor model <sup>*1</sup>			MHMF092L1	This brake will be released when it is energize Do not use this for braking the motor in motior				
		Multif	unction type	MDDLT55SF	Static fri	Static friction torque (N·m)		
Applicable	Model No.	RS48	communication type *2	MDDLN55SG	Engagin	g time (ms)	70 or less	
driver	110.	Basic	type <sup>*2</sup>	MDDLN55SE	Releasir	ng time (ms) Note)4	20 or less	
	Fram	e syml	loc	D-frame	Exciting	current (DC) (A)	0.42	
Power supply	v capacit	у	(kVA)	2.4	Releasir	ng voltage (DC) (V)	1 or more	
Rated output			(W)	1000	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	3.18	• Dormi	Permissible load (For details, refer to P.30		
Continuous s	tall torqu	ie	(N·m)	3.34	• Fermi	•		
Momentary Max. peak torque     (N·m)       Rated current     (A(rms))		ie (N·m)	11.1	During	Radial load P-direction (N)	686		
		(A(rms))	5.7	assembly	Thrust load A-direction (N)	294		
Max. current			(A(o-p))	28.2		Thrust load B-direction (N)	392	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	392	
frequency (tim		Note)1	DV0P4284	No limit Note)2	operation	Thrust load A, B-direction (N)	147	
Rated rotatio	nal spee	d	(r/min)	3000	For deta	For details of Note)1 to Note)4, refer to P.303.		
Max. rotation	al speed		(r/min)	6000		Dimensions of Driver, refer to P.58.		
Moment of in	ertia		Without brake	2.03		the motor part number repre cations.	sents the mo	
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		With brake	2.13		type and RS485 communicati	on type are		
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.22.				
Rotary encod	ler speci	ficatio	1s <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an incremen			
Resolution per single turn		8388608	system (not using multi-turn data), do not conne a battery for absolute encoder.					



# **Dimensions**

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

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

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

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#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

# Motor Specifications 200 V MHMF 1.0 kW [High inertia 130 mm sq.]

## **Specifications**

					AC200 V
Motor model *1			IP67		MHMF102L1
		Multi	iunction type		MDDLT45SF
Applicable	Model No.	RS48	5 communication type	*2	MDDLN45SG
driver		Basic	type <sup>*2</sup>		MDDLN45SE
	Fram	e sym	lod		D-frame
Power supply	capacit	у	(kVA	۹)	2.4
Rated output			(W	/)	1000
Rated torque			(N·m	ו)	4.77
Continuous sta	all torqu	ie	(N·m	ו)	5.25
Momentary Ma	ax. pea	k torqu	ıe (N·m	ו)	14.3
Rated current			(A(rms)	))	5.2
Max. current			(A(o-p)	))	22
Regenerative	brake		Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/mir	ו)	2000
Max. rotationa	l speed		(r/mir	ו)	3000
Moment of ine	rtia		Without brake		22.9
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake		24.1
Recommended moment of inertia ratio of the load and the rotor Note)3			)3	5 times or less	
Rotary encode	er speci	ficatio	ns <sup>*3</sup>		23-bit Absolute
	Re	solutic	n per single turn		8388608

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

(Do not doo this for braking the motor in motor).					
Static friction torque (N·m)	13.7 or more				
Engaging time (ms)	100 or less				
Releasing time (ms) Note)4	50 or less				
Exciting current (DC) (A)	0.79				
Releasing voltage (DC) (V)	2 or more				
Exciting voltage (DC) (V)	24±2.4				

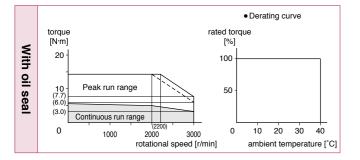
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

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

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



## Dimensions

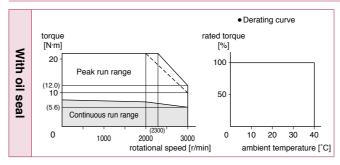
	Key way shaft/ Round shaft						
Motor specifications	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type	_	P.171			P.171		
Encoder connector Small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

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# 200 V MHMF 1.5 kW [High inertia 130 mm sq.]

### **Specifications**

				AC200 V		specifications (For details	,	
Motor model <sup>*1</sup> IP67		IP67	MHMF152L1		(This brake will be released when it is energized.) Do not use this for braking the motor in motion.			
		Multif	unction type	MDDLT55SF	Static fri	Static friction torque (N·m)		
Applicable	Model No.	RS48	5 communication type *2	MDDLN55SG	Engagin	g time (ms)	100 or less	
driver		Basic	type *2	MDDLN55SE	Releasir	ng time (ms) Note)4	50 or less	
	Fram	e sym	lool	D-frame	Exciting	current (DC) (A)	0.79	
Power supply	capacit	у	(kVA)	2.9	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	1500	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	7.16	• Permi	• Permissible load (For details, refer to P.304)		
Continuous sta	all torqu	e	(N·m)	7.52	• Fermi		,	
Momentary Ma	nentary Max. peak torque (N·m) ed current (A(rms))		ie (N·m)	21.5	During	Radial load P-direction (N)	980	
Rated current			(A(rms))	8.0	assembly	Thrust load A-direction (N)	588	
Max. current			(A(o-p))	34		Thrust load B-direction (N)	686	
Regenerative	orake		Without option	No limit Note)2	During	Radial load P-direction (N)	490	
frequency (time		Note)1	DV0P4284	No limit Note)2	operation	Thrust load A, B-direction (N)	196	
Rated rotation	al spee	d	(r/min)	2000	<ul> <li>For detail</li> </ul>	<ul> <li>For details of Note)1 to Note)4, refer to P.303.</li> </ul>		
Max. rotationa	l speed		(r/min)	3000		ons of Driver, refer to P.58.		
Moment of ine	rtia		Without brake	33.4		the motor part number repre cations.	sents the moto	
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	34.6		type and RS485 communicati	on type are	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	Detail	"Position control type". Detail of model designation, refer to P.22.				
Rotary encode	r speci	ficatio	ns <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment		
Resolution per single turn			n per single turn	8388608		system (not using multi-turn data), do not connec a battery for absolute encoder.		



### **Dimensions**

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

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

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#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

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

# Motor Specifications 200 V MHMF 2.0 kW [High inertia 176 mm sq.]

# **Specifications**

				AC200 V
Motor model *1			IP67	MHMF202L1
		Multi	function type	MEDLT83SF
Applicable	Model No	RS48	5 communication type *2	MEDLN83SG
driver		Basic	c type <sup>∗</sup> ²	MEDLN83SE
	Fram	e sym	bol	E-frame
Power supply	capacit	у	(kVA)	3.8
Rated output			(W)	2000
Rated torque			(N·m)	9.55
Continuous sta	all torqu	e	(N·m)	11.5
Momentary Ma	ax. peal	< torqu	ue (N·m)	28.6
Rated current			(A(rms))	12.5
Max. current			(A(o-p))	53
Regenerative	brake		Without option	No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	55.7
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake	61.0
Recommended moment of inertia ratio of the load and the rotor Note)3				5 times or less
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

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

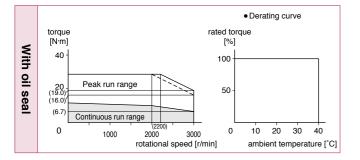
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

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

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



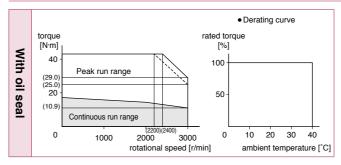
## Dimensions

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

# 200 V MHMF 3.0 kW [High inertia 176 mm sq.]

### Specifications

		AC200 V		specifications (For details				
Motor model <sup>*1</sup> IP67		MHMF302L1		(This brake will be released when it is energized.) Do not use this for braking the motor in motion.				
			unction type	MFDLTA3SF	Static fri	ction torque (N·m)	25.0 or more	
Applicable	Model No.	RS48	5 communication type *2	MFDLNA3SG	Engagin	g time (ms)	80 or less	
driver		Basic	type <sup>*2</sup>	MFDLNA3SE	Releasir	ng time (ms) Note)4	25 or less	
	Fram	e syml	loc	F-frame	Exciting	current (DC) (A)	1.29	
Power supply	capacit	у	(kVA)	5.2	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	3000	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	14.3	Permissible load (For details, refer to P.304)		r = R 204	
Continuous sta	all torqu	e	(N·m)	17.2	• Permi	•	,	
Momentary Ma	ax. pea	k torqu	ie (N·m)	43.0	During	Radial load P-direction (N)	1666	
Rated current			(A(rms))	17.0	assembly	Thrust load A-direction (N)	784	
Max. current			(A(o-p))	72		Thrust load B-direction (N)	980	
Regenerative	hrake		Without option	No limit Note)2	During	Radial load P-direction (N)	784	
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	343	
Rated rotation	al spee	d	(r/min)	2000	<ul> <li>For detail</li> </ul>	For details of Note)1 to Note)4, refer to P.303.		
Max. rotationa	l speed		(r/min)	3000		ons of Driver, refer to P.59.		
Moment of ine	rtia		Without brake	85.3		the motor part number repre cations.	sents the moto	
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	90.7		type and RS485 communicati	on type are	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.22.			
Rotary encode	r speci	ficatio	ns <sup>⁺3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incremen		
Resolution per single turn		n per single turn	8388608	-	system (not using multi-turn data), do not conne a battery for absolute encoder.			



### **Dimensions**

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

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

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#### Motor Specifications A6 Series

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

<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 200 V MHMF 4.0 kW [High inertia 176 mm sq.]

# **Specifications**

					AC200 V		
Motor model *1			IP67		MHMF402L1		
		Multif	iunction type		MFDLTB3SF		
Applicable	Model No	RS48	5 communication type	<b>,</b> *2	MFDLNB3SG		
driver		Basic	type *2		MFDLNB3SE		
	Fram	e sym	lod		F-frame		
Power supply	capacit	у	(kVA	۹)	6.5		
Rated output			(V	V)	4000		
Rated torque			(N·n	n)	19.1		
Continuous sta	all torqu	ie	(N·n	n)	22.0		
Momentary Ma	ax. pea	k torqu	ue (N·n	n)	57.3		
Rated current			(A(rms	))	20		
Max. current			(A(o-p	))	85		
Regenerative	brake		Without option		No limit Note)2		
frequency (time	s/min)	Note)1	DV0P4285×2		No limit Note)2		
Rated rotation	al spee	d	(r/mir	ר)	2000		
Max. rotationa	l speed		(r/mir	า)	3000		
Moment of ine	rtia		Without brake		104		
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) W			With brake		110		
Recommended moment of inertia ratio of the load and the rotor Note)3					5 times or less		
Rotary encode	er speci	ficatio	ns <sup>*3</sup>		23-bit Absolute		
	Re	solutio	n per single turn		8388608		

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

(Do not use this for braking the motor in motor).				
Static friction torque (N·m)	25.0 or more			
Engaging time (ms)	80 or less			
Releasing time (ms) Note)4	25 or less			
Exciting current (DC) (A)	1.29			
Releasing voltage (DC) (V)	2 or more			
Exciting voltage (DC) (V)	24±2.4			

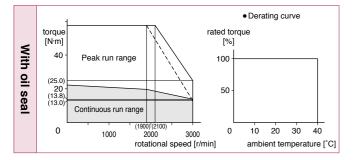
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

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

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



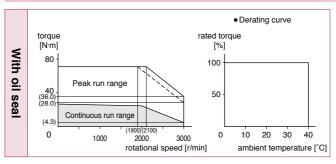
## Dimensions

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

# 200 V MHMF 5.0 kW [High inertia 176 mm sq.]

### **Specifications**

				AC200 V		specifications (For details		
Motor model <sup>*1</sup> IP67		IP67	MHMF502L1		(This brake will be released when it is energized.) Do not use this for braking the motor in motion.)			
			unction type	MFDLTB3SF	Static fri	ction torque (N·m)	44.1 or more	
Applicable	Model No.	RS48	5 communication type *2	MFDLNB3SG	Engagin	g time (ms)	150 or less	
driver		Basic	type *2	MFDLNB3SE	Releasir	ng time (ms) Note)4	30 or less	
	Fram	e sym	loc	F-frame	Exciting	current (DC) (A)	1.29	
Power supply	capacit	у	(kVA)	7.8	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	5000	Exciting	voltage (DC) (V)	24±2.4	
Rated torque	torque (N·m) 23.9 • Permissible load (For details, refe		P(304)					
Continuous sta	all torqu	ie	(N·m)	26.3				
Momentary Ma	ax. pea	k torqu	ie (N·m)	71.6	During	Radial load P-direction (N)	1666	
Rated current			(A(rms))	23.3	assembly	Thrust load A-direction (N)	784	
Max. current			(A(o-p))	99		Thrust load B-direction (N)	980	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	784	
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	343	
Rated rotation	al spee	d	(r/min)	2000	For deta	For details of Note)1 to Note)4, refer to P.303.		
Max. rotationa	l speed		(r/min)	3000		ons of Driver, refer to P.59.		
Moment of ine	rtia		Without brake	146		the motor part number repre cations.	sents the motor	
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	151		type and RS485 communicati	on type are	
Recommender ratio of the loa				5 times or less	Detail	"Position control type". Detail of model designation, refer to P.22. *3 When using a rotary encoder as an increment		
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute				
Resolution per single turn		n per single turn	8388608		system (not using multi-turn data), do not connect a battery for absolute encoder.			



### **Dimensions**

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

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

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<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 A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

E Series

Imformation

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

# Motor Specifications 200 V MHMF 7.5 kW [High inertia 176 mm sq.]

# **Specifications**

				AC200 V
Motor model *1			IP67	MHMF752L1
		Multi	function type	MGDLTC3SF
Applicable	Model No.	RS48	5 communication type *2	_
driver		Basio	c type *2	—
	Fram	e sym	bol	G-frame
Power supply	capacit	y	(kVA)	11
Rated output			(W)	7500
Rated torque			(N·m)	47.8
Continuous sta	all torqu	е	(N·m)	47.8
Momentary Ma	ax. peal	< torqu	ue (N·m)	125
Rated current			(A(rms))	40.2
Max. current			(A(o-p))	154
Regenerative	brake		Without option	No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285×3	No limit Note)2
Rated rotation	al spee	d	(r/min)	1500
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	272
of rotor (×10 <sup>-4</sup> kg·m²)			With brake	279
Recommender ratio of the loa		5 times or less		
Rotary encode	er speci	ficatio	ns⁺³	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

Static friction torque (N·m)	63.0 or more			
Engaging time (ms)	200 or less			
Releasing time (ms) Note)4	80 or less			
Exciting current (DC) (A)	1.29			
Releasing voltage (DC) (V)	2 or more			
Exciting voltage (DC) (V)	15 or less			

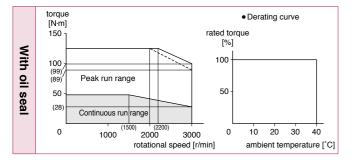
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.60.

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

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



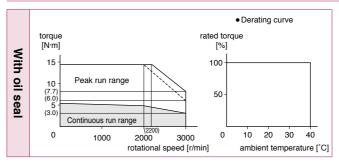
## Dimensions

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

## 200 V MDMF 1.0 kW [Middle inertia 130 mm sq.]

### Specifications

				AC200 V	Brake	specifications (For details	s, refer to F	
Motor model *1	model <sup>*1</sup> IP67		MDMF102L1		ake will be released when it is e use this for braking the motor in			
		Multif	unction type	MDDLT45SF	Static fri	ction torque (N·m)	13.7 or r	
Applicable	Model No.	RS48	5 communication type *2	MDDLN45SG	Engagin	g time (ms)	100 or l	
driver	NO.	Basic	type *2	MDDLN45SE	Releasir	ng time (ms) Note)4	50 or le	
	Fram	e sym	lool	D-frame	Exciting	current (DC) (A)	0.79	
Power supply	capacit	у	(kVA)	2.4	Releasir	ng voltage (DC) (V)	2 or mo	
Rated output			(W)	1000	Exciting	voltage (DC) (V)	24±2.	
Rated torque			(N·m)	4.77	• Dormi	ssible load (For details, refe	er to P304	
Continuous sta	all torqu	ie	(N·m)	5.25	• Fermi			
Momentary Ma	ax. pea	k torqu	ie (N·m)	14.3	During	Radial load P-direction (N)	980	
Rated current			(A(rms))	5.2	assembly	Thrust load A-direction (N)	588	
Max. current			(A(o-p))	22		Thrust load B-direction (N)	686	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	490	
frequency (time		Note)1	DV0P4284	No limit Note)2	operation	Thrust load A, B-direction (N)	196	
Rated rotation	al spee	d	(r/min)	2000	For deta	For details of Note)1 to Note)4, refer to P.303.		
Max. rotationa	l speed		(r/min)	3000		Dimensions of Driver, refer to P.58.		
Moment of ine	rtia		Without brake	6.18		n the motor part number repre	sents the	
of rotor (×10 <sup>-4</sup>	of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		7.40		specifications. *2 Basic type and RS485 communication type and			
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	"Position control type". Detail of model designation, refer to P.22.					
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an increme			
Resolution per single turn			n per single turn	8388608	system (not using multi-turn data), do not conn a battery for absolute encoder.			



### **Dimensions**

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

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. <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 A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

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

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# Motor Specifications 200 V MDMF 1.5 kW [Middle inertia 130 mm sq.]

## **Specifications**

				AC200 V
Motor model *1			IP67	MDMF152L1
		Multi	function type	MDDLT55SF
Applicable	Model No	RS48	5 communication type	<sup>2</sup> MDDLN55SG
driver		Basic	c type *2	MDDLN55SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	) 2.9
Rated output			(W)	1500
Rated torque			(N·m)	7.16
Continuous sta	all torqu	ie	(N·m)	7.52
Momentary Ma	ax. peal	k torqu	ue (N·m)	) 21.5
Rated current			(A(rms))	8.0
Max. current			(A(o-p))	) 34
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	9.16
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake	10.4
Recommender ratio of the loa		10 times or less		
Rotary encode	er speci	ficatio	ns <sup>⁺3</sup>	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

be not use this for braking the motor in motor.				
Static friction torque (N·m)	13.7 or more			
Engaging time (ms)	100 or less			
Releasing time (ms) Note)4	50 or less			
Exciting current (DC) (A)	0.79			
Releasing voltage (DC) (V)	2 or more			
Exciting voltage (DC) (V)	24±2.4			

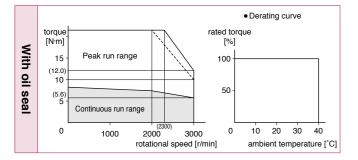
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

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

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



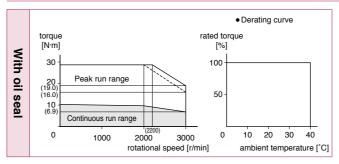
## Dimensions

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

## 200 V MDMF 2.0 kW [Middle inertia 130 mm sq.]

#### Specifications

				AC200 V		specifications (For details		
Motor model <sup>*1</sup> IP67		MDMF202L1		(This brake will be released when it is energized.) Do not use this for braking the motor in motion.				
			unction type	MEDLT83SF	Static fri	Static friction torque (N·m) 13.		
Applicable	Model No.	RS485	5 communication type *2	MEDLN83SG	Engagin	g time (ms)	100 or less	
driver		Basic	type *2	MEDLN83SE	Releasir	ng time (ms) Note)4	50 or less	
	Fram	e syml	loc	E-frame	Exciting	current (DC) (A)	0.79	
Power supply	capacit	у	(kVA)	3.8	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	2000	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	9.55	• Pormi	• Permissible load (For details, refer to P.304		
Continuous sta	all torqu	ie	(N·m)	10.0				
Momentary Ma	Momentary Max. peak torque (N·m) Rated current (A(rms))		ie (N·m)	28.6	During	Radial load P-direction (N)	980	
Rated current			(A(rms))	9.9	assembly	Thrust load A-direction (N)	588	
Max. current			(A(o-p))	42		Thrust load B-direction (N)	686	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	490	
frequency (time		Note)1	DV0P4285	No limit Note)2	operation	Thrust load A, B-direction (N)	196	
Rated rotation	al spee	d	(r/min)	2000	<ul> <li>For detail</li> </ul>	<ul> <li>For details of Note)1 to Note)4, refer to P.303.</li> </ul>		
Max. rotationa	l speed		(r/min)	3000		Dimensions of Driver, refer to P.59.		
Moment of ine	rtia		Without brake	12.1		the motor part number repre cations.	sents the moto	
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	13.3		type and RS485 communicati	ion type are	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.22.			
Rotary encode	er speci	fication	ns <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment		
Resolution per single turn			n per single turn	8388608	-	system (not using multi-turn data), do not connec a battery for absolute encoder.		



### Dimensions

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

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

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#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

E Series

Imformation

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

# Motor Specifications 200 V MDMF 3.0 kW [Middle inertia 130 mm sq.]

## **Specifications**

					AC200 V
Motor model *1			IP67		MDMF302L1
		Multif	unction type		MFDLTA3SF
Applicable	Model No.	RS48	5 communication type	e *2	MFDLNA3SG
driver		Basic	type *2		MFDLNA3SE
	Fram	e sym	loc		F-frame
Power supply	capacit	у	(kV/	A)	5.2
Rated output			(V	V)	3000
Rated torque			(N·r	n)	14.3
Continuous sta	all torqu	ie	(N·n	n)	15.0
Momentary Ma	ax. peal	k torqu	ıe (N∙r	n)	43.0
Rated current			(A(rms	5))	16.4
Max. current			(A(o-p	))	70
Regenerative	brake		Without option		No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285×2		No limit Note)2
Rated rotation	al spee	d	(r/mi	n)	2000
Max. rotationa	l speed		(r/mi	n)	3000
Moment of ine	rtia		Without brake		18.6
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake		19.6
Recommended moment of inertia ratio of the load and the rotor Note)3					10 times or less
Rotary encode	er speci	ficatio	1s <sup>*3</sup>		23-bit Absolute
	Re	solutio	n per single turn		8388608

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

(Do not use this for braking the motor in motor).				
Static friction torque (N·m)	22.0 or more			
Engaging time (ms)	110 or less			
Releasing time (ms) Note)4	50 or less			
Exciting current (DC) (A)	0.90			
Releasing voltage (DC) (V)	2 or more			
Exciting voltage (DC) (V)	24±2.4			

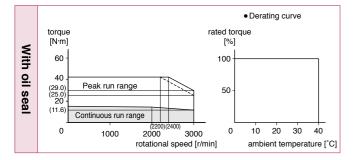
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

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

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



## Dimensions

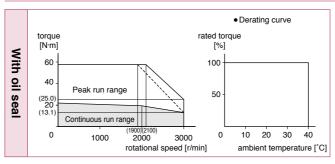
		Key way shaft/ Round shaft					
Motor specifications	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.184		—	P.184		
Encoder connector Small size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

# 200 V MDMF 4.0 kW [Middle inertia 176 mm sq.]

# Specifications

				AC200 V		specifications (For details		
Motor model 1 IP67		MDMF402L1		(This brake will be released when it is energized. Do not use this for braking the motor in motion.				
			unction type	MFDLTB3SF	Static fri	Static friction torque (N·m) 2		
Applicable	Model No.	RS485	communication type *2	MFDLNB3SG	Engagin	g time (ms)	80 or less	
driver	110.	Basic	type *2	MFDLNB3SE	Releasir	ng time (ms) Note)4	25 or less	
	Fram	e syml	loc	F-frame	Exciting	current (DC) (A)	1.29	
Power supply	capacit	у	(kVA)	6.5	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	4000	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	19.1	• Dormi	Permissible load (For details, refer to P.30		
Continuous sta	all torqu	le	(N·m)	22.0	• Fermi	•	,	
Momentary Ma	ax. pea	x. peak torque (N·m)		57.3	During	Radial load P-direction (N)	1666	
Rated current	-		(A(rms))	20.0	assembly	Thrust load A-direction (N)	784	
Max. current			(A(o-p))	85		Thrust load B-direction (N)	980	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	784	
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	343	
Rated rotation	al spee	d	(r/min)	2000	For deta	<ul> <li>For details of Note)1 to Note)4, refer to P.303.</li> </ul>		
Max. rotationa	l speed		(r/min)	3000		Dimensions of Driver, refer to P.59.		
Moment of ine	rtia		Without brake	46.9		the motor part number repre cations	sents the mo	
of rotor ( $\times 10^{-4}$	×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		With brake	52.3		specifications. *2 Basic type and RS485 communication type are		
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.22.				
Rotary encode	er speci	fication	າຣ <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment system (not using multi-turn data), do not conne a battery for absolute encoder.		
	Re	solutio	n per single turn	8388608	-			

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



# Dimensions

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

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

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#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

#### A6 Series Motor Specifications

### 200 V MDMF 5.0 kW [Middle inertia 176 mm sq.]

# **Specifications**

					AC200 V
Motor model *1			IP67		MDMF502L1
		Multi	iunction type		MFDLTB3SF
Applicable	Model No	RS48	5 communication type	*2	MFDLNB3SG
driver		Basic	type <sup>*2</sup>		MFDLNB3SE
	Fram	e sym	lod		F-frame
Power supply	capacit	у	(kVA	()	7.8
Rated output			(W	/)	5000
Rated torque			(N·m	1)	23.9
Continuous sta	all torqu	ie	(N·m	ו)	26.3
Momentary Ma	ax. pea	k torqu	ıe (N·m	ו)	71.6
Rated current			(A(rms)	))	23.3
Max. current			(A(o-p)	))	99
Regenerative	brake		Without option		No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285×2		No limit Note)2
Rated rotation	al spee	d	(r/min	ו)	2000
Max. rotationa	l speed		(r/min	ו)	3000
Moment of inertia W			Without brake		58.2
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With			With brake		63.0
Recommended moment of inertia ratio of the load and the rotor Note)3					10 times or less
Rotary encode	er speci		23-bit Absolute		
	Re	solutic	n per single turn		8388608

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

(Be not doe this for braking the motor in motor).				
Static friction torque (N·m)	44.1 or more			
Engaging time (ms)	150 or less			
Releasing time (ms) Note)4	30 or less			
Exciting current (DC) (A)	1.29			
Releasing voltage (DC) (V)	2 or more			
Exciting voltage (DC) (V)	24±2.4			

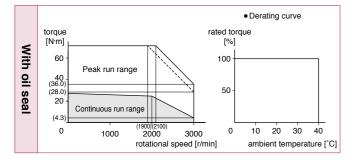
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

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

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



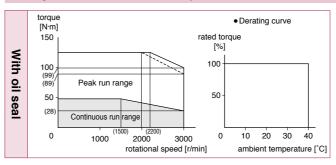
## Dimensions

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

## 200 V MDMF 7.5 kW [Middle inertia 176 mm sq.]

# Specifications

Specifica		-						
			AC200 V		specifications (For details			
Motor model <sup>*1</sup>			IP67	MDMF752L1		ake will be released when it is e use this for braking the motor ir		
		Multif	unction type	MGDLTC3SF	Static fri	ction torque (N·m)	63.0 or	
Applicable	Model No.	RS485	5 communication type *2	_	Engagin	g time (ms)	200 or	
driver	110.	Basic	type <sup>*2</sup>	_	Releasir	ng time (ms) Note)4	80 or	
	Frame	ə syml	loc	G-frame	Exciting	current (DC) (A)	1.2	
Power supply	capacit	/	(kVA)	11	Releasir	ng voltage (DC) (V)	2 or m	
Rated output			(W)	7500	Exciting	voltage (DC) (V)	15 or	
Rated torque			(N·m)	47.8	• Dormi	ssible load (For details, refe	or to P30	
Continuous sta	all torqu	е	(N·m)	47.8	• Feilin			
Momentary Ma	ax. peal	< torqu	ie (N·m)	125	During	Radial load P-direction (N)	205	
Rated current			(A(rms))	40.2	assembly	Thrust load A-direction (N)	980	
Max. current			(A(o-p))	154		Thrust load B-direction (N)	117	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	117	
frequency (time		Note)1	DV0P4285×3	No limit Note)2	operation	Thrust load A, B-direction (N)	49	
Rated rotation	al spee	d	(r/min)	1500	For deta	• For details of Note)1 to Note)4, refer to P.303.		
Max. rotationa	l speed		(r/min)	3000		• Dimensions of Driver, refer to P.60.		
Moment of ine	rtia		Without brake	122		the motor part number representations	sents the	
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		With brake	127		specifications. *2 Basic type and RS485 communication type are			
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	"Position control type". Detail of model designation, refer to P.22.				
Rotary encode	er specit	icatio	1S <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an increment			
	Re	solutio	n per single turn	8388608	,	system (not using multi-turn data), do not conne a battery for absolute encoder.		



#### Dimensions

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

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

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#### **Motor Specifications** A6 Series

A6 Family

A6N Series

A6B

Series

ш Series

Imformation

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

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# Motor Specifications 200 V MDMF 11.0 kW [Middle inertia 220 mm sq.]

# **Specifications**

				AC200 V
Motor model *1			IP67	MDMFC12L1
		Multi	function type	MHDLTE3SF
Applicable	Model No	RS48	5 communication type *2	—
driver	110.	Basic	c type *2	—
	Fram	e sym	bol	H-frame
Power supply	capacit	у	(kVA)	15
Rated output			(W)	11000
Rated torque			(N·m)	70.0
Continuous sta	all torqu	ie	(N·m)	70.0
Momentary Ma	ax. pea	k torqı	ue (N·m)	175
Rated current			(A(rms))	57.1
Max. current			(A(o-p))	209
Regenerative	brake		Without option	No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285×6	No limit Note)2
Rated rotation	al spee	d	(r/min)	1500
Max. rotationa	l speed		(r/min)	2000
Moment of inertia			Without brake	205
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake	214
Recommender ratio of the loa		10 times or less		
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

Static friction torque (N·m)	100 or more				
Engaging time (ms)	300 or less				
Releasing time (ms) Note)4	140 or less				
Exciting current (DC) (A)	1.08				
Releasing voltage (DC) (V)	2 or more				
Exciting voltage (DC) (V)	15 or less				

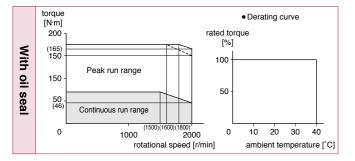
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.61.

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

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



## Dimensions

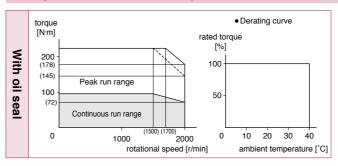
	Round shaft/ Key way, center tap shaft						
Motor specifications	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type	_	P.189			P.190	_	
Encoder connector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

# 200 V MDMF 15.0 kW [Middle inertia 220 mm sq.]

# Specifications

Specifica		5						
				AC200 V	• Brake specifications (For de			
Motor model <sup>*1</sup> IP67		MDMFC52L1		nergized. 1 motion.				
		Multif	unction type	MHDLTE3SF	Static fri	ction torque (N·m)	100 or more	
Applicable	Model No.	RS48	5 communication type *2	_	Engagin	g time (ms)	300 or less	
driver	140.	Basic	type <sup>*2</sup>	_	Releasir	ng time (ms) Note)4	140 or less	
	Fram	e sym	ool	H-frame	Exciting	current (DC) (A)	1.08	
Power supply	capacit	у	(kVA)	20	1	ng voltage (DC) (V)	2 or more	
Rated output			(W)	15000	Exciting	voltage (DC) (V)	15 or less	
Rated torque			(N·m)	95.5		0 ( ) ( )	x to D 204)	
Continuous st	all torqu	e	(N·m)	95.5	• Permi	ssible load (For details, refe		
Momentary M	ntary Max. peak torque (N·m)		ie (N·m)	224	During	Radial load P-direction (N)	4508	
Rated current			(A(rms))	65.8	assembly	Thrust load A-direction (N)	1470	
Max. current			(A(o-p))	225		Thrust load B-direction (N)	2646	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	2254	
frequency (time		Note)1	DV0P4285×6	No limit Note)2	operation	Thrust load A, B-direction (N)	686	
Rated rotation	al spee	d	(r/min)	1500	For deta	For details of Note)1 to Note)4, refer to P.303.		
Max. rotationa	l speed		(r/min)	2000		Dimensions of Driver, refer to P.61.		
Moment of ine	rtia		Without brake	280		the motor part number representations.	sents the moto	
of rotor (×10 <sup>-4</sup>	of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		With brake	289		type and RS485 communications.	on type are	
	Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.22.			
Rotary encode	er speci	ficatio	ns <sup>∗3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incremen		
	Re	solutio	n per single turn	8388608	system (not using multi-turn data), do not conne a battery for absolute encoder.			

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



### Dimensions

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

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

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#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

E Series

# Motor Specifications 200 V MDMF 22.0 kW [Middle inertia 220 mm sq.]

## **Specifications**

				AC200 V
Motor model *1			IP44	MDMFD22L1
		Multi	function type	MHDLTF3SF
Applicable	Model No	RS48	5 communication type *2	—
driver	110.	Basic	c type <sup>*2</sup>	—
	Fram	e sym	bol	H-frame
Power supply	capacit	у	(kVA)	28
Rated output			(W)	22000
Rated torque			(N·m)	140
Continuous sta	all torqu	ie	(N·m)	140
Momentary Ma	ax. pea	k torqı	ue (N·m)	350
Rated current			(A(rms))	80.9
Max. current	Max. current (A			294
Regenerative	brake		Without option	No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285×6	No limit Note)2
Rated rotation	al spee	d	(r/min)	1500
Max. rotationa	l speed		(r/min)	2000
Moment of ine	rtia		Without brake	431
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake	455
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times or less
Rotary encode	er speci	ficatio	ns*3	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

Static friction torque (N·m)	200 or more				
Engaging time (ms)	300 or less				
Releasing time (ms) Note)4	150 or less				
Exciting current (DC) (A)	1.72				
Releasing voltage (DC) (V)	2 or more				
Exciting voltage (DC) (V)	15 or less				

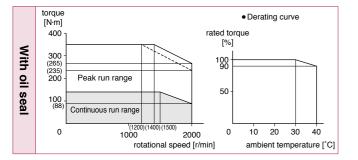
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.61.

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

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



## Dimensions

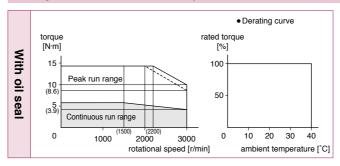
	Round shaft/ Key way, center tap shaft						
Motor specifications	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.192		—	P.192		
Encoder connector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

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#### [Middle inertia Low speed/High torque type] 200 V MGMF 0.85 kW 130 mm sq.

#### Specifications

opeenie		-						
			AC200 V		specifications (For details ake will be released when it is e			
Motor model *1			IP67	MGMF092L1		Do not use this for braking the motor in motio		
			unction type	MDDLT45SF	Static fri	Static friction torque (N·m)		
Applicable	Model No.	RS48	5 communication type *2	MDDLN45SG	Engagin	g time (ms)	100 or less	
driver		Basic	type *2	MDDLN45SE	Releasir	ng time (ms) Note)4	50 or less	
	Fram	e sym	lool	D-frame	Exciting	current (DC) (A)	0.79	
Power supply	capacit	y	(kVA)	2.0	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	850	Exciting	Exciting voltage (DC) (V) 24±2		
Rated torque			(N·m)	5.41	• Dormi	ssible load (For details, refe	r to P 204)	
Continuous stall torque (N·m)		(N·m)	5.41	• Fermi		,		
Momentary M	ax. peal	< torqu	ie (N·m)	14.3	During	Radial load P-direction (N)	980	
Rated current			(A(rms))	5.9	assembly	Thrust load A-direction (N)	588	
Max. current			(A(o-p))	22		Thrust load B-direction (N)	686	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	686	
frequency (time		Note)1	DV0P4284	No limit Note)2	operation	Thrust load A, B-direction (N)	196	
Rated rotation	al spee	d	(r/min)	1500		<ul> <li>For details of Note)1 to Note)4, refer to P.303.</li> </ul>		
Max. rotationa	l speed		(r/min)	3000		Dimensions of Driver, refer to P.58.		
Moment of inertia Without brake		Without brake	6.18		the motor part number repre cations.	sents the mot		
of rotor (×10 <sup>-4</sup>	of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		With brake	7.40		type and RS485 communicati	on type are	
Recommende ratio of the loa				10 times or less	"Position control type". Detail of model designation, refer to P.22.			
Rotary encode	er speci	ficatio	ns <sup>∗3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment system (not using multi-turn data), do not conne a battery for absolute encoder.		
	Re	solutio	n per single turn	8388608	,			



### Dimensions

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

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

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#### Motor Specifications A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

E Series

Imformation

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

[Middle inertia Low speed/High torque type] 130 mm sq.

## **Specifications**

		AC200 V		
Motor model *1			IP67	MGMF132L1
		Multi	iunction type	MDDLT55SF
Applicable	Model No	RS48	5 communication type	<sup>2</sup> MDDLN55SG
driver	110.	Basic	type *2	MDDLN55SE
	Fram	e sym	lod	D-frame
Power supply	capacit	у	(kVA	) 2.6
Rated output			(W)	) 1300
Rated torque			(N·m	8.28
Continuous sta	all torqu	ie	(N·m	) 8.28
Momentary Ma	ax. pea	k torqı	ue (N·m	) 23.3
Rated current			(A(rms)	9.3
Max. current			(A(o-p)	) 37
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min	) 1500
Max. rotationa	l speed		(r/min	) 3000
Moment of ine	rtia		Without brake	9.16
of rotor (×10 <sup>-4</sup>	of rotor (×10 <sup>-4</sup> kg⋅m <sup>2</sup> )			10.4
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times or less
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutic	n per single turn	8388608

• Brake specifications (For details, refer to P.305) /This brake will be released when it is energized.)

(Do not use this for braking the motor in	n motion. /	
Static friction torque (N·m)	13.7 or more	

Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

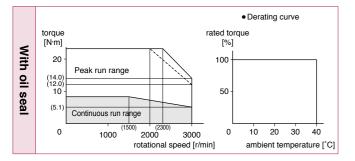
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

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

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



## Dimensions

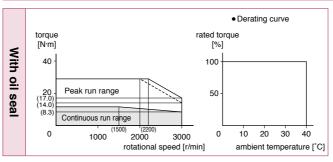
	Key way shaft/ Round shaft						
Motor specifications		without brake		with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.195		—	P.195		
Encoder connector Small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

#### Middle inertia Low speed/High torque type 200 V MGMF 1.8 kW 130 mm sq.

# Creations

Specific		3						
				AC200 V		specifications (For details		
Motor model *1			IP67	MGMF182L1	This brake will be released when it is energing to not use this for braking the motor in motion of the motor			
			unction type	MEDLT83SF	Static fri	ction torque (N·m)	13.7 or m	
Applicable	Model No.	RS48	5 communication type *2	MEDLN83SG	Engagin	g time (ms)	100 or le	
driver	110.	Basic	type <sup>*2</sup>	MEDLN83SE	Releasir	ng time (ms) Note)4	50 or le	
	Fram	e sym	loc	E-frame	Exciting	current (DC) (A)	0.79	
Power supply	capacit	y	(kVA)	3.4	Releasir	ng voltage (DC) (V)	2 or mo	
Rated output			(W)	1800	Exciting	24±2.4		
Rated torque			(N·m)	11.5	Permissible load (For details, refer to P.3			
Continuous stall torque (N·m)			(N·m)	11.5	• Fermi	•		
Momentary M	ax. peal	< torqu	ie (N·m)	28.7	During	Radial load P-direction (N)	980	
Rated current			(A(rms))	11.8	assembly	Thrust load A-direction (N)	588	
Max. current			(A(o-p))	42		Thrust load B-direction (N)	686	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	686	
frequency (tim		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	196	
Rated rotatior	al spee	d	(r/min)	1500	For deta	ails of Note)1 to Note)4, refer t	to P.303.	
Max. rotationa	al speed		(r/min)	3000		Dimensions of Driver, refer to P.59.		
Moment of ine	ertia		Without brake	12.1		the motor part number repre cations.	sents the r	
of rotor (×10-4	kg∙m²)		With brake	13.3	*2 Basic type and RS485 communication type			
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	"Position control type". Detail of model designation, refer to P.22.				
Rotary encod	er speci	ficatio	າຣ <sup>*3</sup>	23-bit Absolute		using a rotary encoder as		
	Re	solutio	n per single turn	8388608		n (not using multi-turn data), erv for absolute encoder.	uo not cor	

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



# Dimensions

	Key way shaft/ Round shaft							
Motor specifications	without brake				with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.196			P.196			
Encoder connector Small size (JN2) type		P.1	197		P.197			

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

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#### **Motor Specifications** A6 Series

A6 Family

A6N Series

A6B

Series

ш Series

# 200 V MGMF 2.4 kW

[Middle inertia Low speed/High torque type] 176 mm sq.

## **Specifications**

				AC200 V
Motor model *1			IP67	MGMF242L1
		Multi	function type	MEDLT93SF
Applicable	Model No	RS48	5 communication type *	<sup>2</sup> MEDLN93SG
driver	110.	Basic	type *2	MEDLN93SE
	Fram	e sym	lod	E-frame
Power supply	capacit	у	(kVA)	) 4.5
Rated output			(W)	2400
Rated torque			(N·m)	) 15.3
Continuous stall torque			(N·m)	15.3
Momentary Ma	Momentary Max. peak torque			45.2
Rated current			(A(rms))	) 16.0
Max. current			(A(o-p))	67
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	1500
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	46.9
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	52.3
Recommender ratio of the loa				10 times or less
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutic	n per single turn	8388608

• Brake specifications (For details, refer to P.305) /This brake will be released when it is energized.)

Do not use this for braking the motor i	n mouon. /
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less

Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

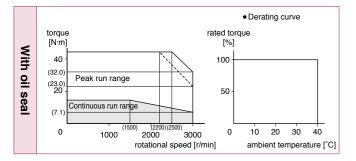
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

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

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



## Dimensions

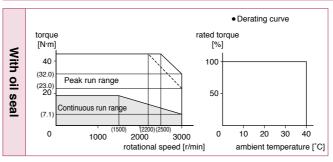
Motor specifications	Key way shaft/ Round shaft						
		without brake		with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P. <sup>-</sup>	P.197		P.198		
Encoder connector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

#### Middle inertia Low speed/High torque type 200 V MGMF 2.9 kW 176 mm sq.

# Specifications

Specifica		3						
				AC200 V		specifications (For details		
Motor model *1			IP67	MGMF292L1		(This brake will be released when it is en Do not use this for braking the motor in		
		Multif	unction type	MFDLTB3SF	Static fri	ction torque (N·m)	25.0 or mor	
Applicable	Model No.	RS485	5 communication type *2	MFDLNB3SG	Engaging time (ms)		80 or less	
driver		Basic	type <sup>*2</sup>	MFDLNB3SE	Releasir	ng time (ms) Note)4	25 or less	
	Fram	e syml	loc	F-frame	Exciting	current (DC) (A)	1.29	
Power supply	capacit	y	(kVA)	5.0	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	2900	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	18.5	• Dormi	ssible load (For details, refe	r to P 304	
Continuous st	all torqu	е	(N·m)	18.5	• Perm	•		
Momentary M	ax. pea	< torqu	ie (N·m)	45.2	During	Radial load P-direction (N)	1666	
Rated current			(A(rms))	19.3	assembly	Thrust load A-direction (N)	784	
Max. current			(A(o-p))	67		Thrust load B-direction (N)	980	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	1176	
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	490	
Rated rotation	al spee	d	(r/min)	1500	For details of Note)1 to Note)4, refer to P.3		o P.303.	
Max. rotationa	l speed		(r/min)	3000		Dimensions of Driver, refer to P.59.		
Moment of ine	rtia		Without brake	46.9		the motor part number repre cations.	sents the mo	
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	52.3	*2 Basic type and RS485 communication type a			
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	"Position control type". Detail of model designation, refer to P.22.		P.22.		
Rotary encode	er speci	fication	1s <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment system (not using multi-turn data), do not conr		
	Re	solutio	n per single turn	8388608	,	erv for absolute encoder.	uo not conn	

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



## Dimensions

Motor specifications	Key way shaft/ Round shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type	_	P.199			P.199			
Encoder connector Small size (JN2) type		P.199			P.200			

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

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#### Motor Specifications A6 Series

# 200 V MGMF 4.4 kW

[Middle inertia Low speed/High torque type] 176 mm sq.

## **Specifications**

					AC200 V		
Motor model *1			IP67	MGMF442L1			
		Multif	unction type		MFDLTB3SF		
Applicable	Model No	RS485 communication type *2			MFDLNB3SG		
driver		Basic type *2			MFDLNB3SE		
	Fram	e sym	bol		F-frame		
Power supply	capacit	у		(kVA)	7.0		
Rated output				(W)	4400		
Rated torque				(N·m)	28.0		
Continuous sta	all torqu	ie		(N·m)	28.0		
Momentary Ma	ax. pea	70.0					
Rated current				(rms))	27.2		
Max. current				(o-p))	96		
Regenerative brake			Without option		No limit Note)2		
frequency (times/min) Note)1		Note)1	DV0P4285×2		No limit Note)2		
Rated rotation	al spee	d	(r/min)		1500		
Max. rotationa	l speed		(	r/min)	3000		
Moment of ine	Moment of inertia			ke	58.2		
of rotor (×10 <sup>-4</sup>	of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )				63.0		
Recommended moment of inertia ratio of the load and the rotor Note)3					10 times or less		
Rotary encoder specifications <sup>*3</sup>			ns *3		23-bit Absolute		
	Re	urn	8388608				

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

Do not use this for braking the motor in motion.						
Static friction torque (N·m)	44.1 or more					
Engaging time (ms)	150 or less					
Releasing time (ms) Note)4	30 or less					
Exciting current (DC) (A)	1.29					
Releasing voltage (DC) (V)	2 or more					
Exciting voltage (DC) (V)	24±2.4					

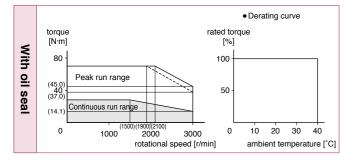
#### • Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666		
	Thrust load A-direction (N)	784		
	Thrust load B-direction (N)	980		
During operation	Radial load P-direction (N)	1470		
	Thrust load A, B-direction (N)	490		

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

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

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



### Dimensions

Motor specifications	Key way shaft/ Round shaft							
	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.200			P.200			
Encoder connector Small size (JN2) type		P.201			P.201			

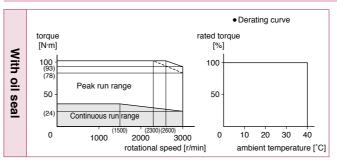
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#### Middle inertia Low speed/High torque type 200 V MGMF 5.5 kW 176 mm sq.

# 

				AC200 V		specifications (For details			
Motor model *1			IP67	MGMF552L1		(This brake will be released when it is energized. Do not use this for braking the motor in motion.			
		Multifunction type		MGDLTC3SF	Static fr	Static friction torque (N·m)			
Applicable	Model No.	RS485 communication type *2		—	Engagir	Engaging time (ms)			
driver		Basic type *2		—	Releasi	80 or less			
	Frame	sym	loc	G-frame	Exciting current (DC) (A)		1.29		
Power supply	capacity	/	(kVA)	8.5	Releasi	Releasing voltage (DC) (V)			
Rated output			(W)	5500	Exciting	Exciting voltage (DC) (V) 15 c			
Rated torque			(N·m)	35.0	• Permi	• Permissible load (For details, refer to P.304)			
Continuous st	all torqu	е	(N·m)	35.0					
Momentary Max. peak torque (N·m)		102	During	Radial load P-direction (N)	2058				
Rated current (A(rms))		39.8	assembly	Thrust load A-direction (N)	980				
Max. current (A(o-p))		164		Thrust load B-direction (N)	1176				
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	1176		
		Note)1	DV0P4285×3	No limit Note)2	operation	Thrust load A, B-direction (N)	490		
Rated rotation	al spee	ł	(r/min)	1500	For deta	<ul> <li>For details of Note)1 to Note)4, refer to P.303.</li> <li>Dimensions of Driver, refer to P.60.</li> </ul>			
Max. rotationa	l speed		(r/min)	3000					
Moment of ine	rtia		Without brake	83.0		*1 in the motor part number represents the mospecifications.			
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake		88.0	*2 Basic type and RS485 communication type are						
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	Detail	"Position control type". Detail of model designation, refer to P.22.					
Rotary encode	er specif	icatio	rs <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an increment system (not using multi-turn data), do not conne				
Resolution per single turn				8388608		a battery for absolute encoder.			

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



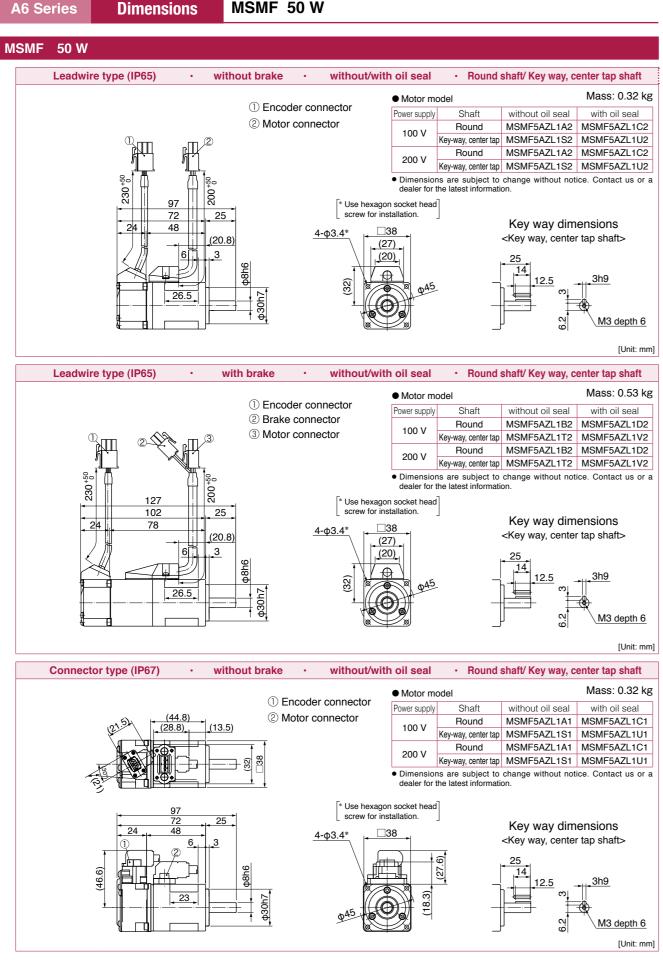
### Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.201		—	P.202			
Encoder connector Small size (JN2) type		P.202		_	P.202	_		

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

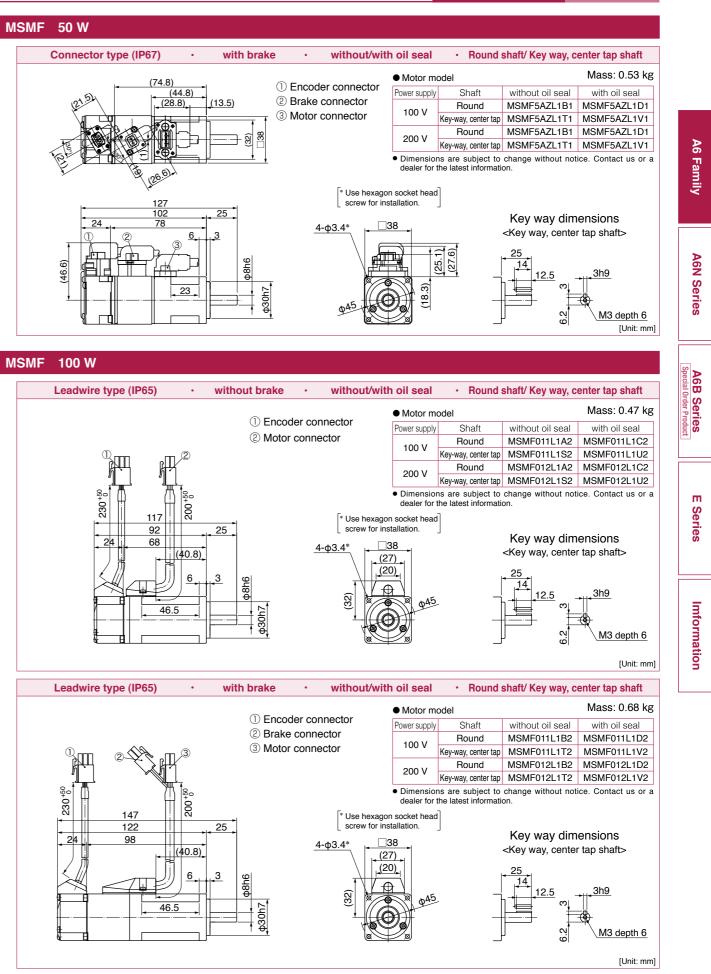
#### **Motor Specifications** A6 Series

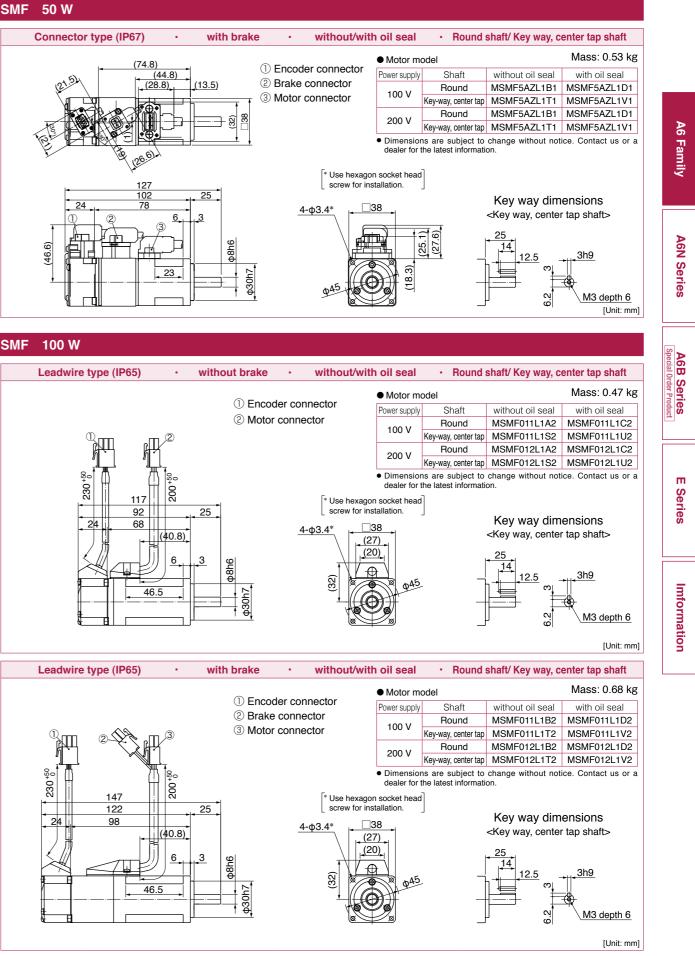
#### **MSMF 50 W**



\* For motors specifications, refer to P.63, P.64.

### MSMF 50 W to 100 W



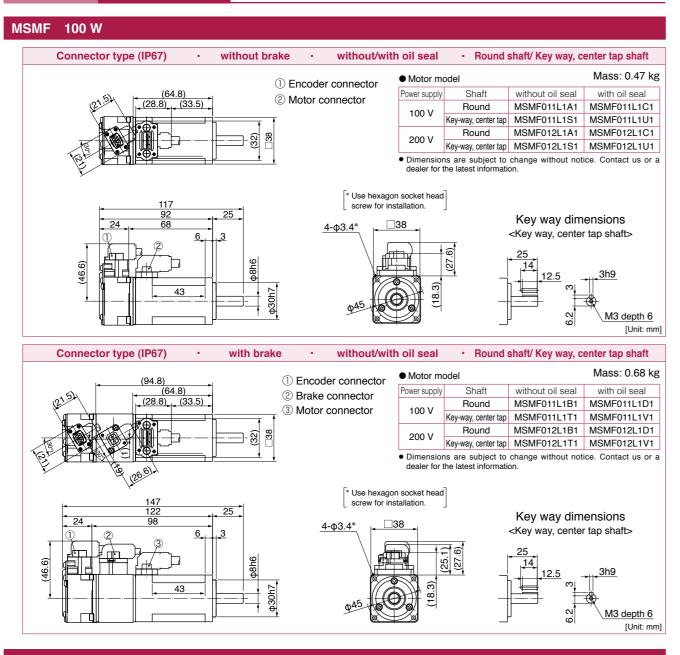


\* For motors specifications, refer to P.63 to P.66.

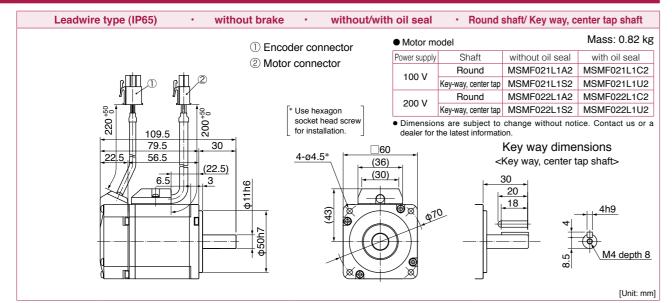
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# Dimensions

#### MSMF 100 W to 200 W



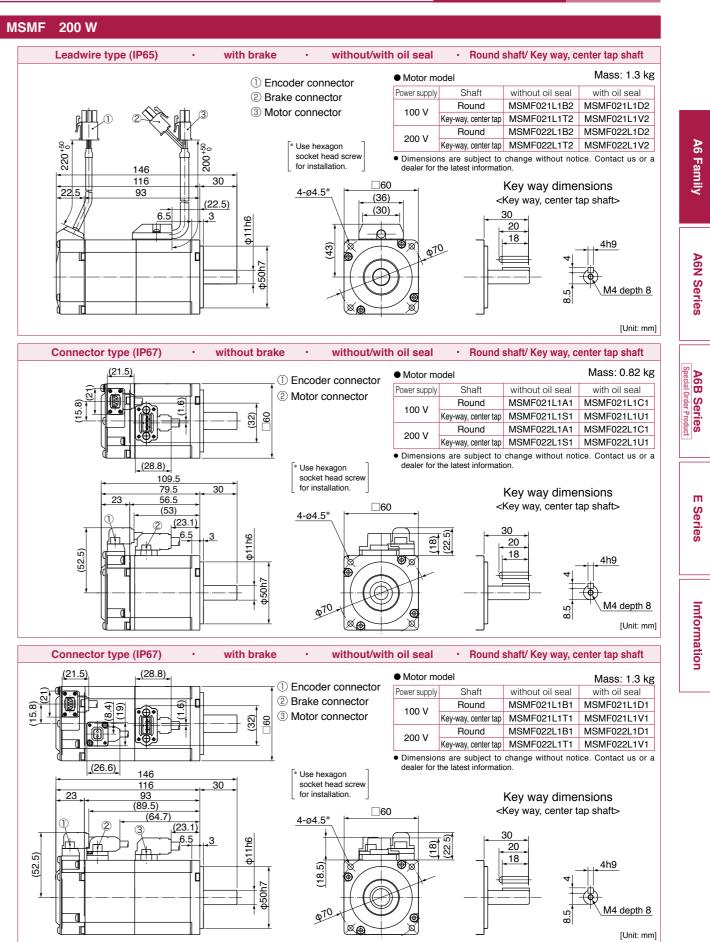
#### **MSMF 200 W**

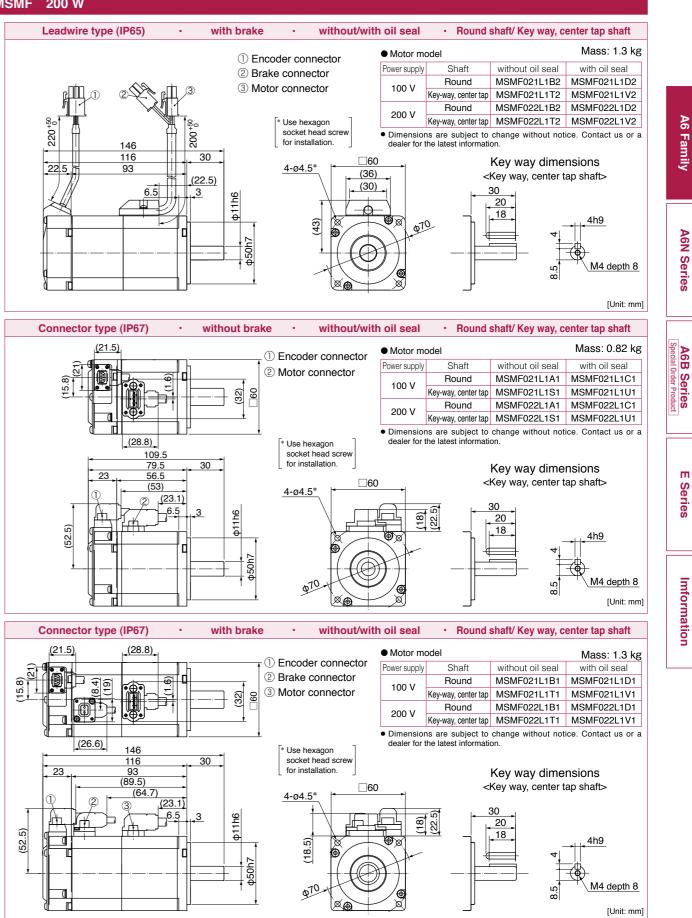


\* For motors specifications, refer to P.65 to P.68.

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### **MSMF 200 W**

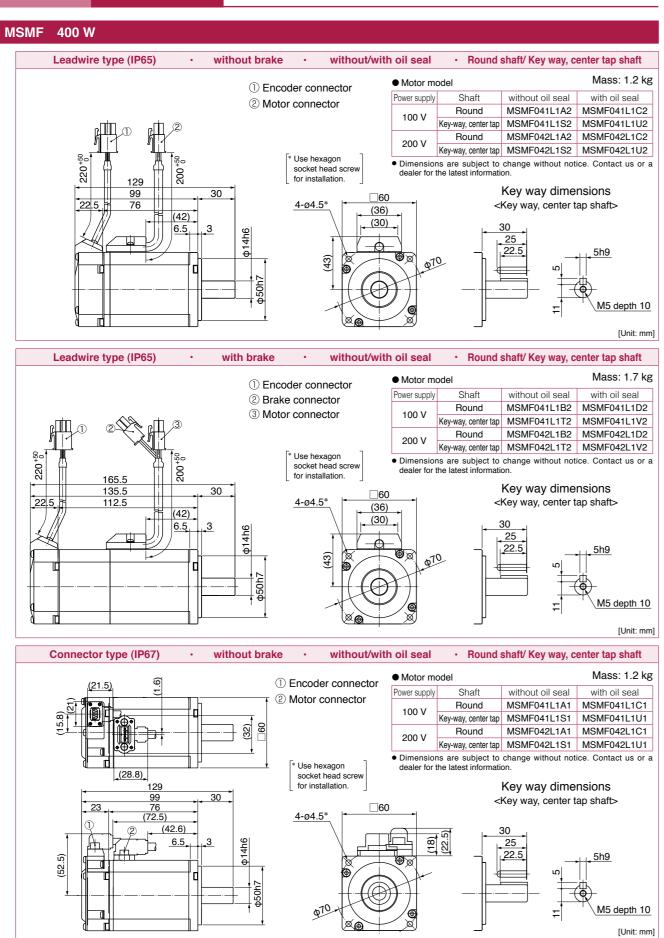




\* For motors specifications, refer to P.67, P.68.

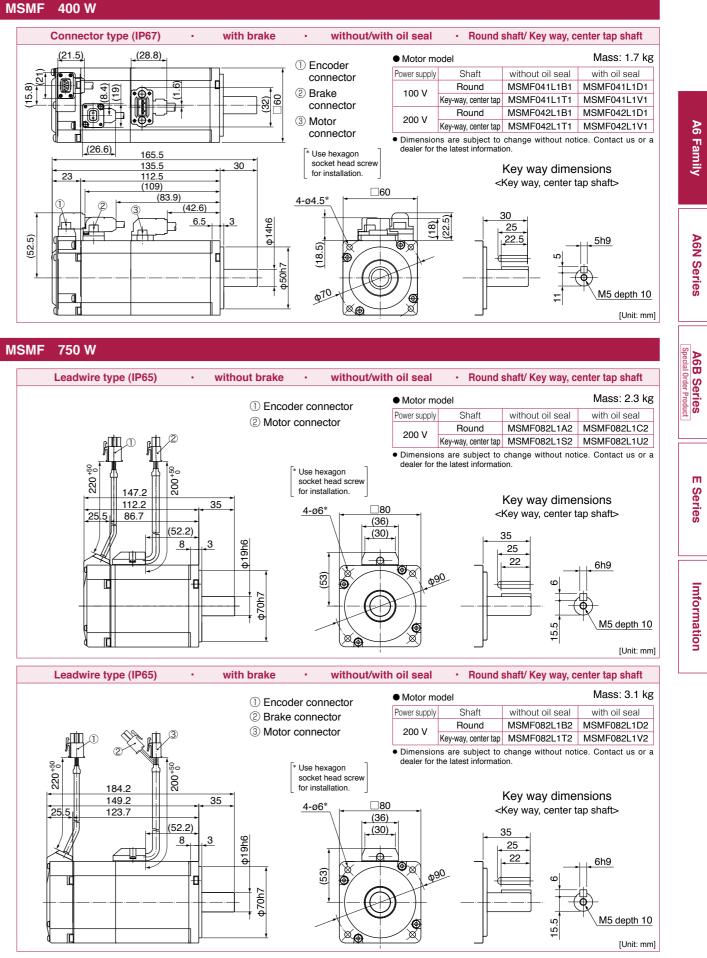
# Dimensions

#### MSMF 400 W



\* For motors specifications, refer to P.69, P.70.

### MSMF 400 W to 750 W



\* For motors specifications, refer to P.69 to P.71.

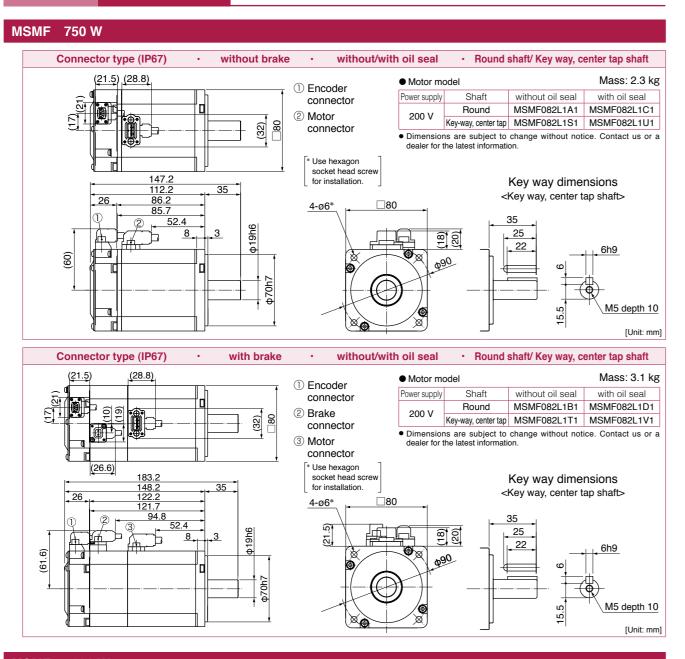
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# Dimensions

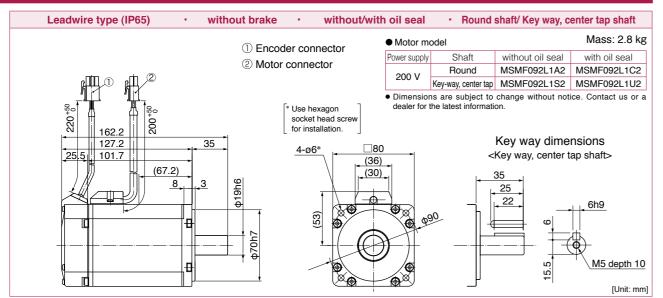
A6 Series

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## MSMF 750 W to 1000 W



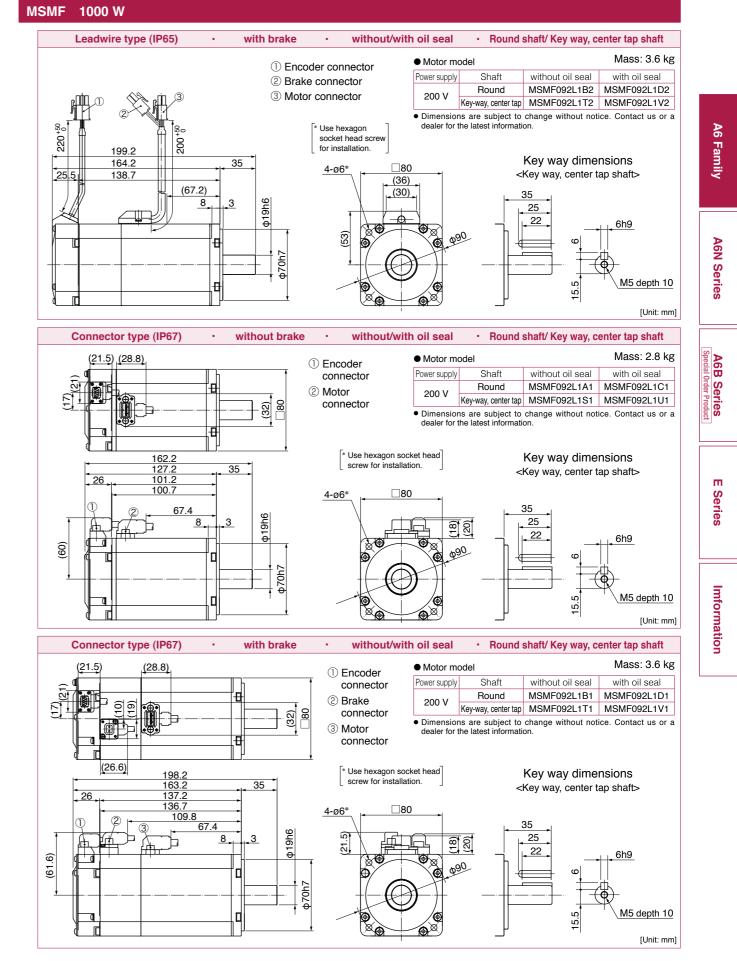
# MSMF 1000 W



\* For motors specifications, refer to P.71, P.72.

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## **MSMF 1000 W**



\* For motors specifications, refer to P.72.

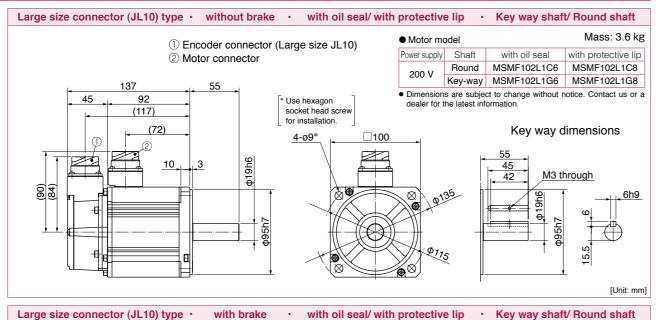
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# Dimensions

#### A6 Series Dimensions

#### MSMF 1.0 kW



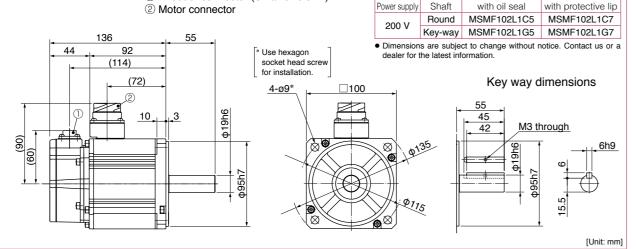


Mass: 4.7 kg Motor model ① Encoder connector (Large size JL10) Power supply Shaft with oil seal with protective lip 2 Motor/Brake connector Round MSMF102L1D6 MSMF102L1D8 200 V Key-way MSMF102L1H6 MSMF102L1H8 164 \* Use hexagon • Dimensions are subject to change without notice. Contact us or a dealer for the latest information. 45 119 socket head screw (144)for installation. (2) (59) 100 Key way dimensions <u>4-ø</u>9\* ф19h6 12 45 10 (101) (84) M3 through 42 ¢135  $\otimes$ 6h9 15.5 [Unit: mm]

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

Motor model

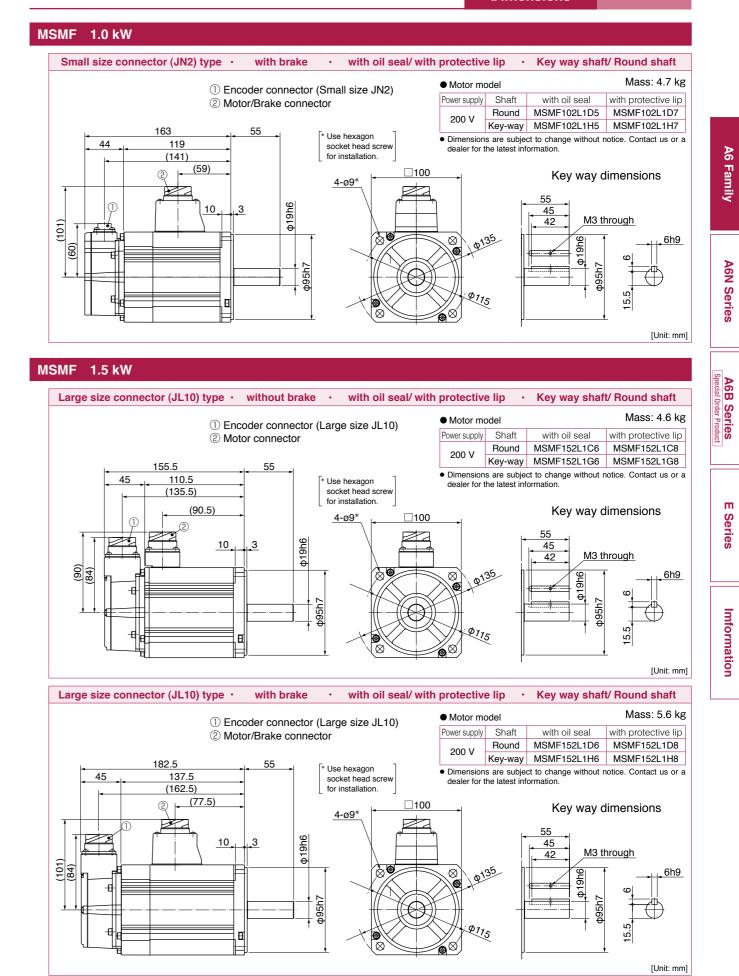
① Encoder connector (Small size JN2) 2 Motor connector



\* For motors specifications, refer to P.73.

Mass: 3.6 kg

# MSMF 1.0 kW to 1.5 kW

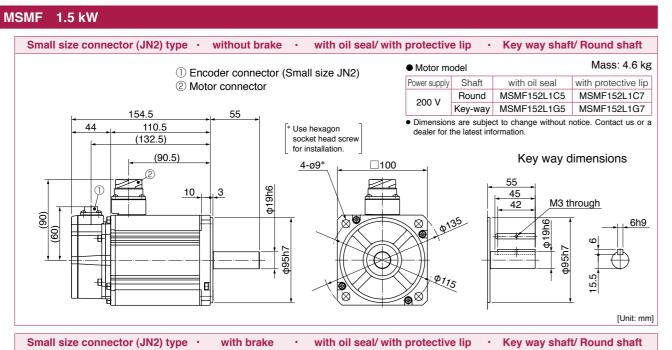


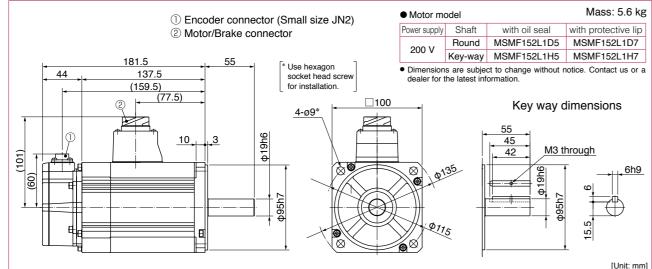
\* For motors specifications, refer to P.73, P.74.

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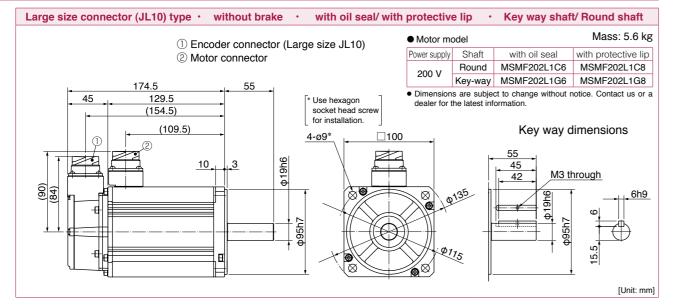
# Dimensions

#### MSMF 1.5 kW to 2.0 kW





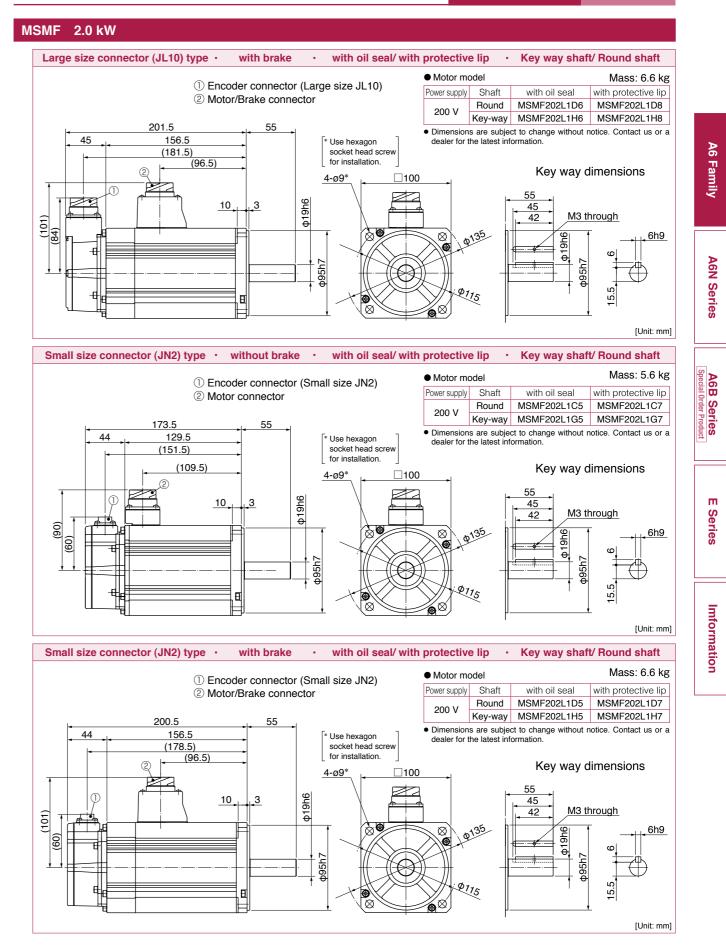
# MSMF 2.0 kW



\* For motors specifications, refer to P.74, P.75.

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# MSMF 2.0 kW

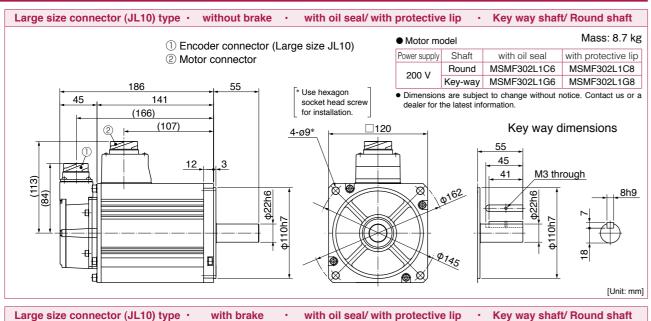


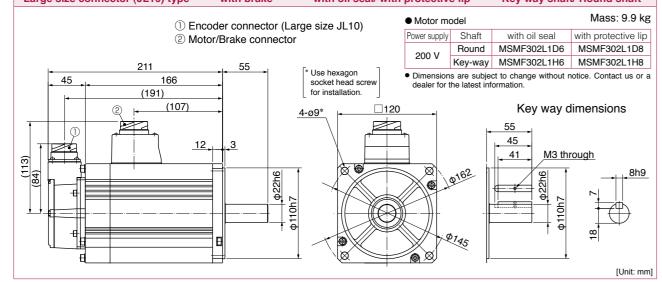
\* For motors specifications, refer to P.75.

# Dimensions

#### MSMF 3.0 kW



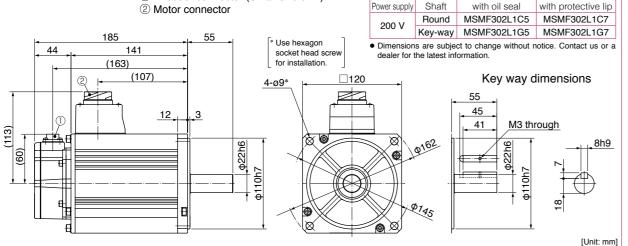




Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft Mass: 8.7 kg

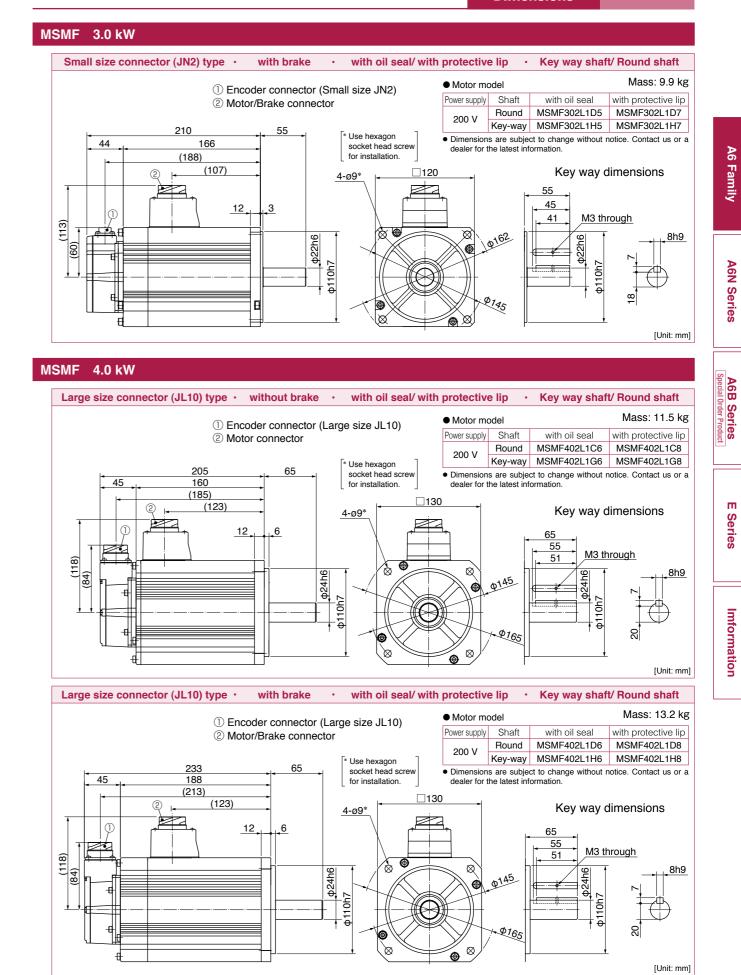
Motor model

① Encoder connector (Small size JN2) 2 Motor connector



\* For motors specifications, refer to P.76.

## MSMF 3.0 kW to 4.0 kW

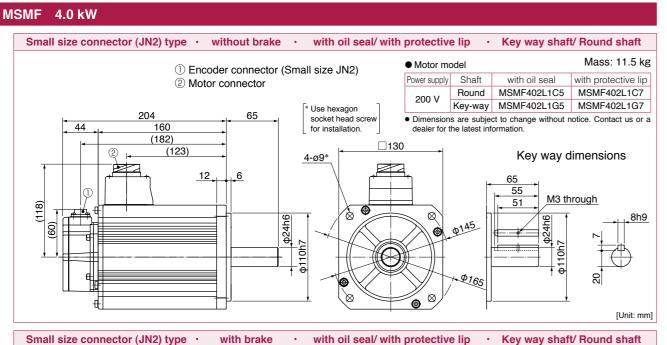


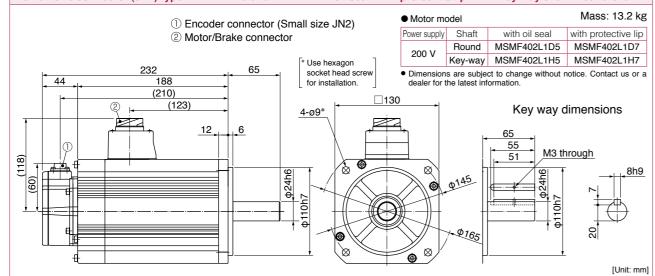
\* For motors specifications, refer to P.76, P.77.

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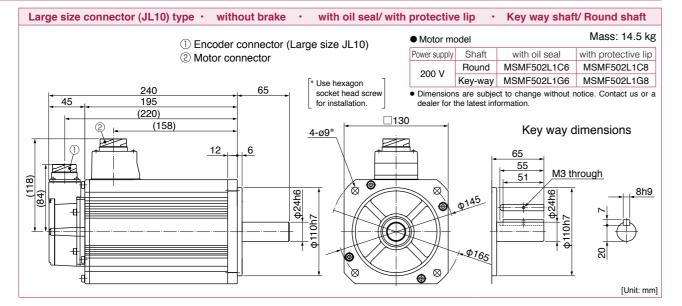
# Dimensions

#### MSMF 4.0 kW to 5.0 kW





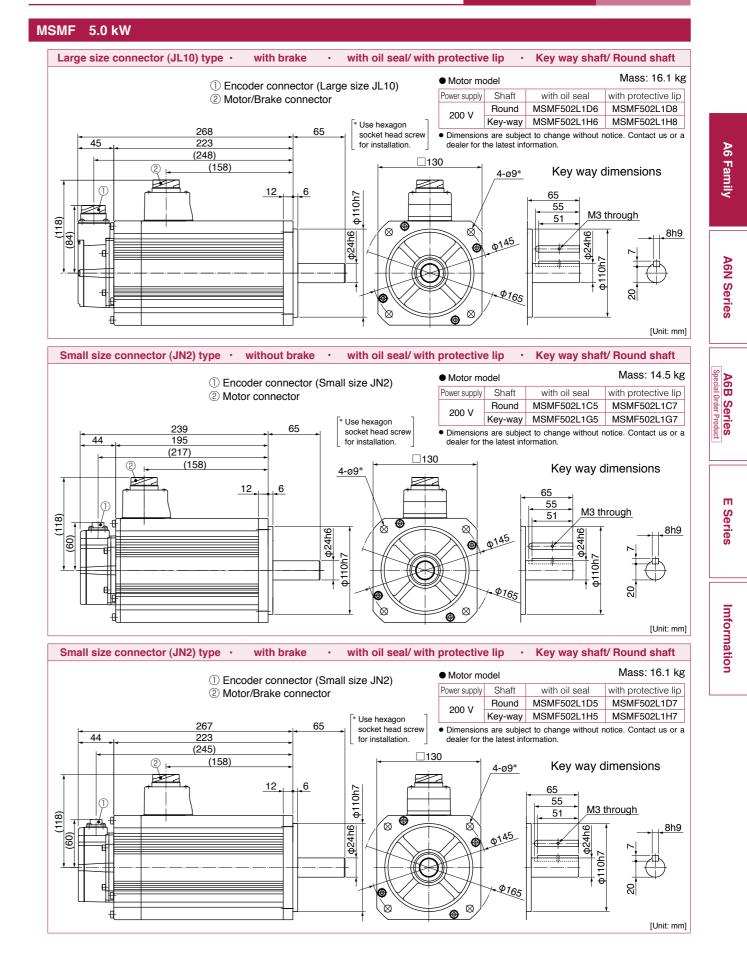
# MSMF 5.0 kW



\* For motors specifications, refer to P.77, P.78.

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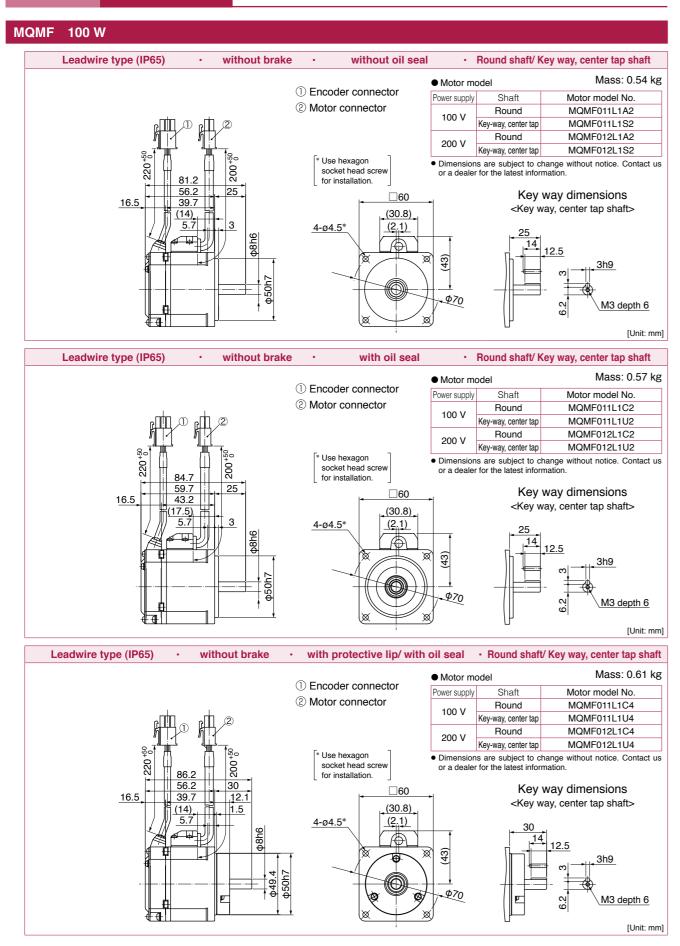
# MSMF 5.0 kW



\* For motors specifications, refer to P.78.

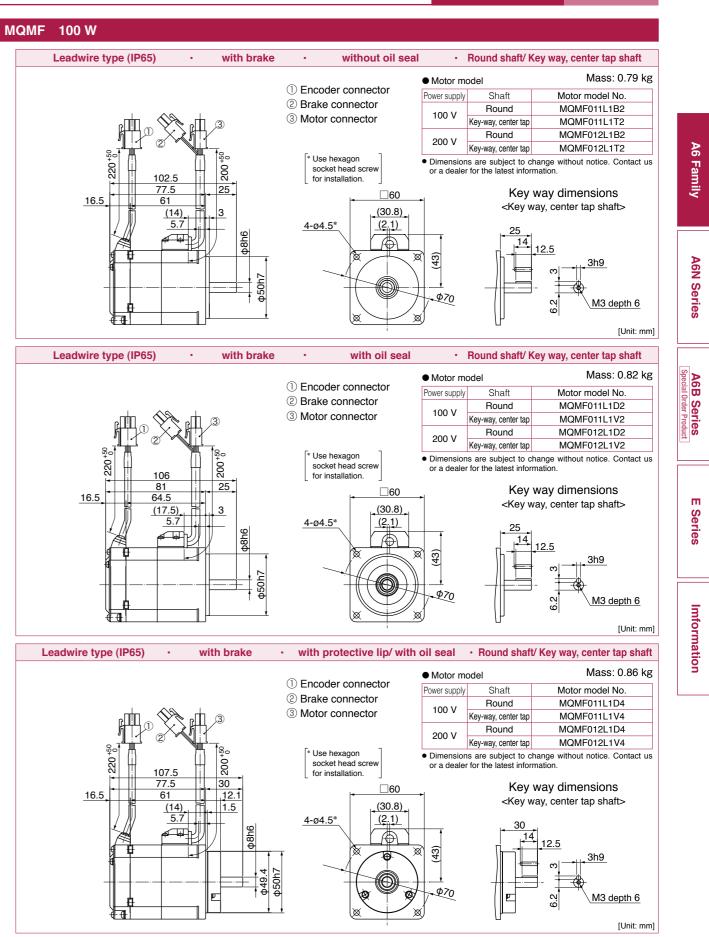
# **Dimensions**

#### **MQMF 100 W**



\* For motors specifications, refer to P.79, P.80.

### **MQMF 100 W**

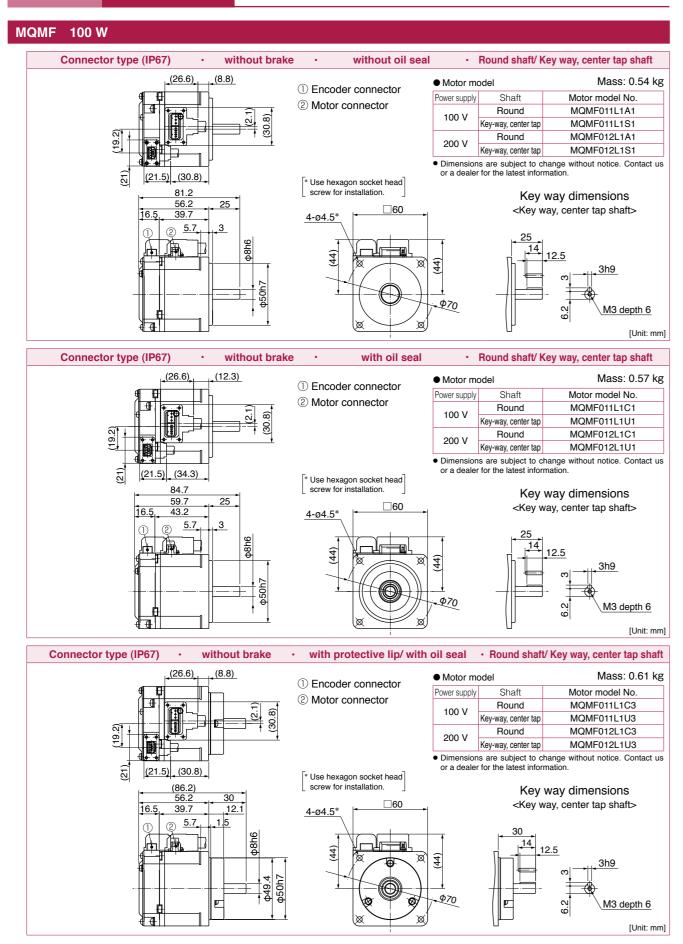


\* For motors specifications, refer to P.79, P.80.



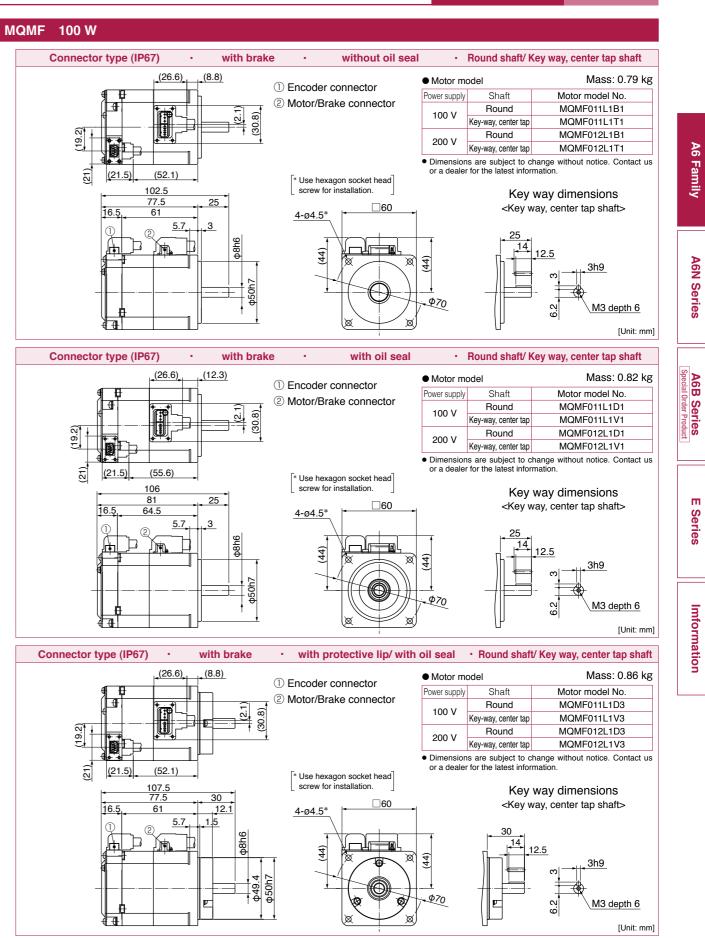
# **Dimensions**

#### **MQMF 100 W**



\* For motors specifications, refer to P.79, P.80.

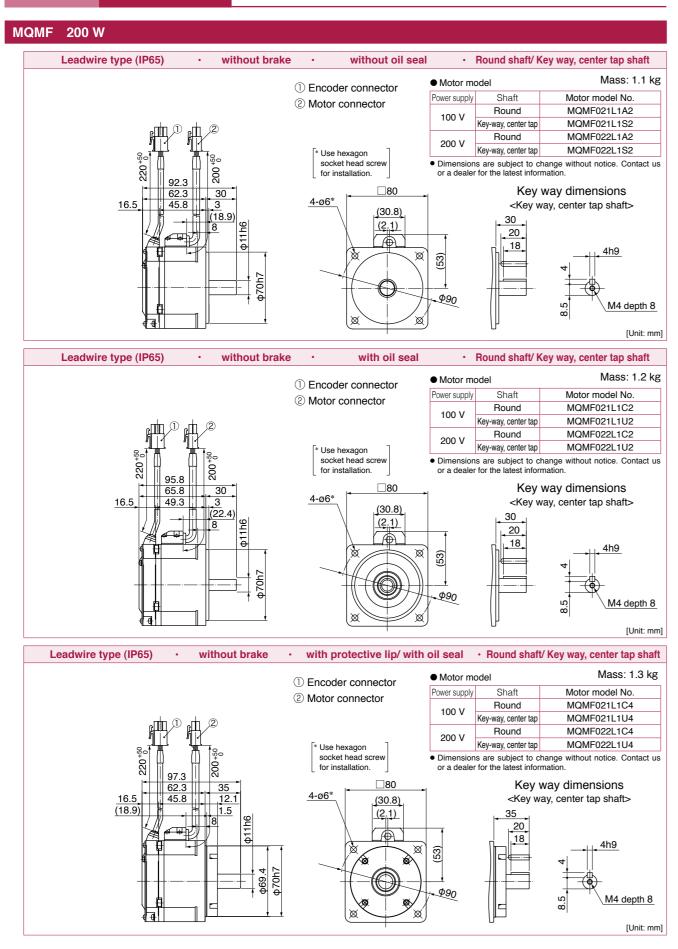
### **MQMF 100 W**



\* For motors specifications, refer to P.79, P.80.

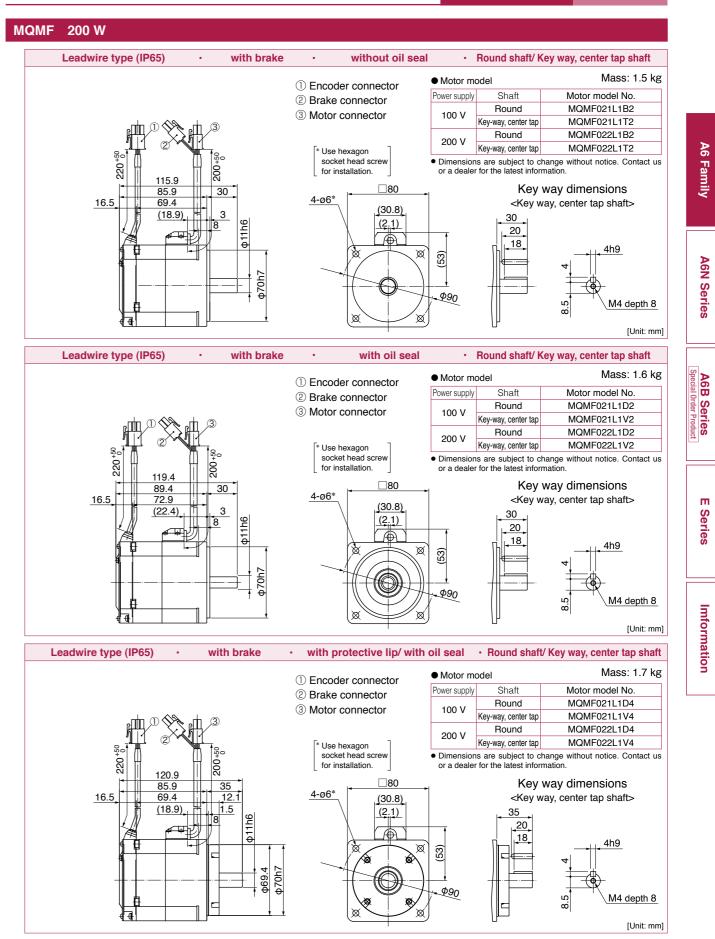
# **Dimensions**

#### **MQMF 200 W**



\* For motors specifications, refer to P.81, P.82.

### **MQMF 200 W**

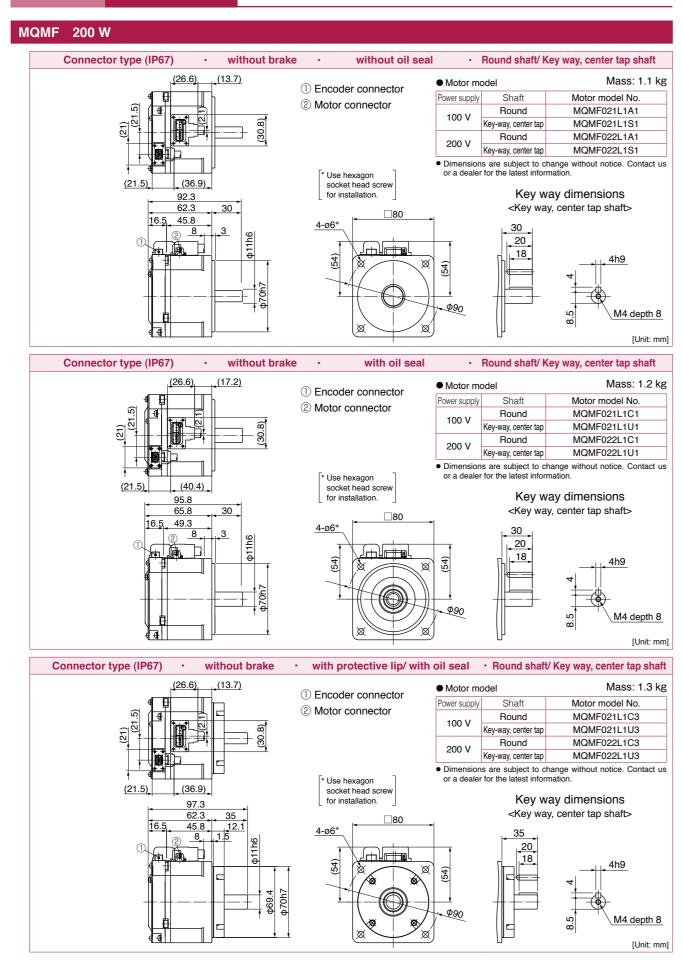


\* For motors specifications, refer to P.81, P.82.



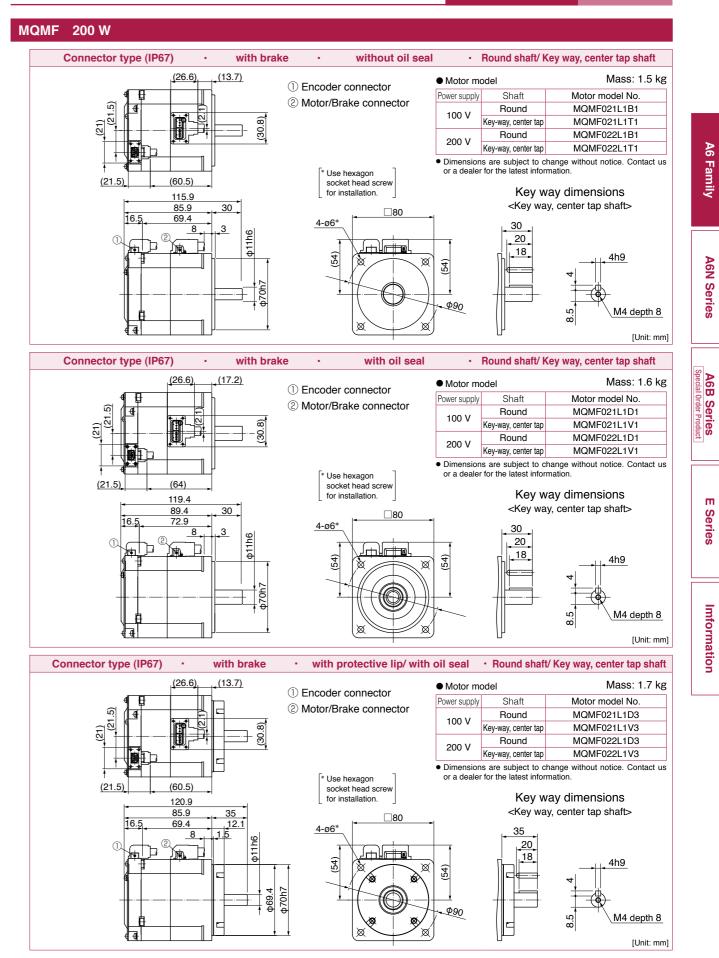
# Dimensions

#### **MQMF 200 W**



\* For motors specifications, refer to P.81, P.82.

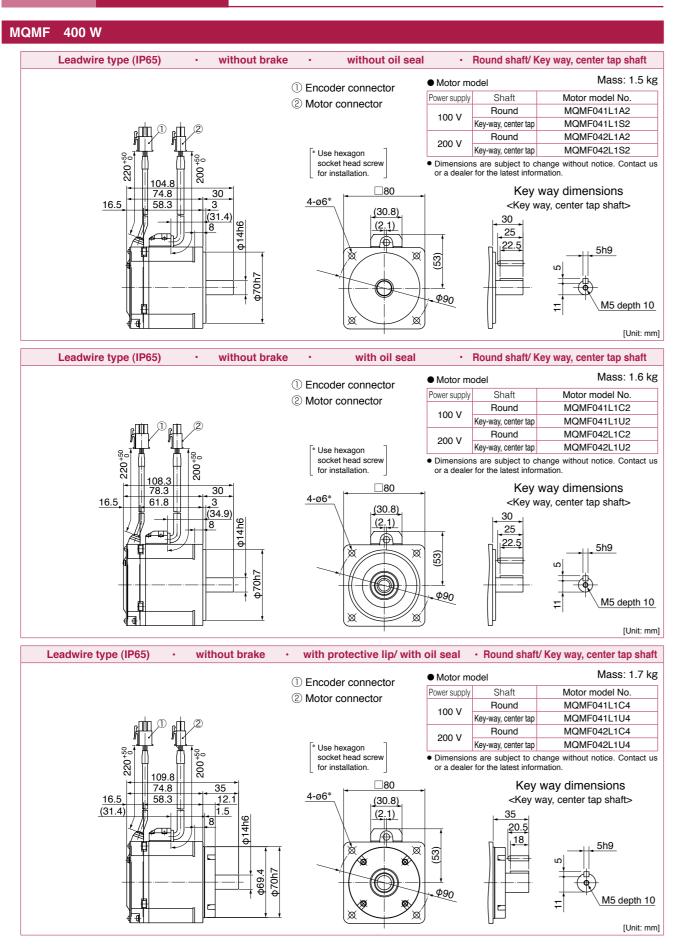
### **MQMF 200 W**



\* For motors specifications, refer to P.81, P.82.

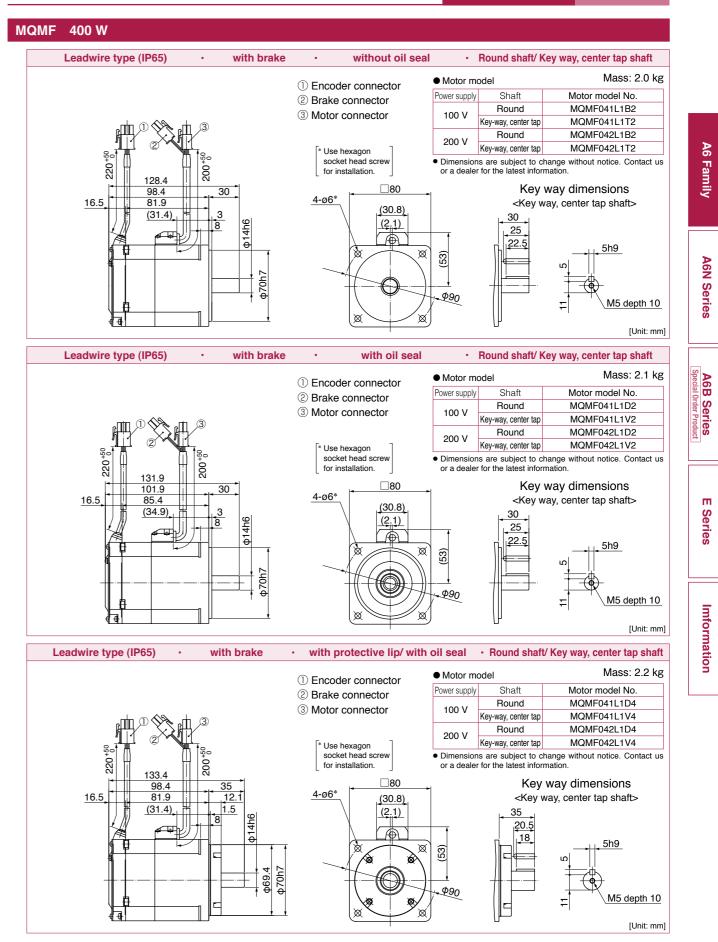
# Dimensions

#### MQMF 400 W



\* For motors specifications, refer to P.83, P.84.

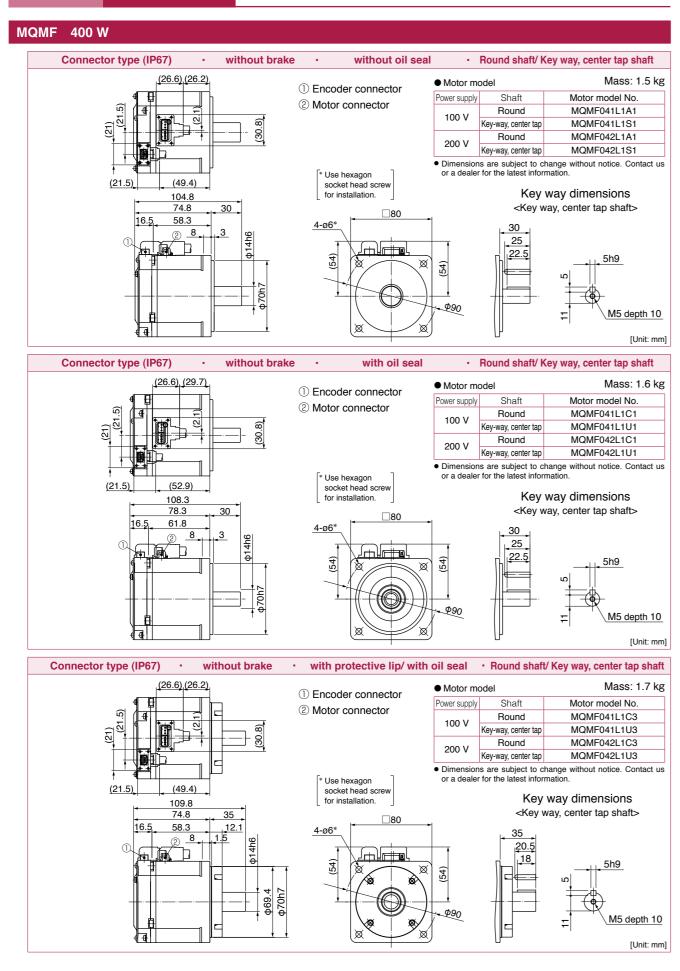
#### MQMF 400 W



\* For motors specifications, refer to P.83, P.84.

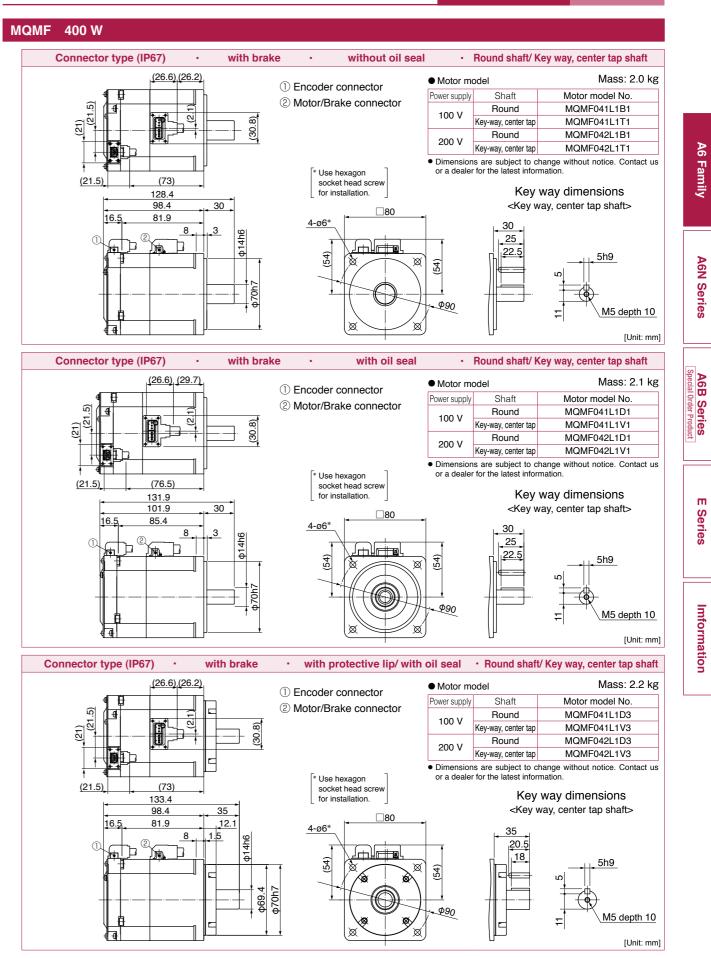
# Dimensions

#### MQMF 400 W



\* For motors specifications, refer to P.83, P.84.

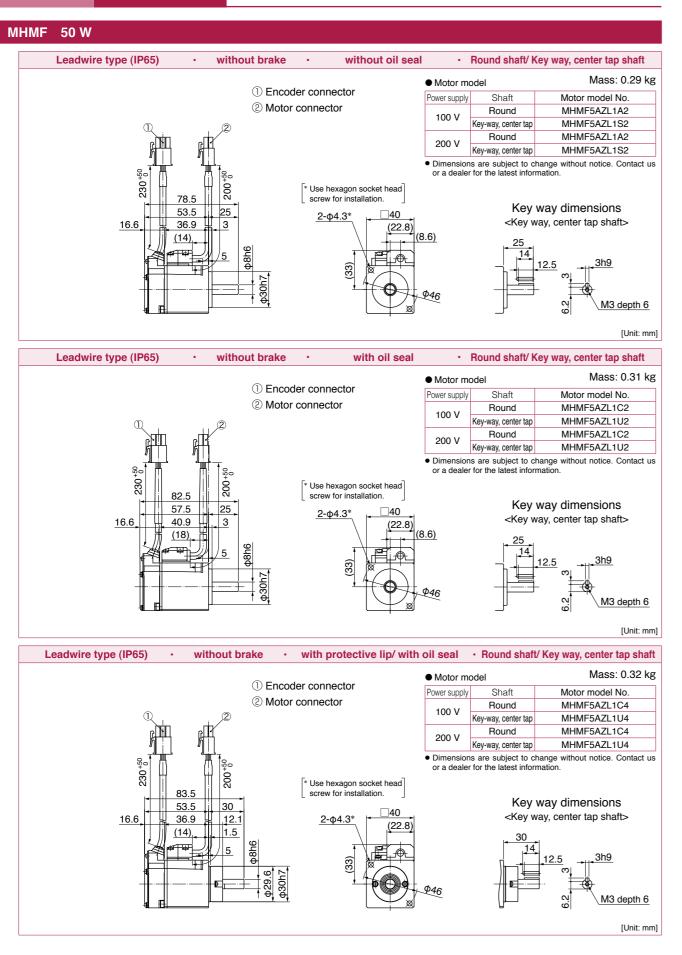
#### MQMF 400 W



\* For motors specifications, refer to P.83, P.84.

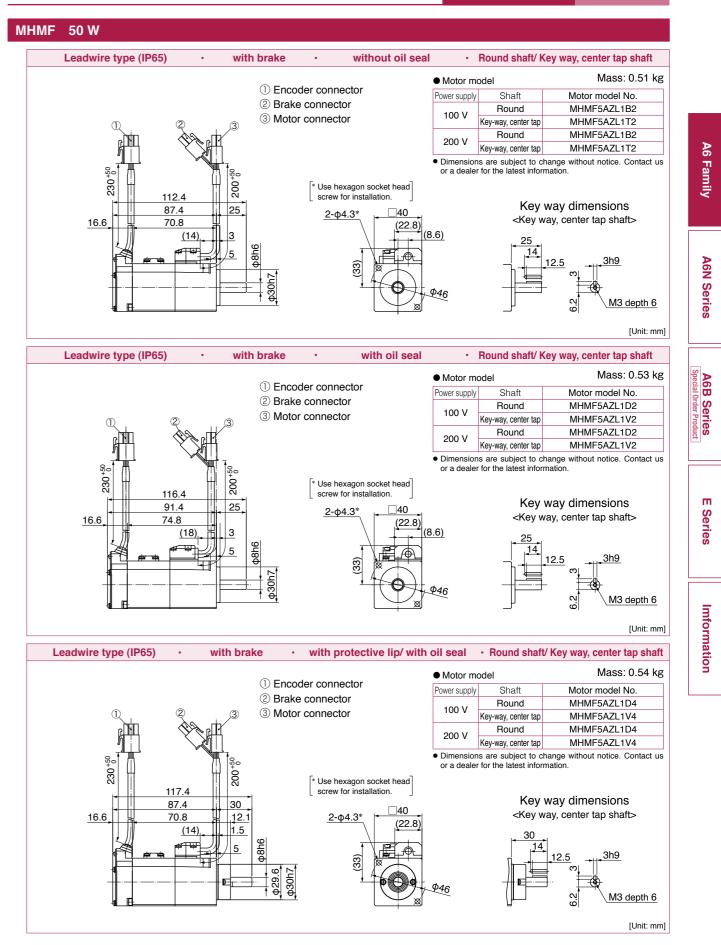
# Dimensions

#### **MHMF 50 W**



\* For motors specifications, refer to P.85, P.86.

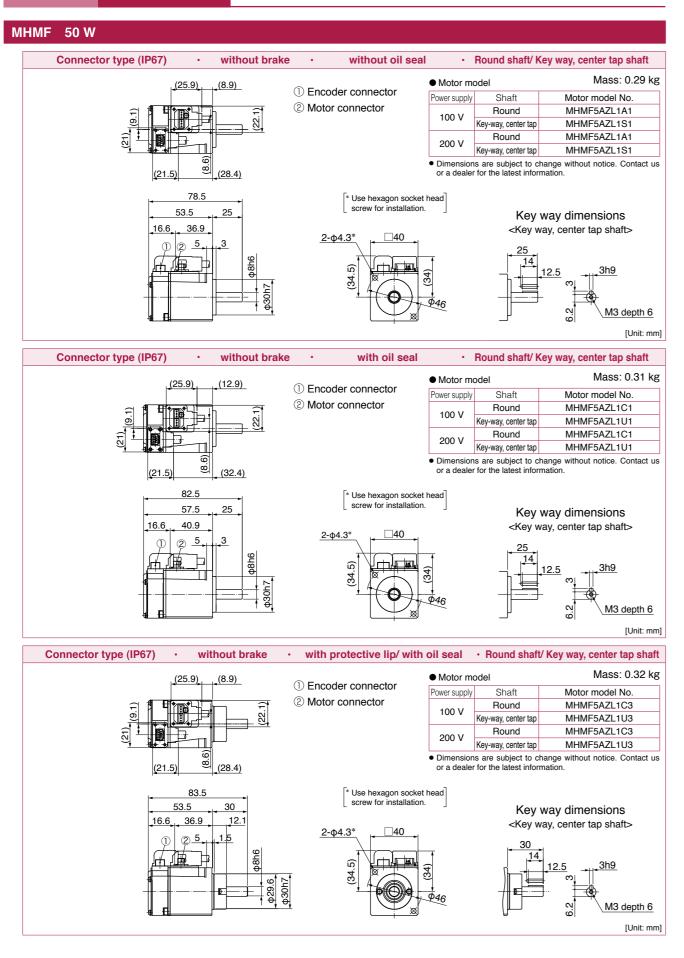
# **MHMF 50 W**



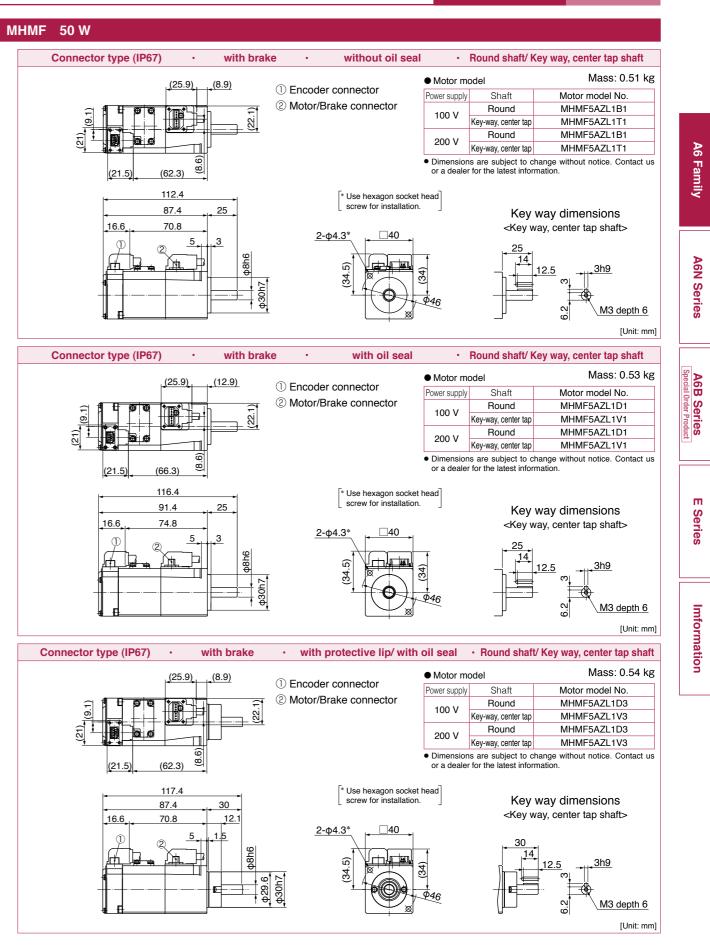
\* For motors specifications, refer to P.85, P.86.

# **Dimensions**

**MHMF 50 W** 



**MHMF 50 W** 



\* For motors specifications, refer to P.85, P.86.

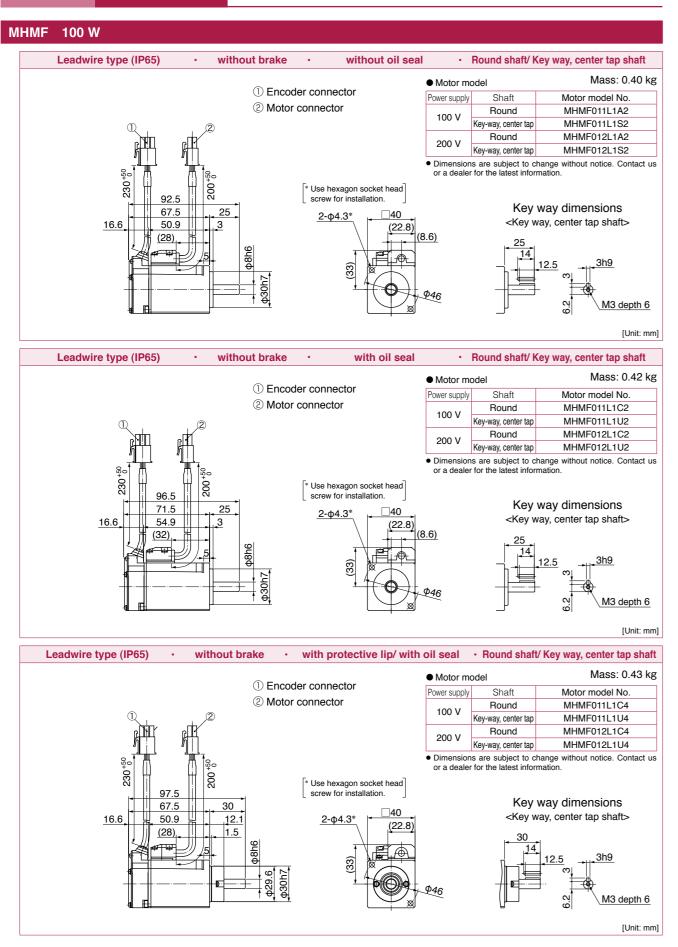
\* For motors specifications, refer to P.85, P.86.

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# Dimensions

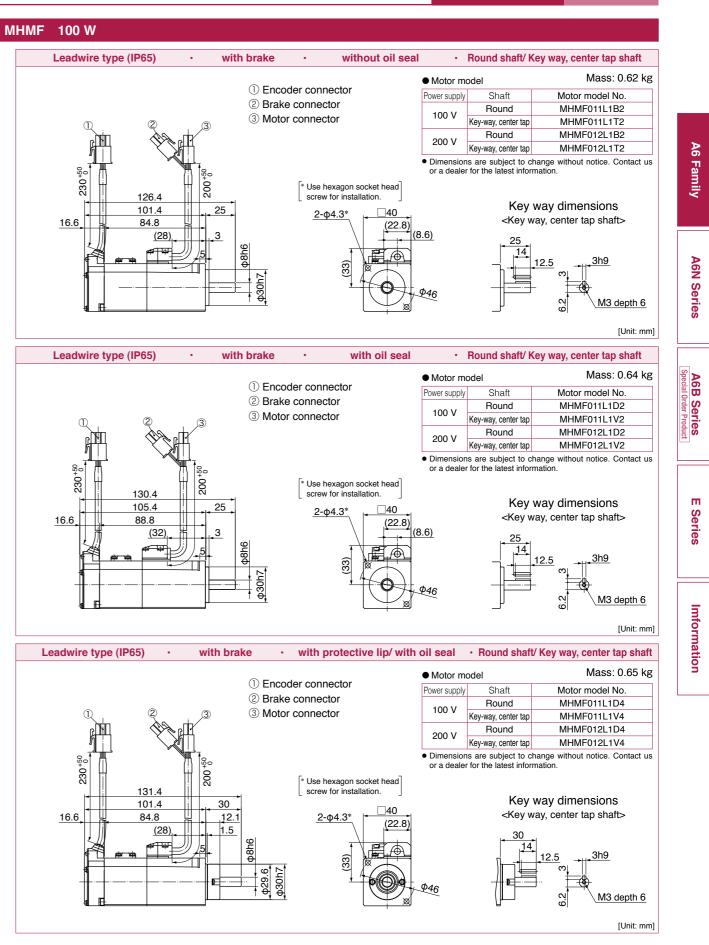
## A6 Series

#### Dimensions MHMF 100 W



\* For motors specifications, refer to P.87, P.88.

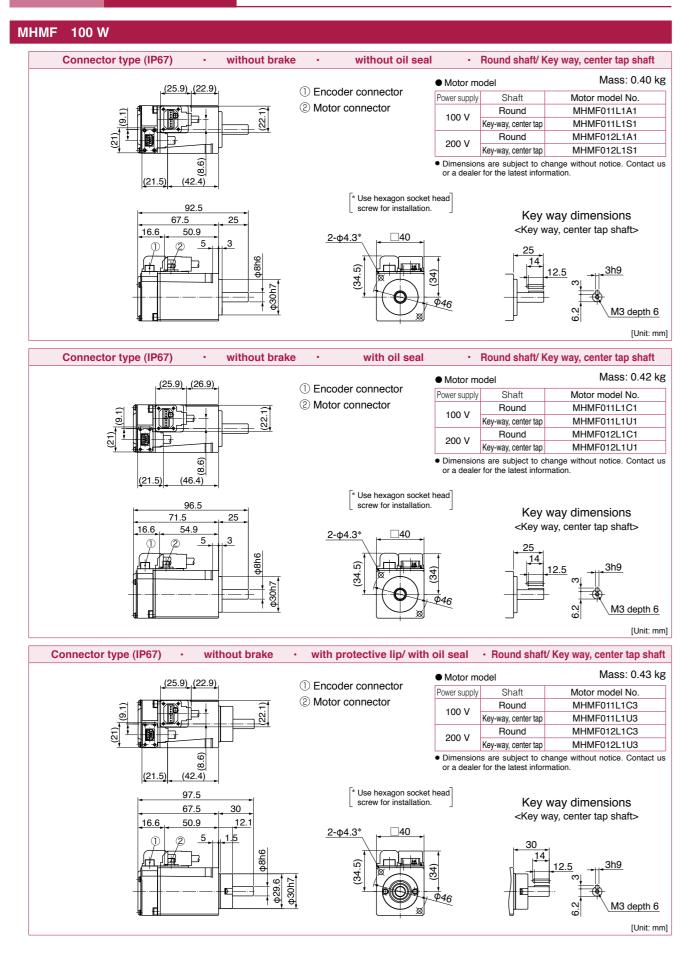
## MHMF 100 W



\* For motors specifications, refer to P.87, P.88.

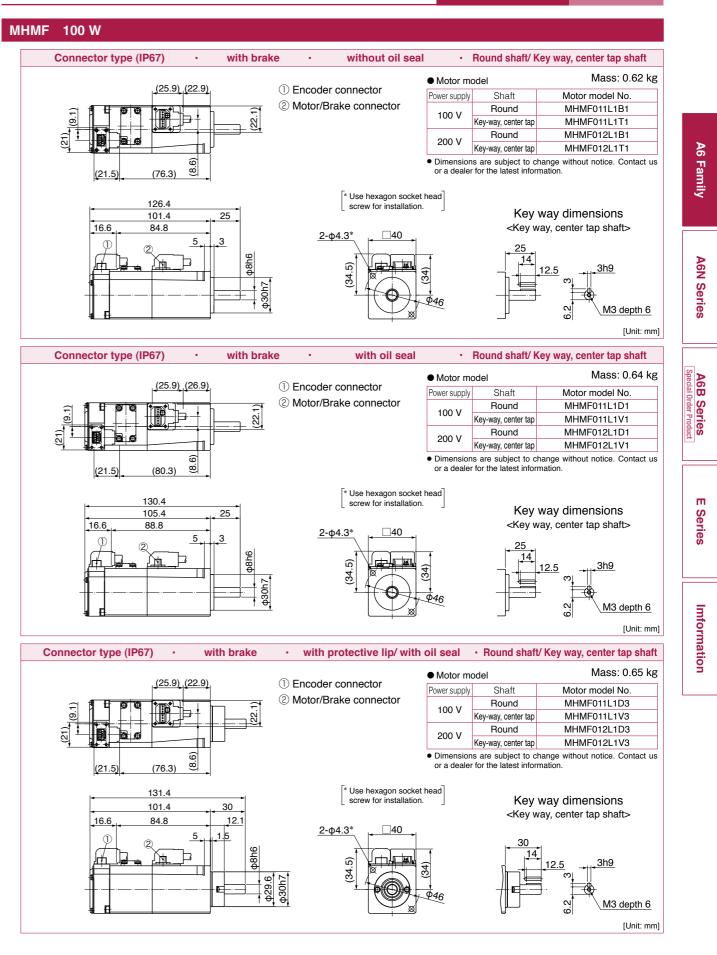
# Dimensions

#### MHMF 100 W



\* For motors specifications, refer to P.87, P.88.

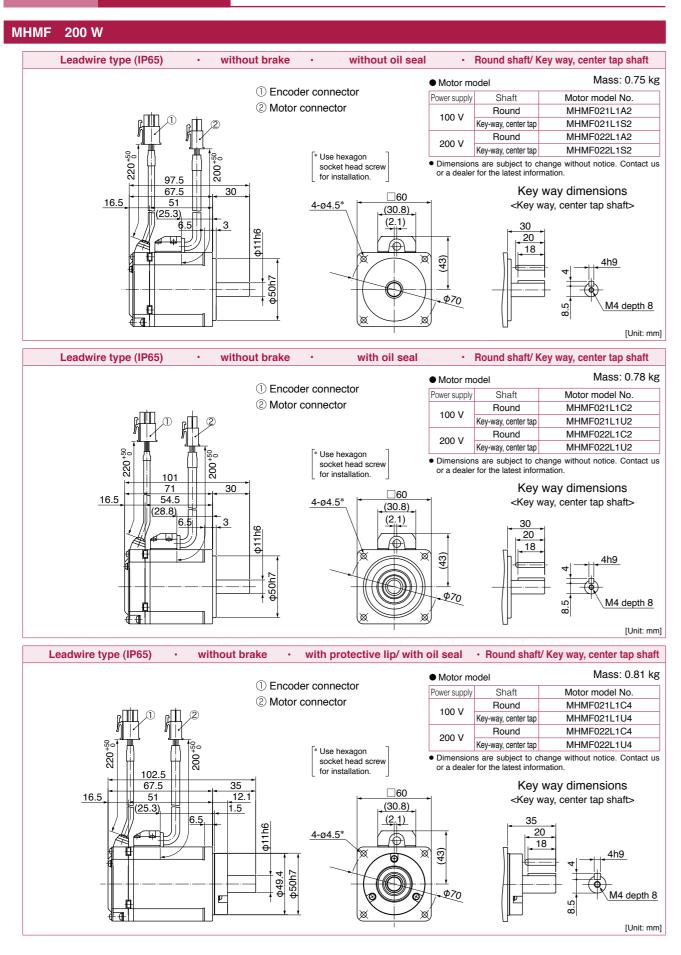
#### **MHMF 100 W**



\* For motors specifications, refer to P.87, P.88.

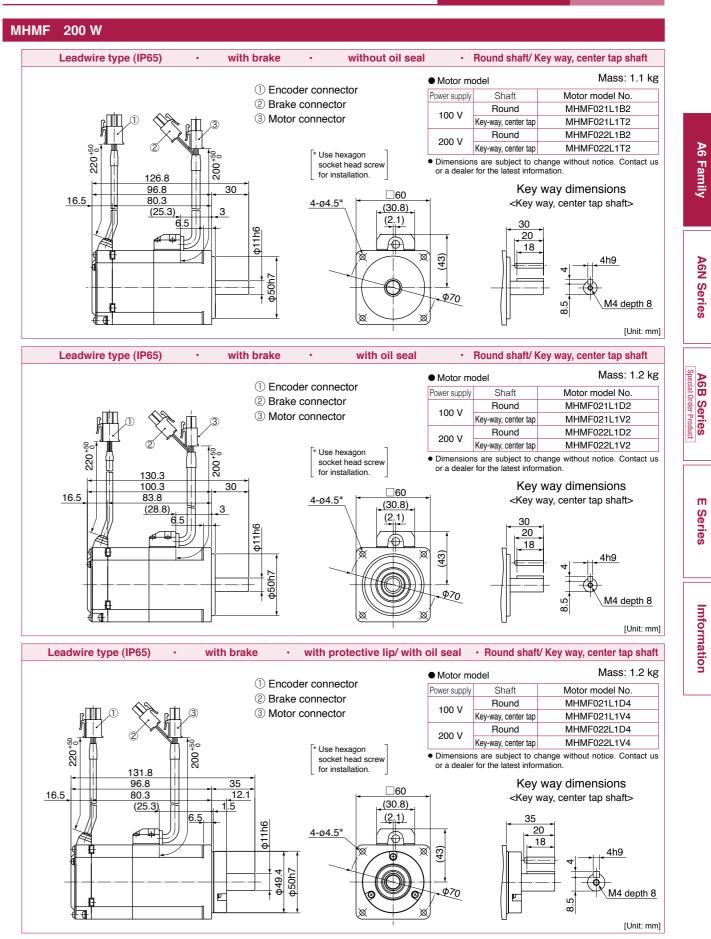
# **Dimensions**

#### MHMF 200 W



\* For motors specifications, refer to P.89, P.90.

#### MHMF 200 W



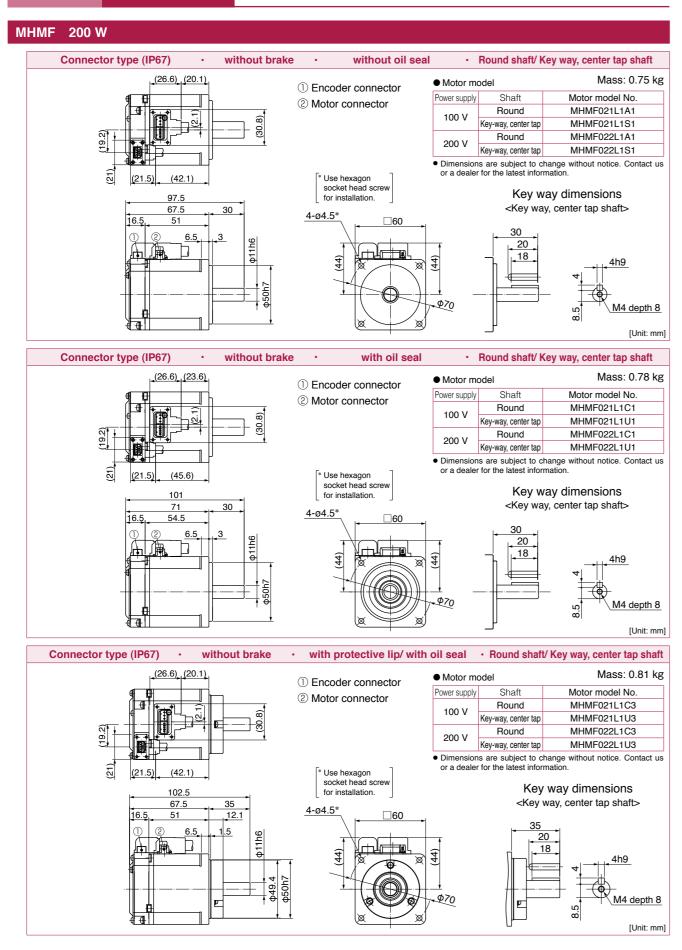
\* For motors specifications, refer to P.89, P.90.

# Dimensions

A6 Series

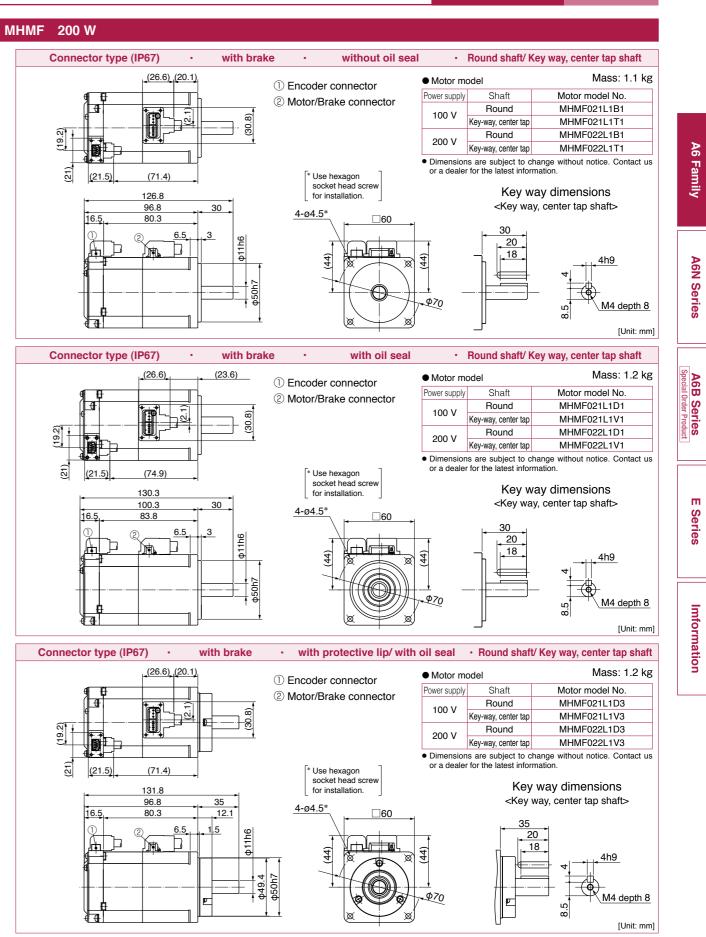
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#### MHMF 200 W



\* For motors specifications, refer to P.89, P.90.

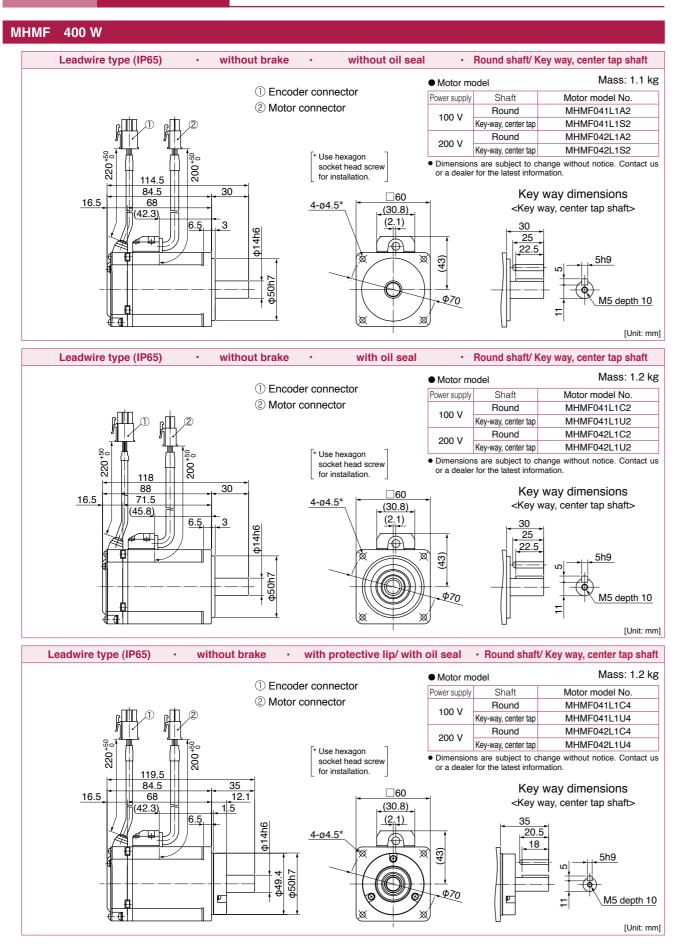
#### **MHMF 200 W**



\* For motors specifications, refer to P.89, P.90.

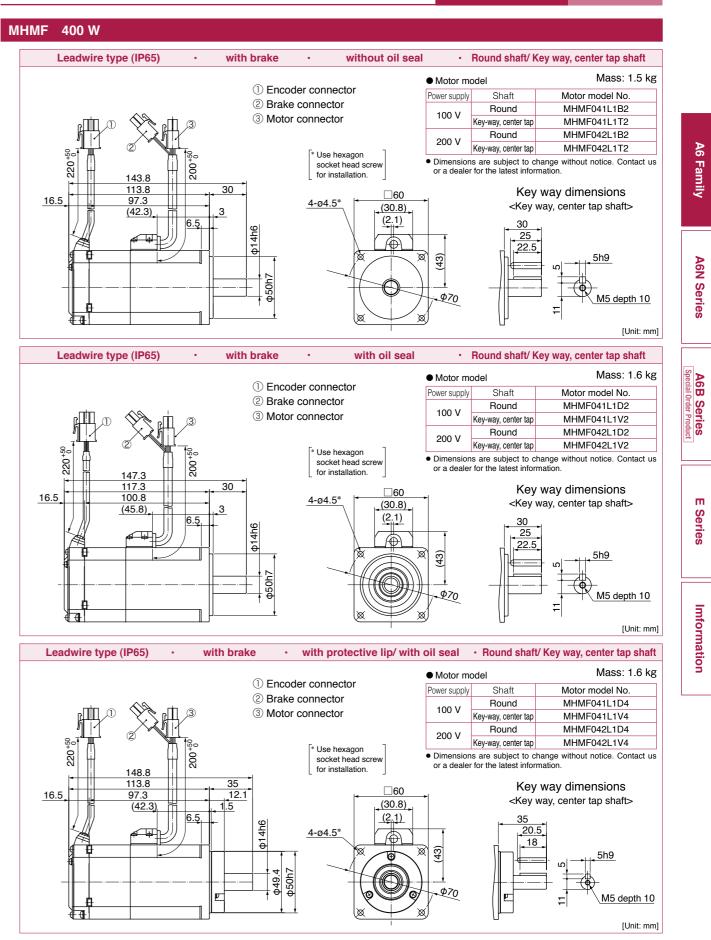
# **Dimensions**

#### MHMF 400 W



\* For motors specifications, refer to P.91, P.92.

#### **MHMF 400 W**

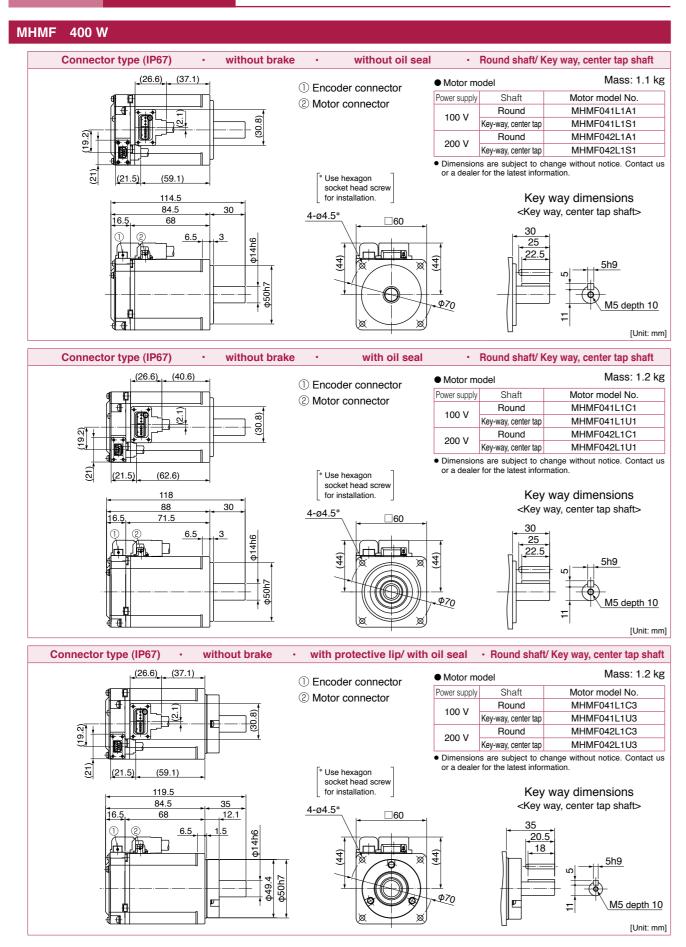


\* For motors specifications, refer to P.91, P.92.



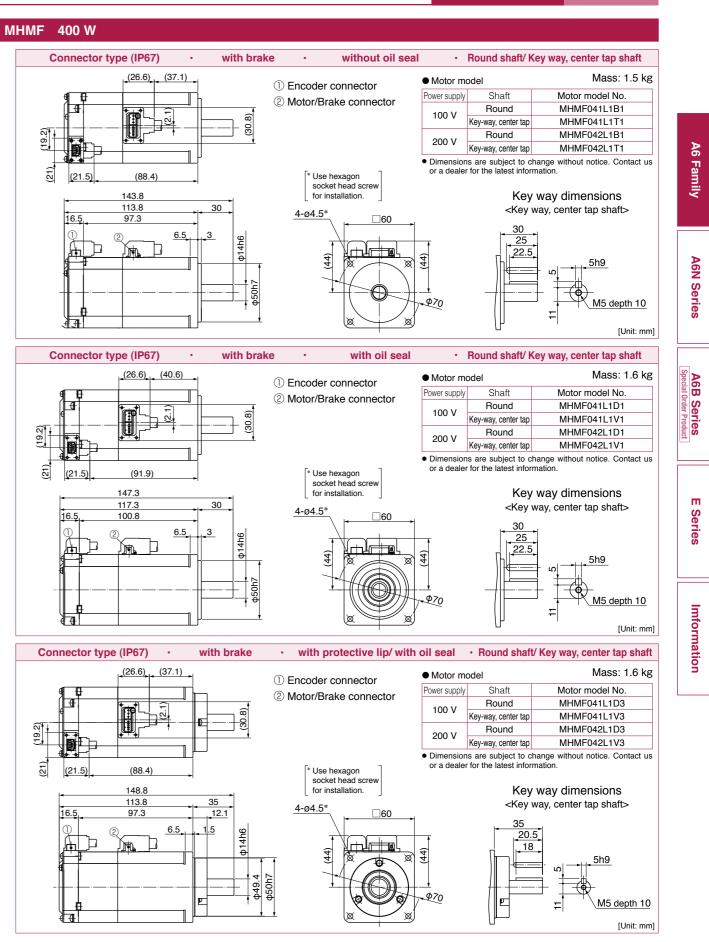
# **Dimensions**

#### MHMF 400 W



\* For motors specifications, refer to P.91, P.92.

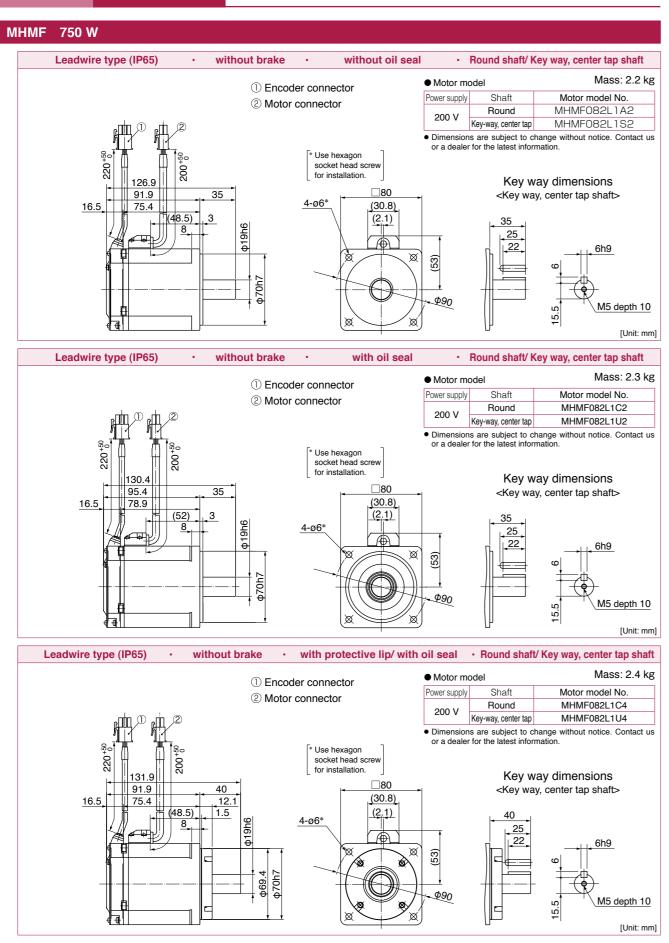
#### **MHMF 400 W**



\* For motors specifications, refer to P.91, P.92.

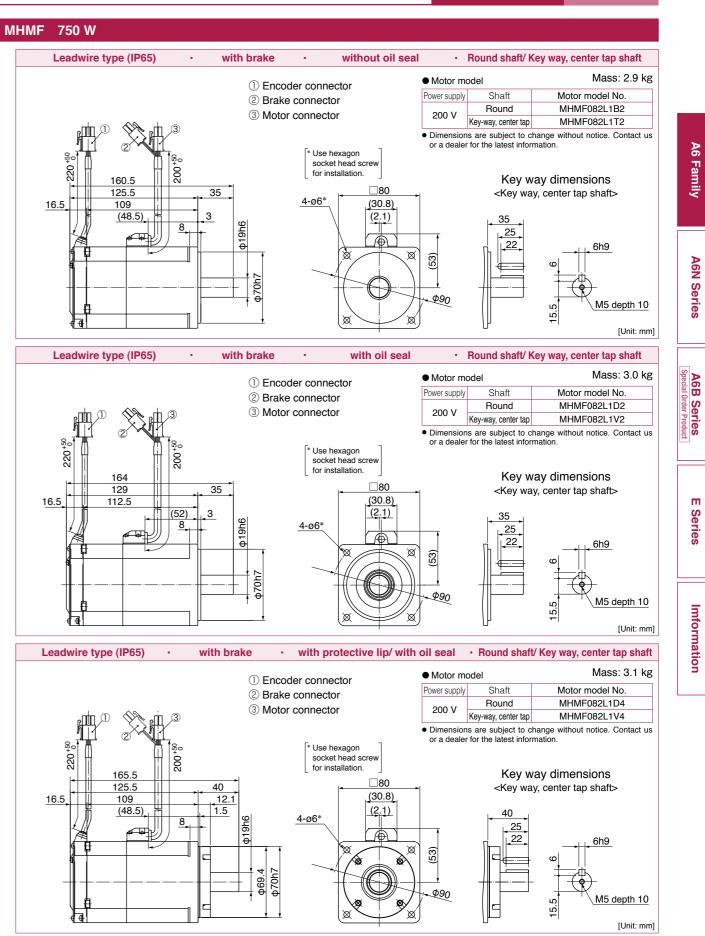
# Dimensions

#### MHMF 750 W



\* For motors specifications, refer to P.93.

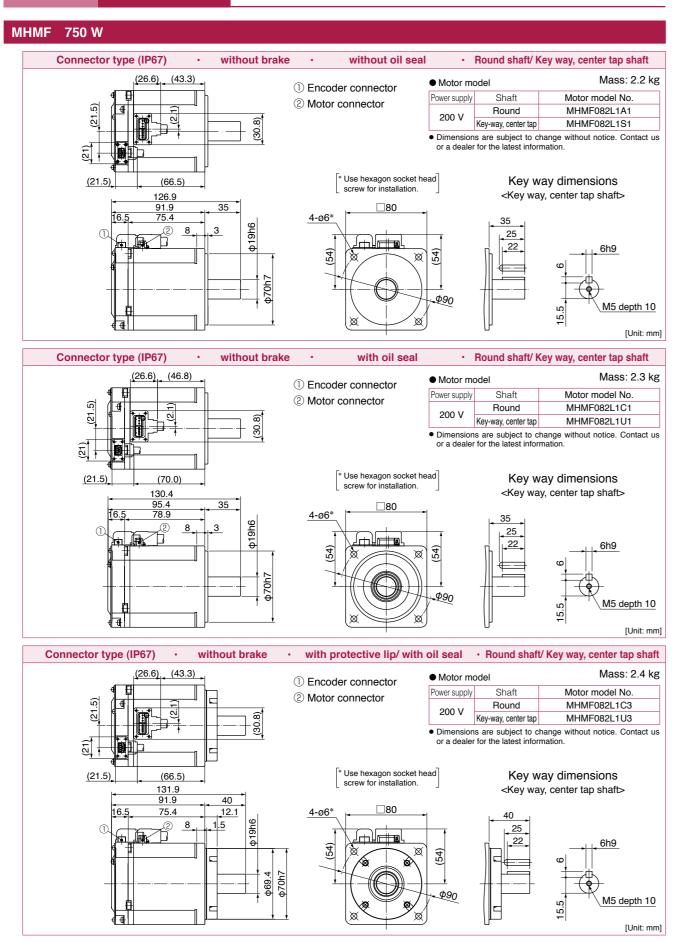
#### MHMF 750 W



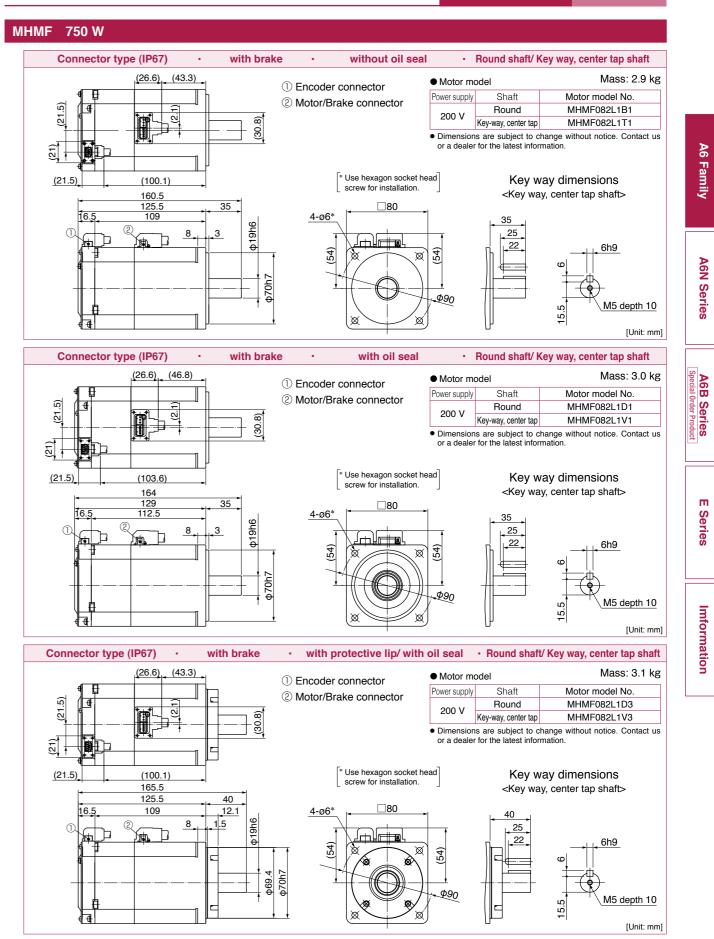
\* For motors specifications, refer to P.93.

# Dimensions

MHMF 750 W



**MHMF 750 W** 



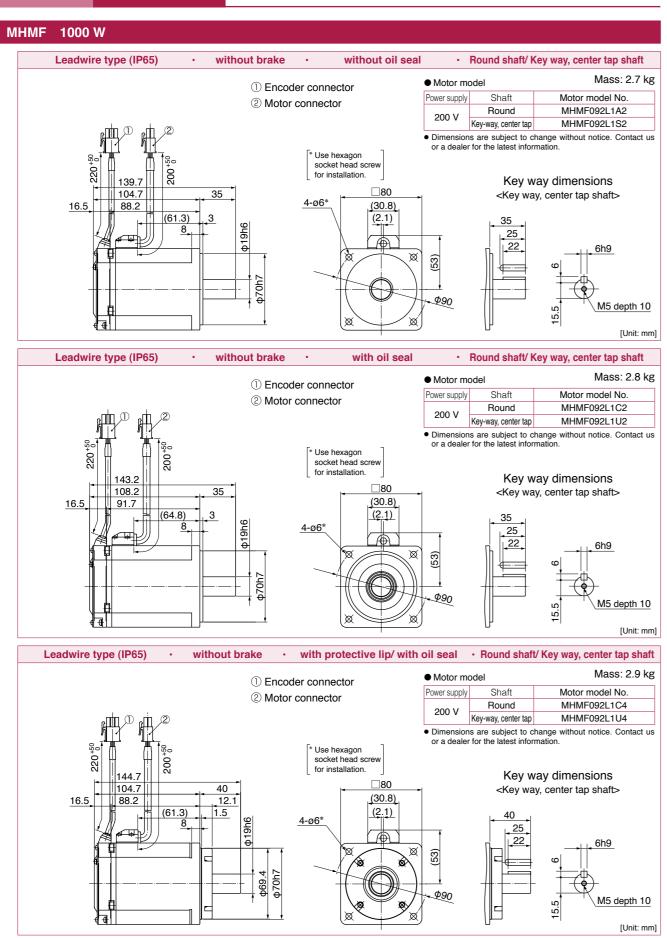
\* For motors specifications, refer to P.93.

\* For motors specifications, refer to P.93.

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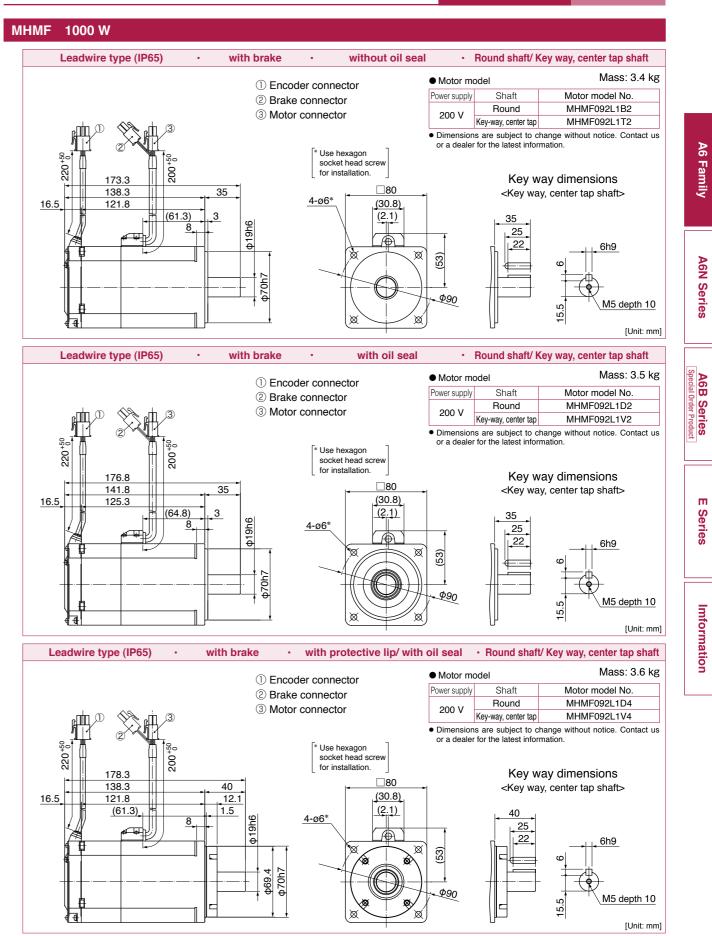
# **Dimensions**

#### MHMF 1000 W



\* For motors specifications, refer to P.94.

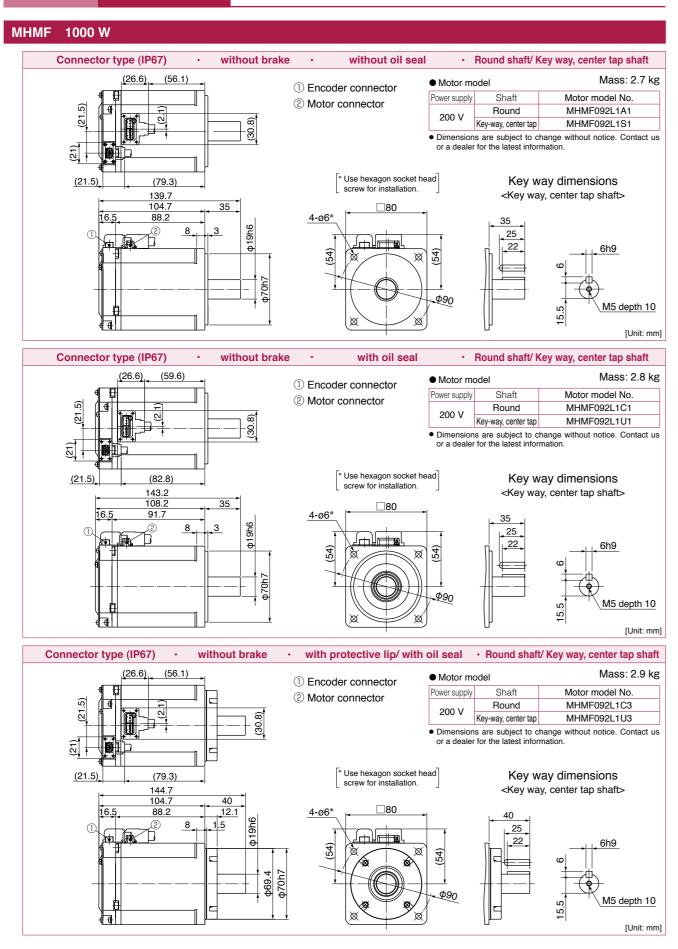
#### MHMF 1000 W



\* For motors specifications, refer to P.94.

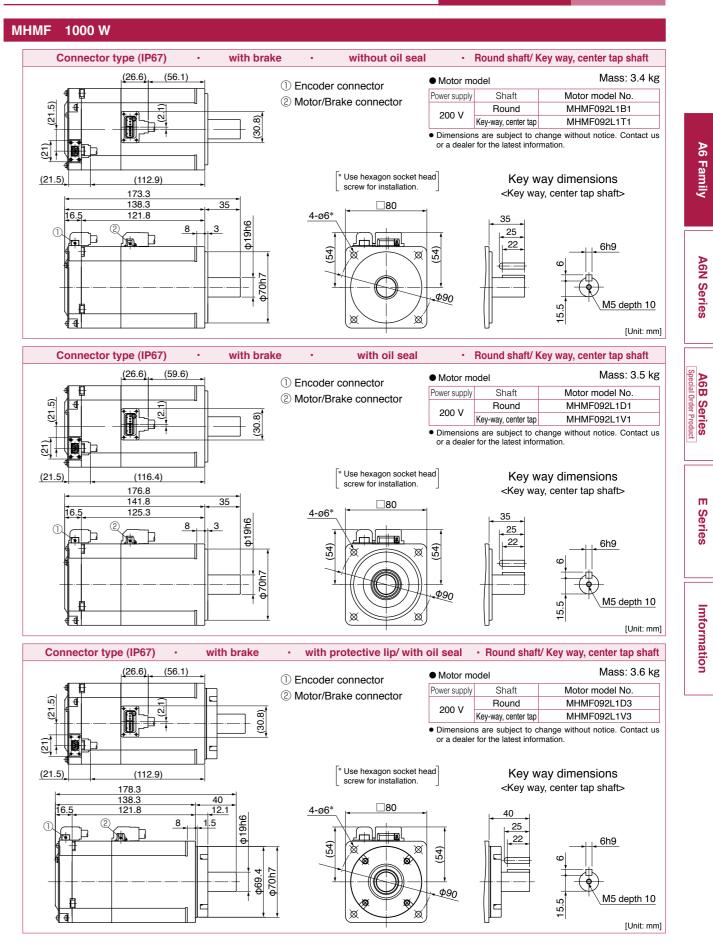
# Dimensions

#### MHMF 1000 W



\* For motors specifications, refer to P.94.

#### MHMF 1000 W



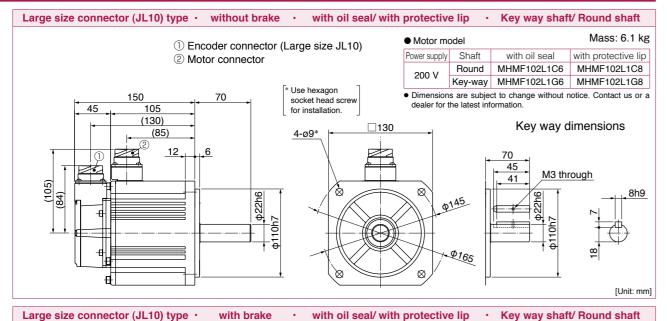
\* For motors specifications, refer to P.94.

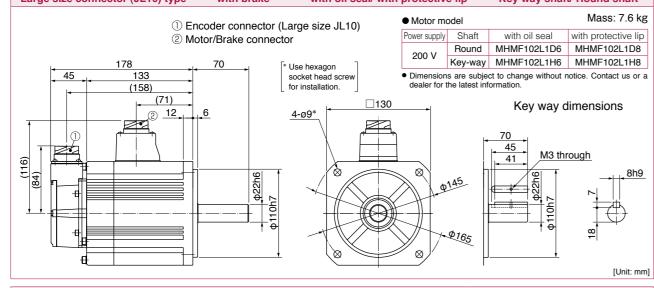
# **Dimensions**

#### A6 Series Dimensions

#### MHMF 1.0 kW

# MHMF 1.0 kW

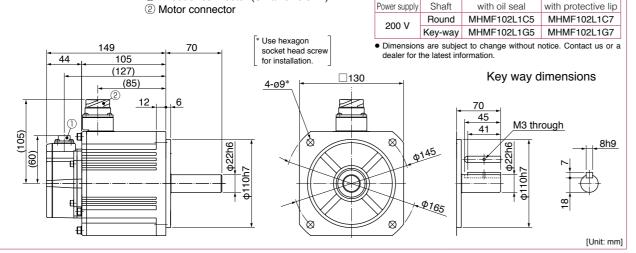




Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft Mass: 6.1 kg

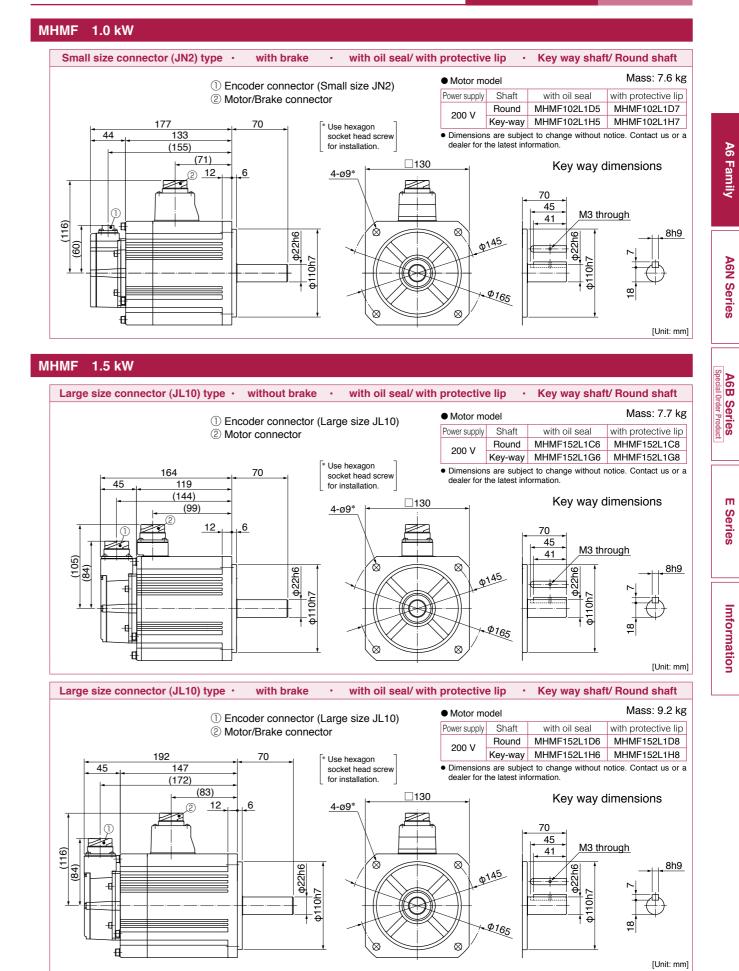
Motor model

① Encoder connector (Small size JN2) 2 Motor connector



\* For motors specifications, refer to P.95.

### MHMF 1.0 kW to 1.5 kW



\* For motors specifications, refer to P.95, P.96.

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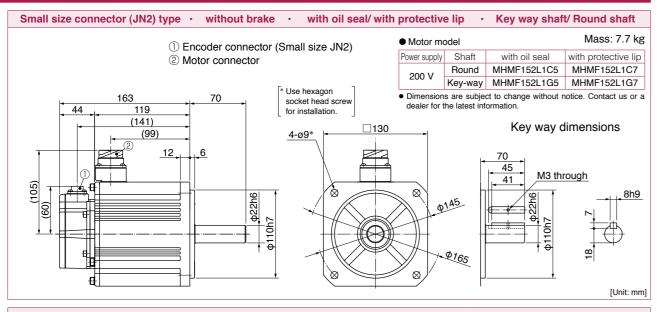
# **Dimensions**

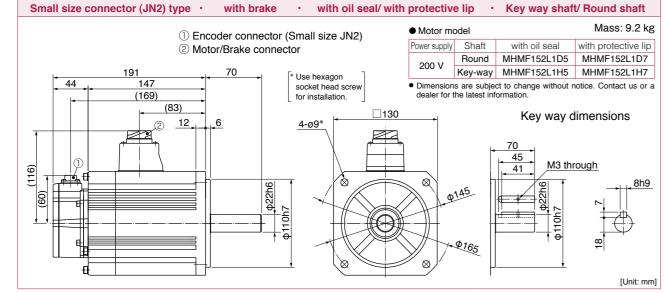
A6 Series

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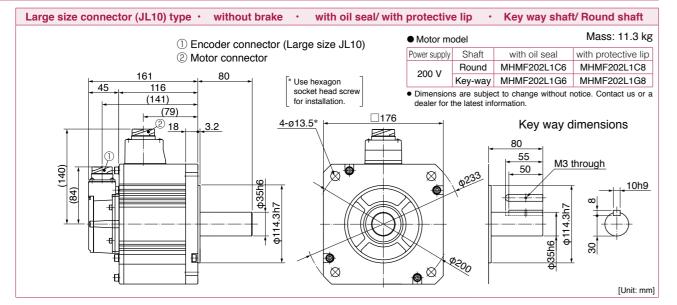
#### MHMF 1.5 kW to 2.0 kW







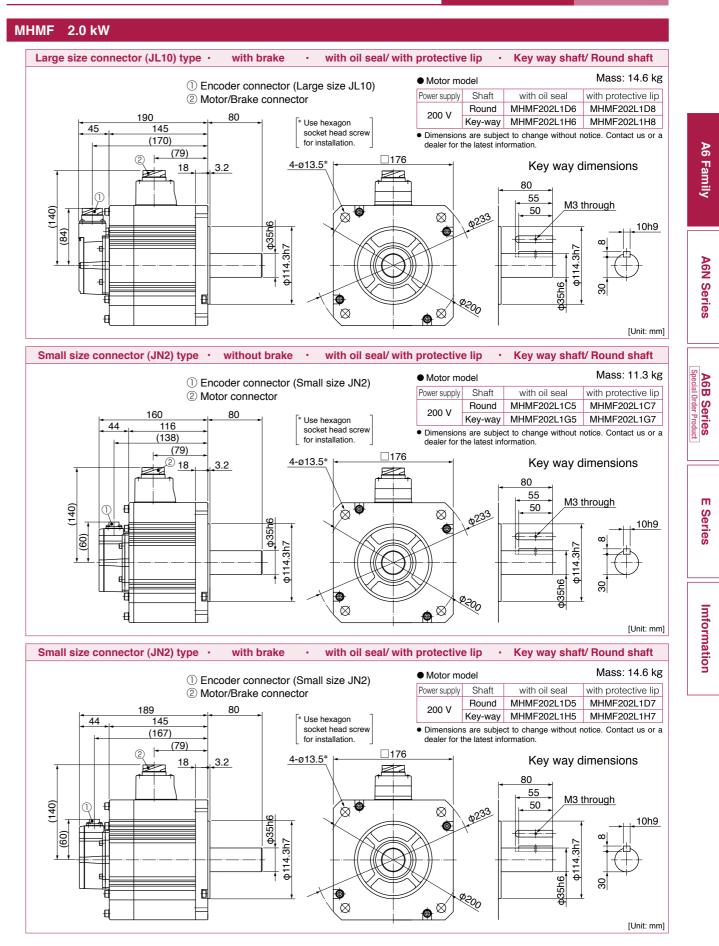
## MHMF 2.0 kW



\* For motors specifications, refer to P.96, P.97.

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#### MHMF 2.0 kW

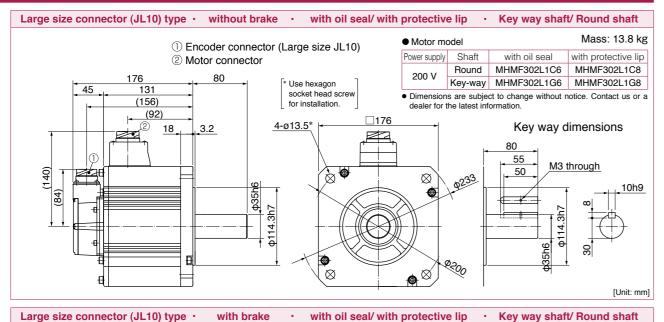


\* For motors specifications, refer to P.97.

# **Dimensions**

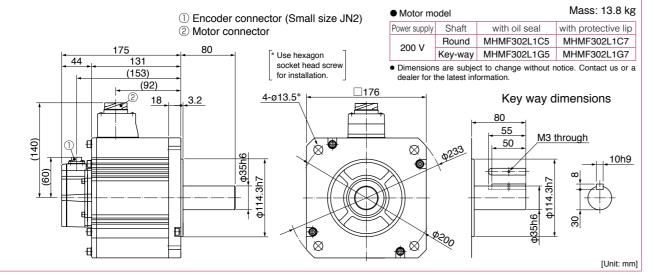
#### Dimensions MHMF 3.0 kW

### MHMF 3.0 kW



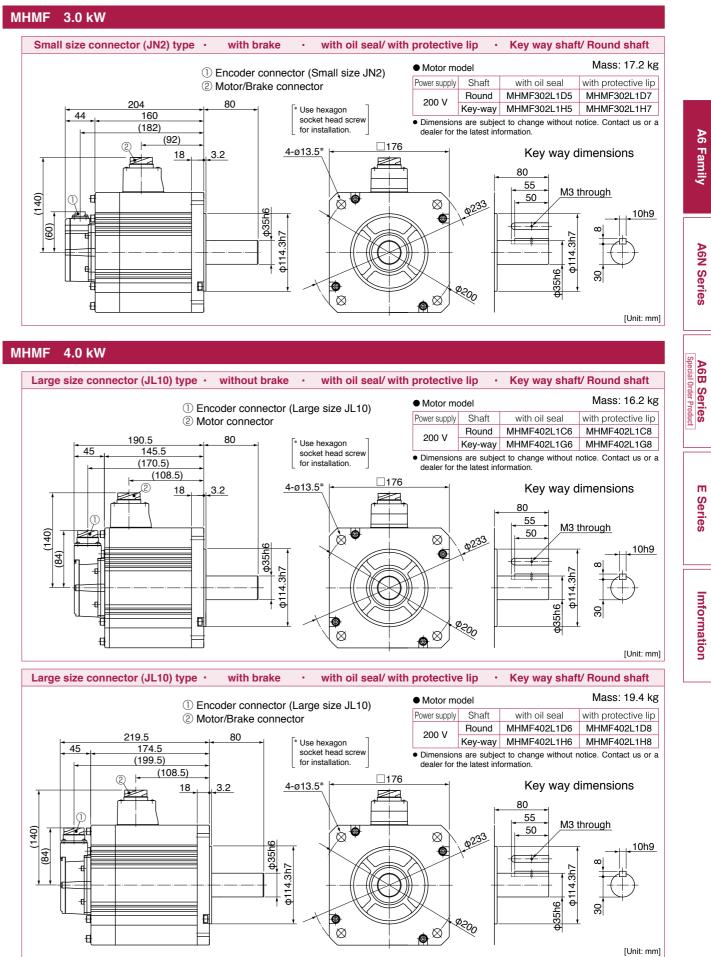
Mass: 17.2 kg Motor model ① Encoder connector (Large size JL10) Power supply Shaft with oil seal with protective lip 2 Motor/Brake connector Round MHMF302L1D6 MHMF302L1D8 200 V 205 Key-way MHMF302L1H6 MHMF302L1H8 \* Use hexagon 160 45 socket head screw Dimensions are subject to change without notice. Contact us or a dealer for the latest information. (185) for installation. (92) 2 +---176 4-ø13.5\* Key way dimensions 18 3.2 55 (140) (84) M3 through `````` 50 o233  $\otimes$ 10h9 6 **b35** ф114.3h7 \$200  $\bigotimes$ [Unit: mm]

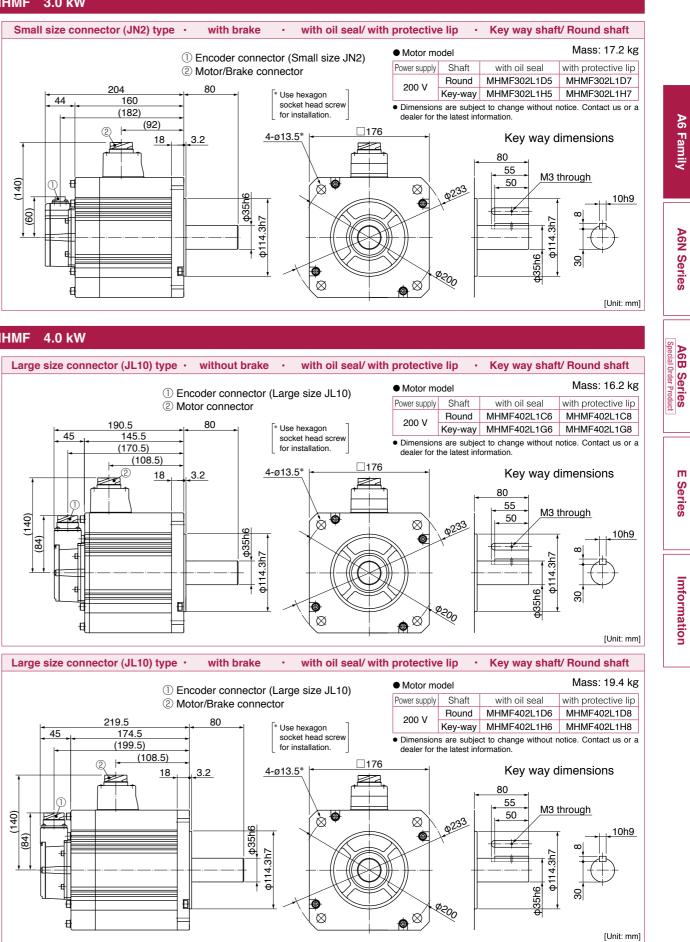
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.98.

### MHMF 3.0 kW to 4.0 kW

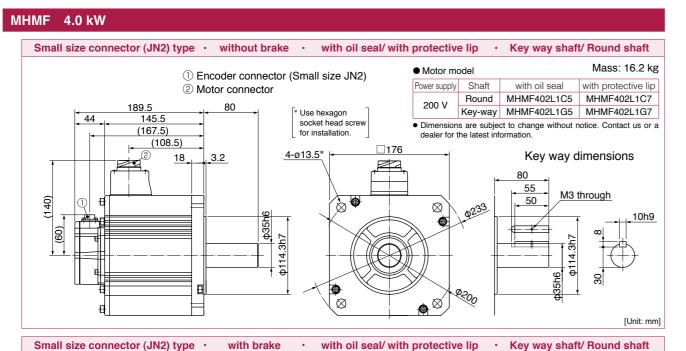




\* For motors specifications, refer to P.98, P.99.

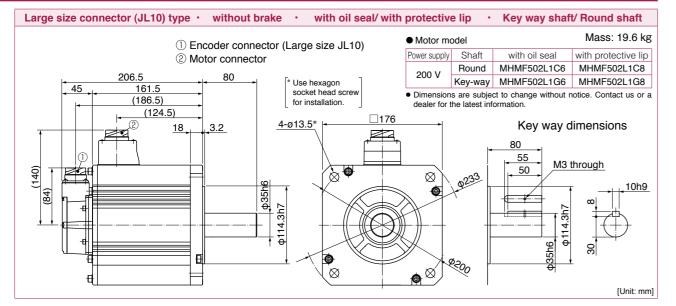
# **Dimensions**

#### MHMF 4.0 kW to 5.0 kW



Mass: 19.4 kg Motor model ① Encoder connector (Small size JN2) Power supply Shaft with oil seal with protective lip 2 Motor/Brake connector Round MHMF402L1D5 MHMF402L1D7 200 V 218.5 Key-way MHMF402L1H5 MHMF402L1H7 \* Use hexagon 174.5 44 socket head screw Dimensions are subject to change without notice. Contact us or a dealer for the latest information. (196.5) for installation. (108.5) 2  $\Box 176$ 4-ø13.5\* Key way dimensions 18 3.2 55 M3 through (140) ````\ 50 p233  $\otimes$ 10h9 Ф35h 6 (09) ф114.3h7 \$200  $\otimes$ [Unit: mm]

# MHMF 5.0 kW

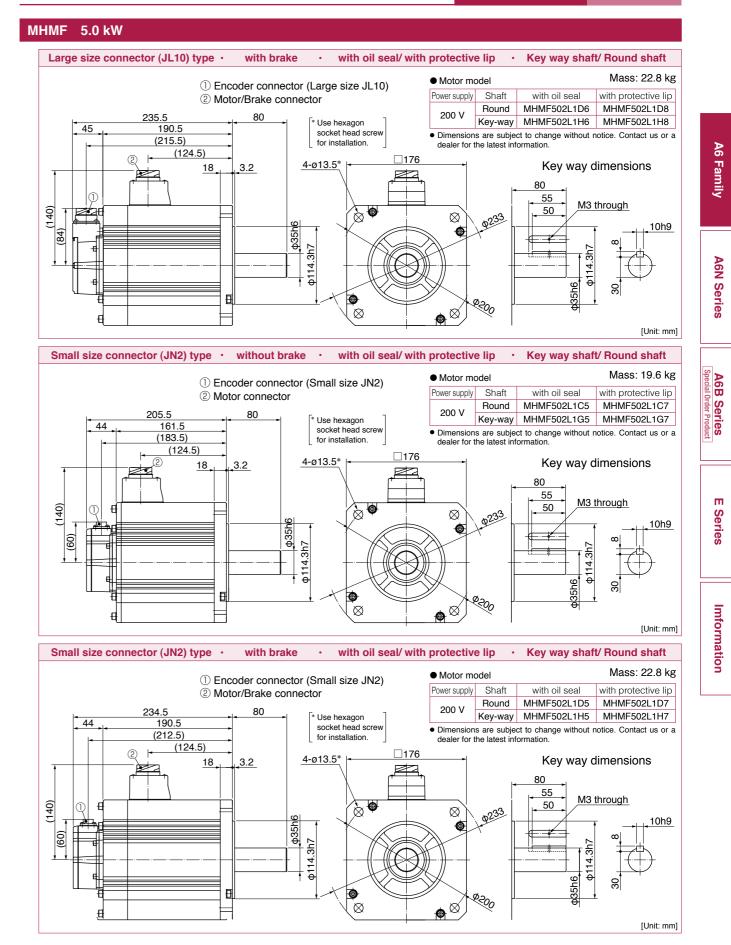


\* For motors specifications, refer to P.99, P.100.

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### MHMF 5.0 kW

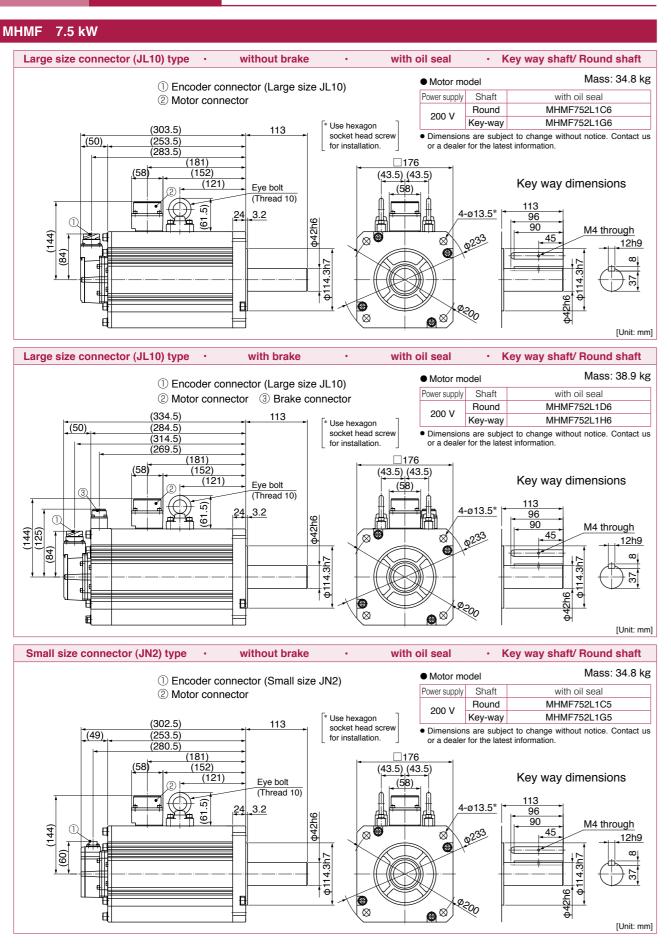


\* For motors specifications, refer to P.100.

# **Dimensions**

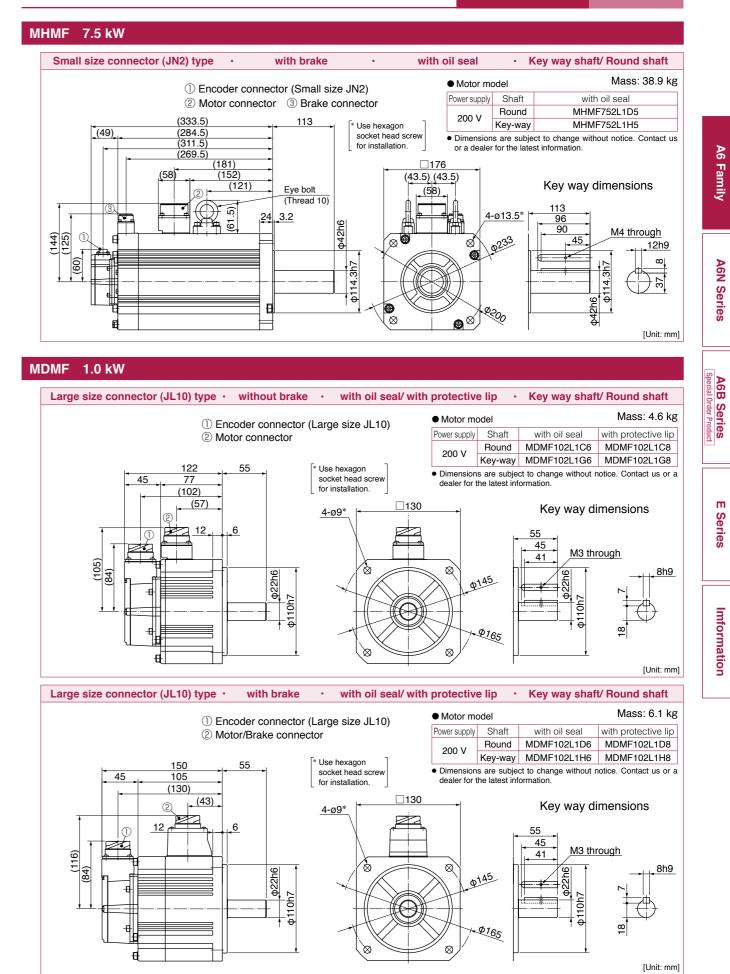
#### A6 Series Dimensions

#### MHMF 7.5 kW



\* For motors specifications, refer to P.101.

# MHMF 7.5 kW / MDMF 1.0 kW

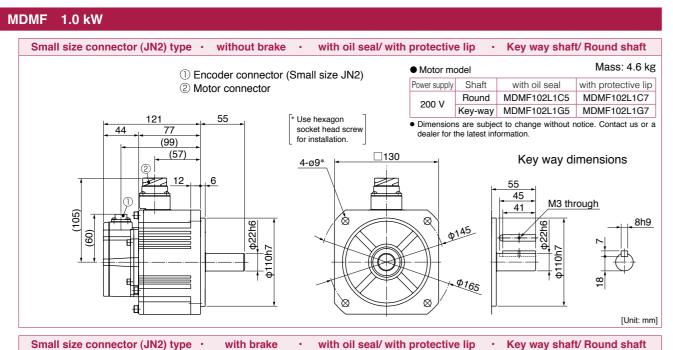


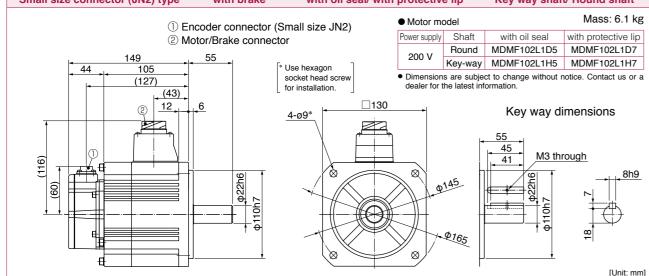
\* For motors specifications, refer to P.101, P.102.



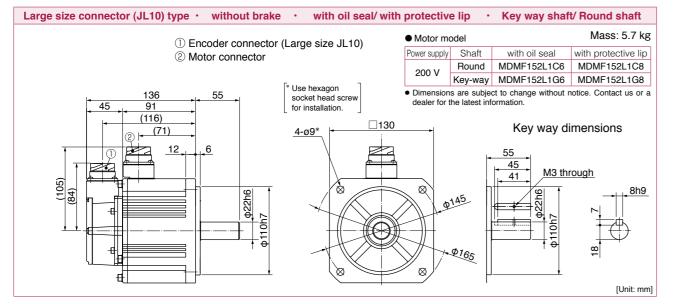
# **Dimensions**

#### MDMF 1.0 kW to 1.5 kW





# MDMF 1.5 kW

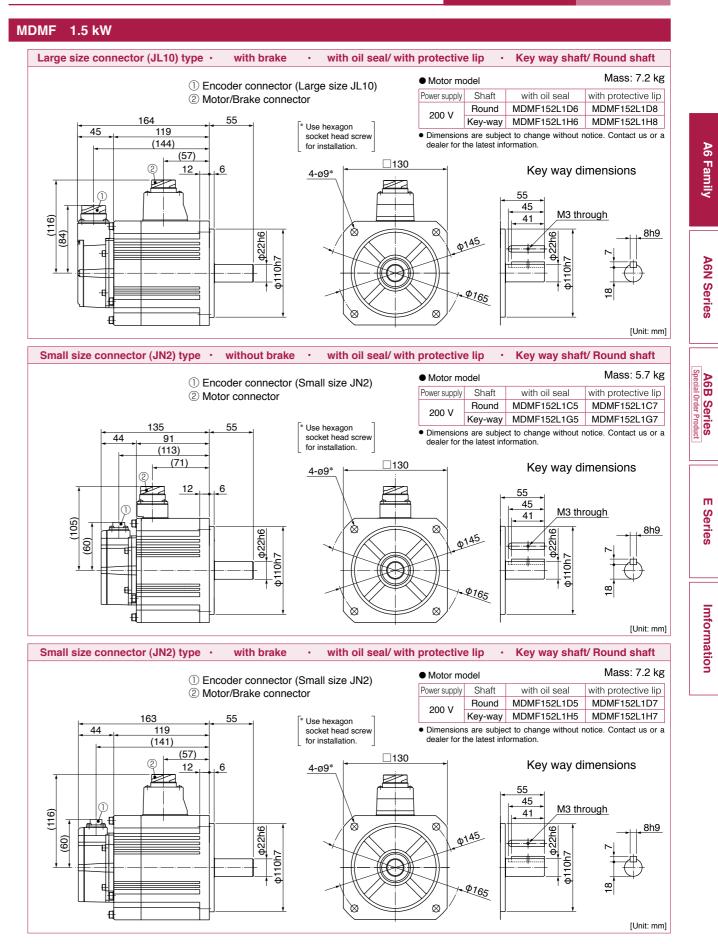


\* For motors specifications, refer to P.102, P.103.

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## **MDMF 1.5 kW**

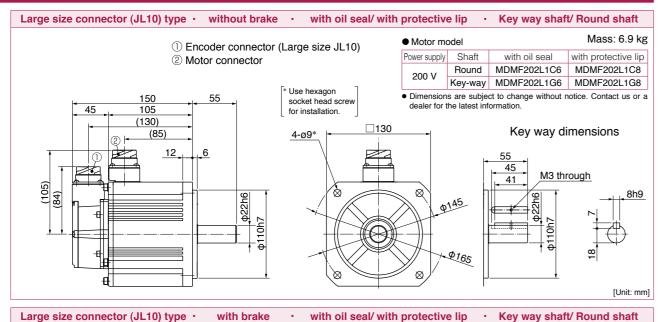


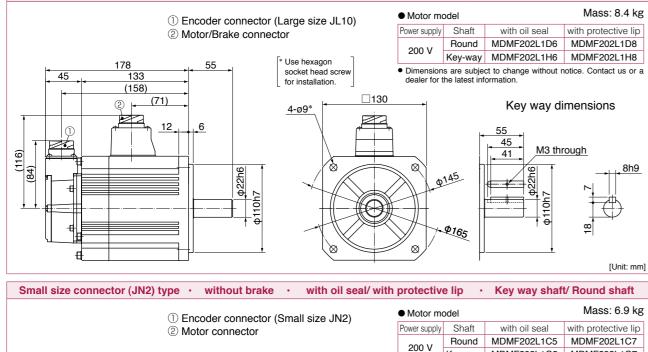
\* For motors specifications, refer to P.103.

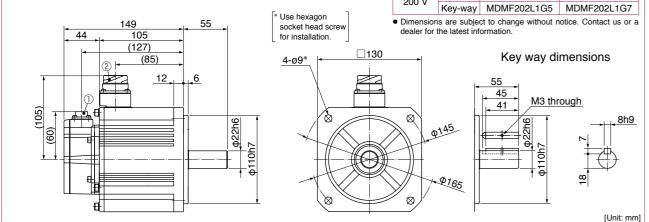
# **Dimensions**

#### MDMF 2.0 kW

### MDMF 2.0 kW

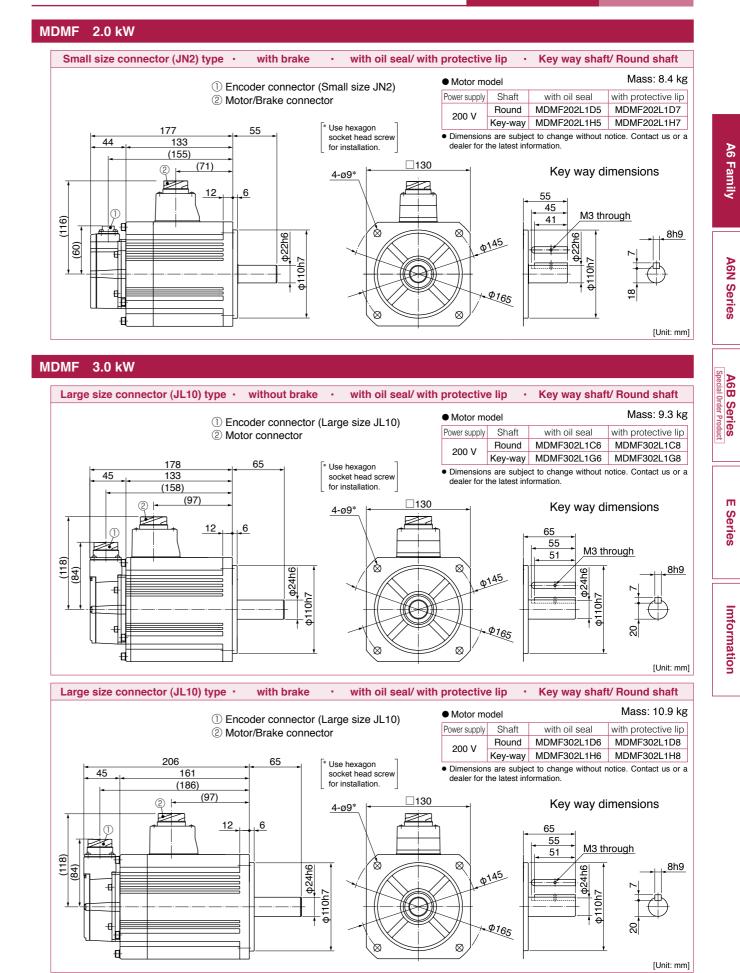






\* For motors specifications, refer to P.104.

### MDMF 2.0 kW to 3.0 kW

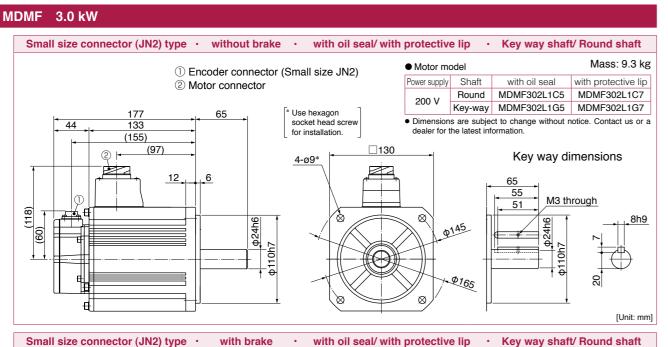


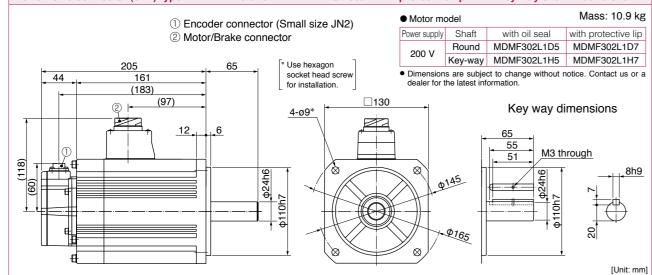
\* For motors specifications, refer to P.104, P.105.

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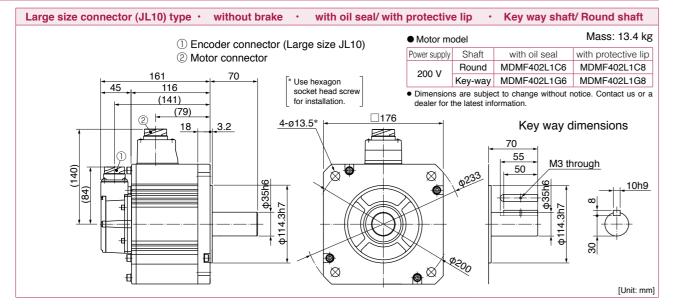
# Dimensions

#### MDMF 3.0 kW to 4.0 kW





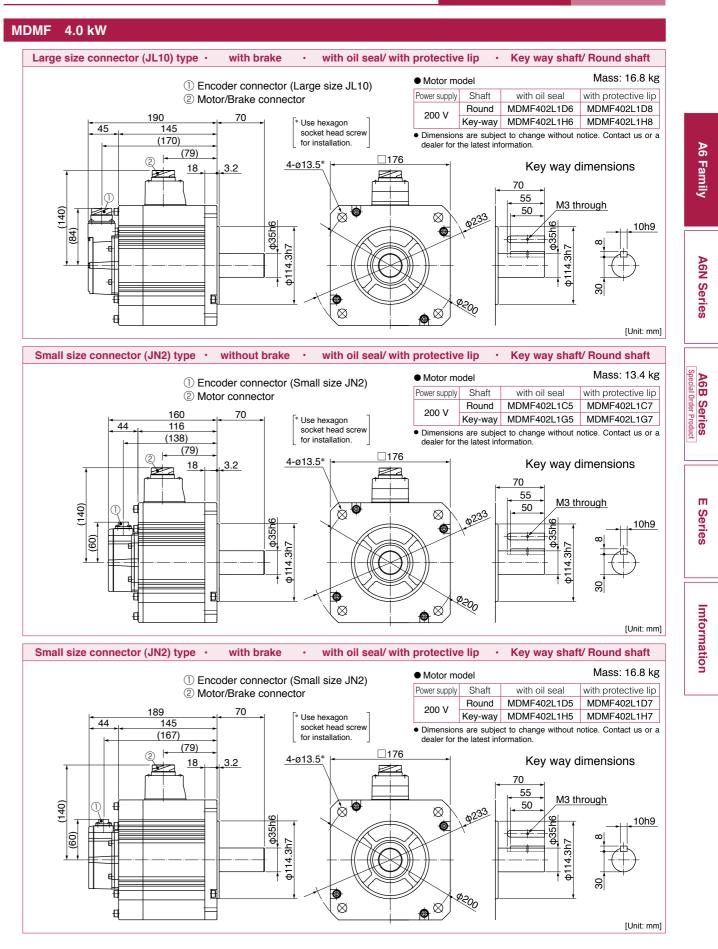
#### MDMF 4.0 kW



\* For motors specifications, refer to P.105, P.106.

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## MDMF 4.0 kW

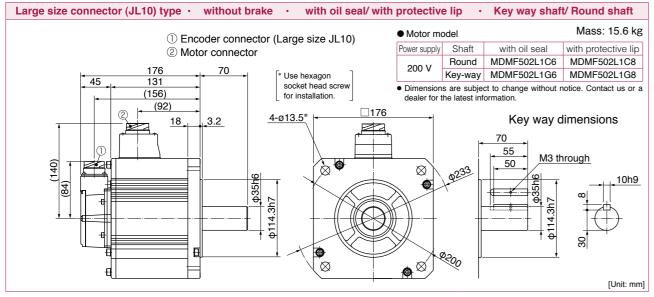


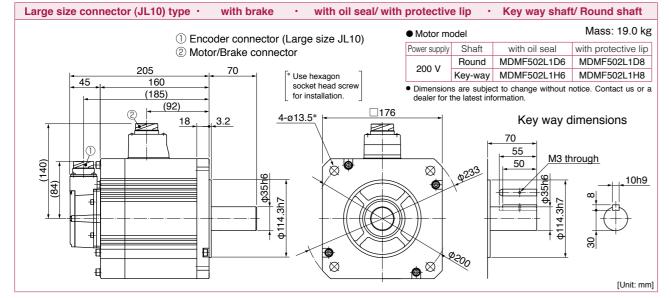
\* For motors specifications, refer to P.106.

# Dimensions

#### Dimensions MDMF 5.0 kW





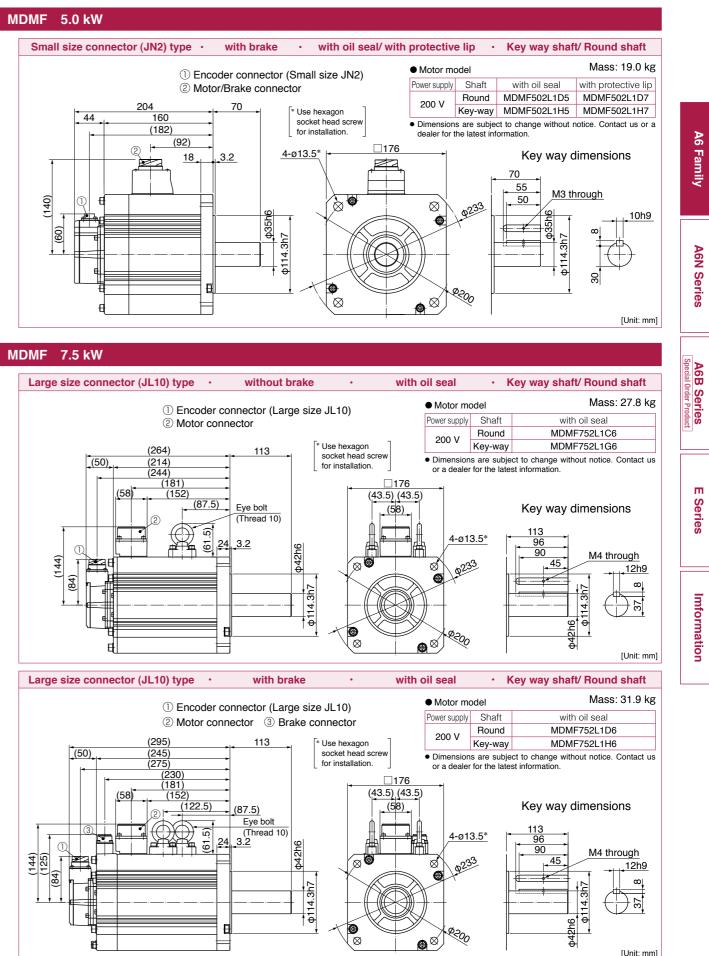


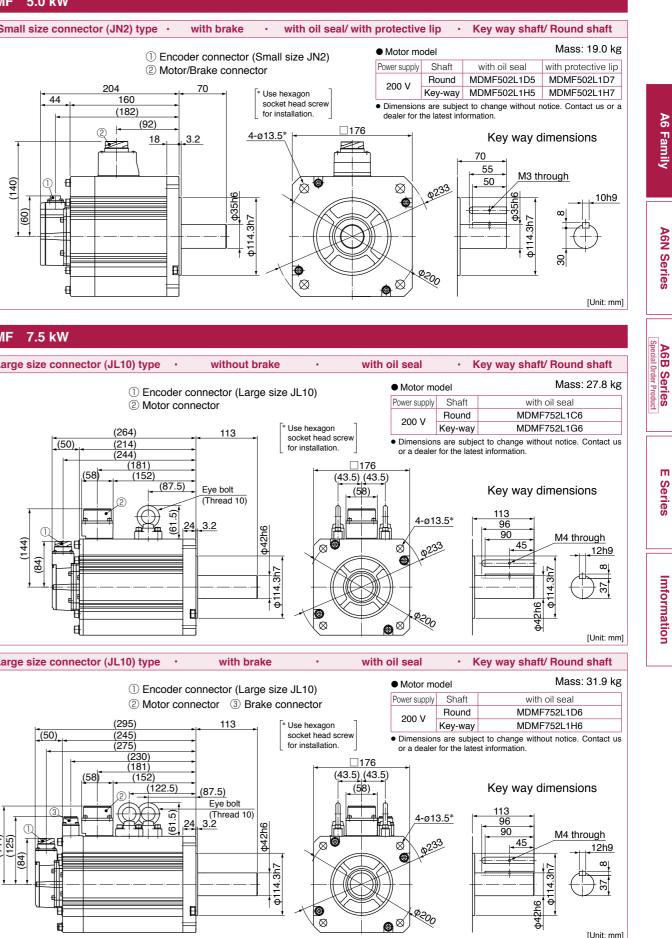
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

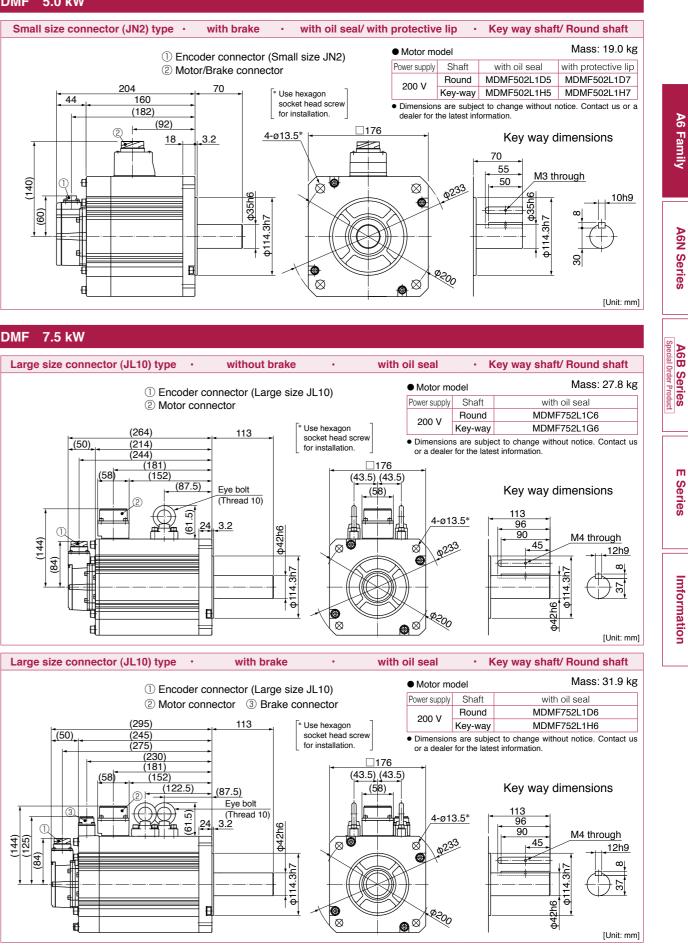
Mass: 15.6 kg Motor model ① Encoder connector (Small size JN2) Power supply Shaft with oil seal with protective lip (2) Motor connector Round MDMF502L1C5 MDMF502L1C7 200 V 70 \* Use hexagon Key-way MDMF502L1G5 MDMF502L1G7 131 44 socket head screw • Dimensions are subject to change without notice. Contact us or a for installation. (153) dealer for the latest informatio (92) 176 4-ø13.5\* Key way dimensions 18 3.2 è-P. 55 M3 through (140) ∕ ≽ 🖗 50  $\otimes$ 10h9 6 **435** 60) ф114.3h7 F P200  $\otimes$ ø<sup>Ø</sup> [Unit: mm]

\* For motors specifications, refer to P.107.

### MDMF 5.0 kW to 7.5 kW





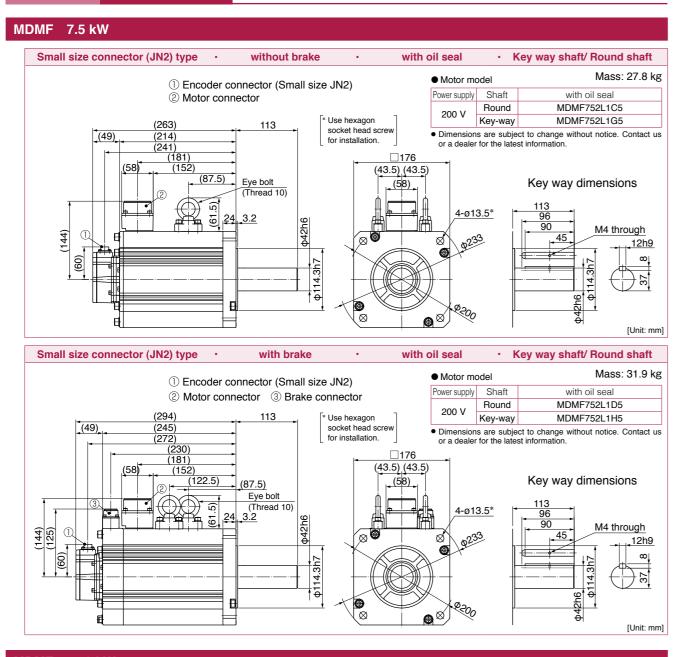


\* For motors specifications, refer to P.107, P.108

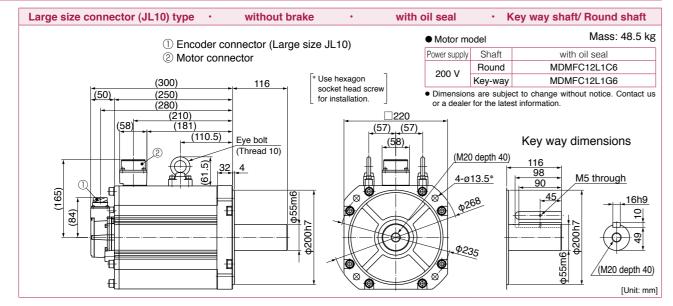
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# **Dimensions**

#### MDMF 7.5 kW to 11.0 kW



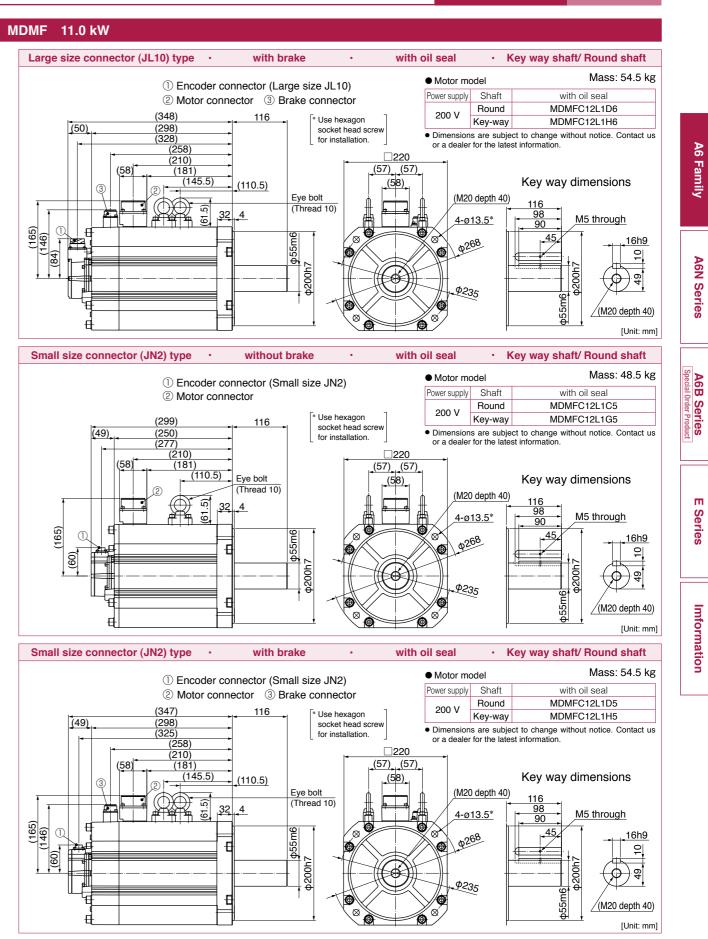
## MDMF 11.0 kW



\* For motors specifications, refer to P.108, P.109.

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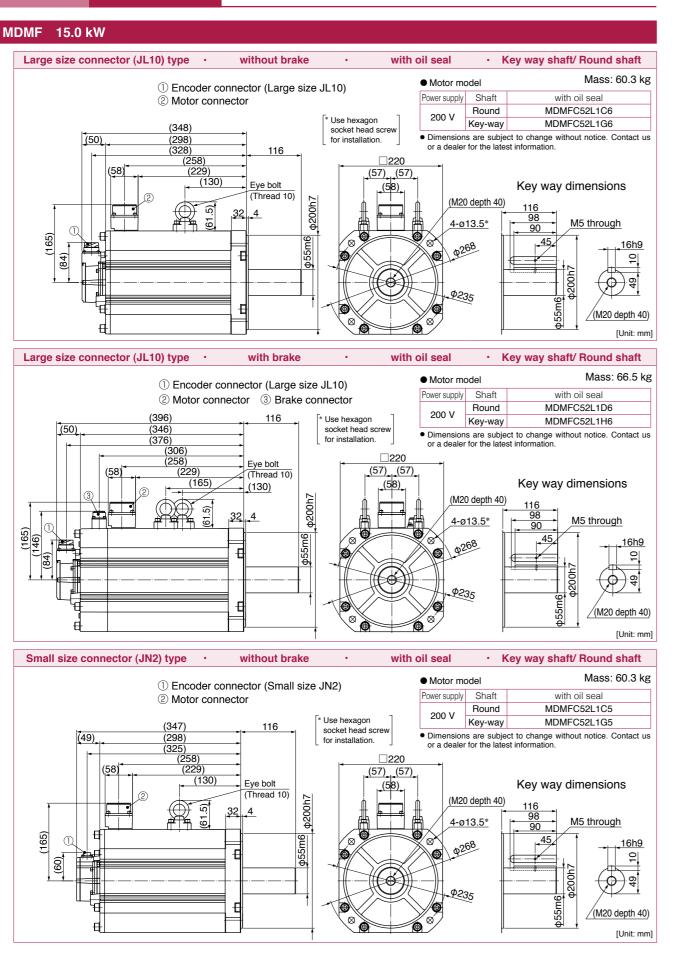
## MDMF 11.0 kW



\* For motors specifications, refer to P.109.

# Dimensions

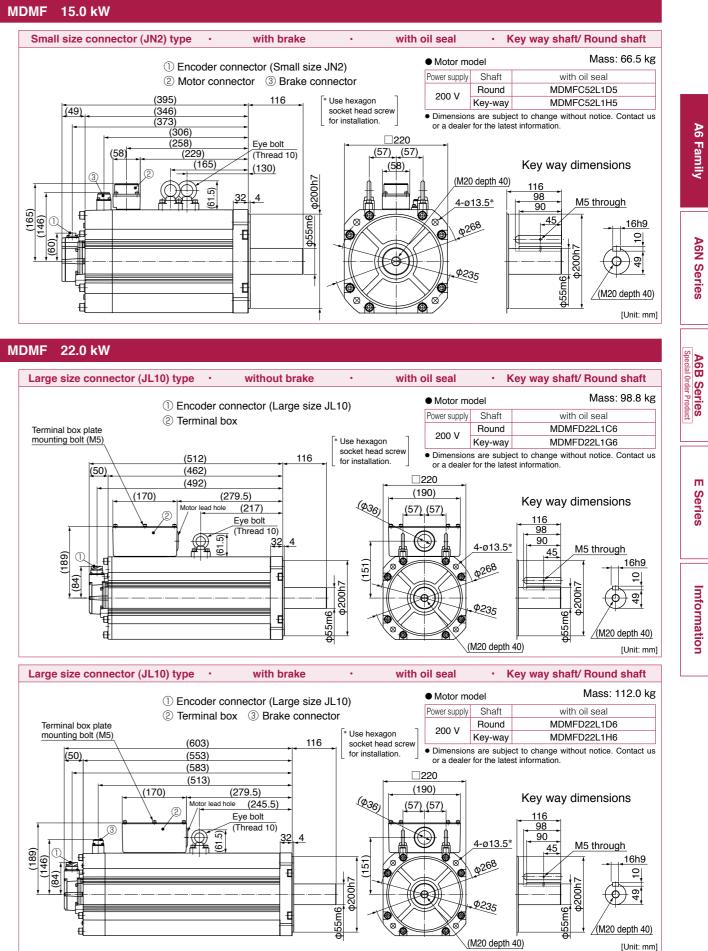
#### MDMF 15.0 kW

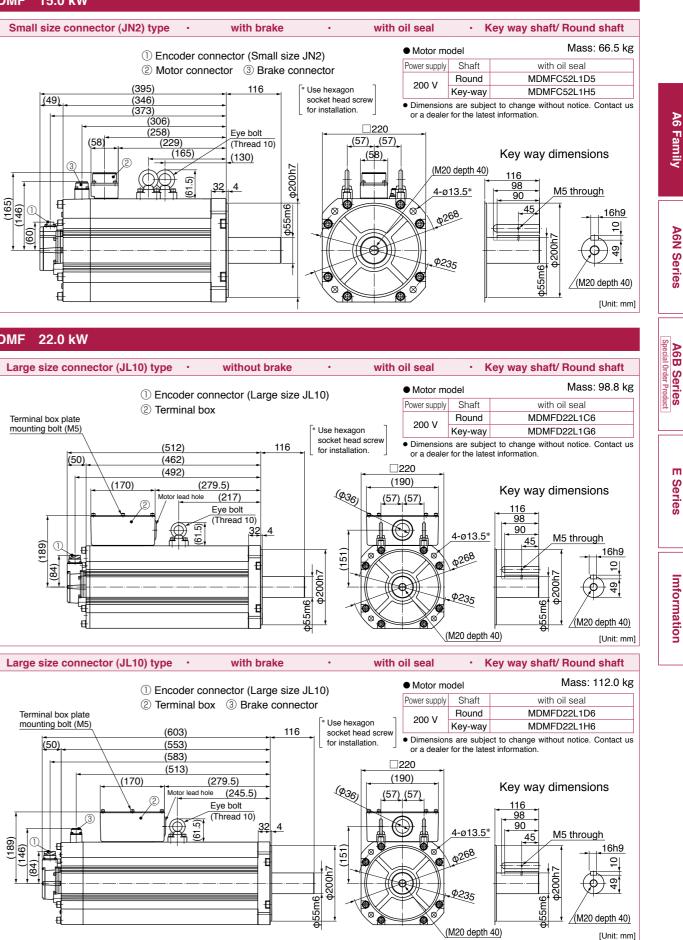


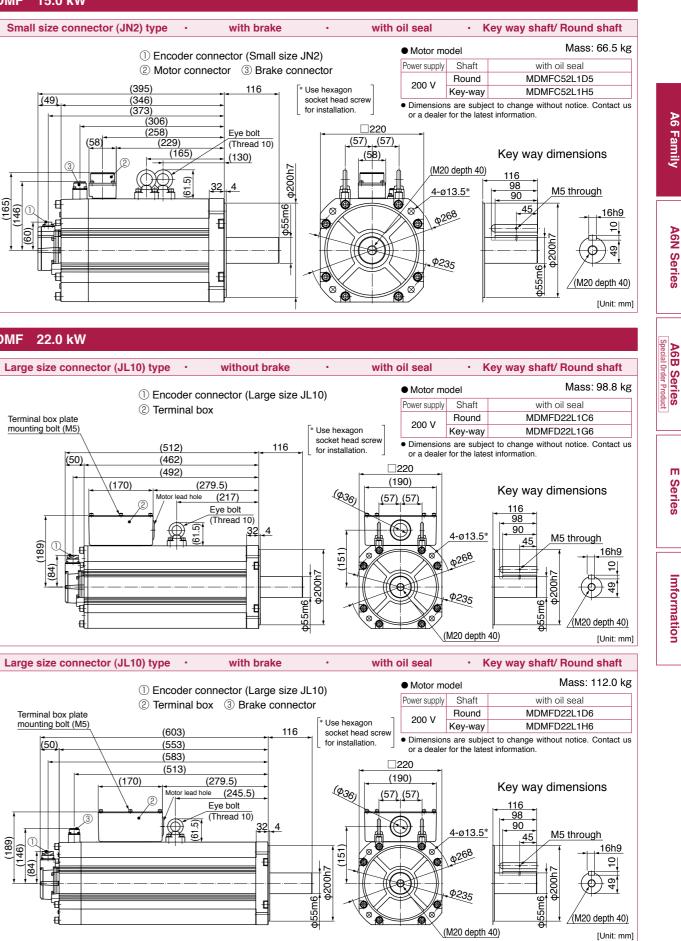
\* For motors specifications, refer to P.110.

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## MDMF 15.0 kW to 22.0 kW





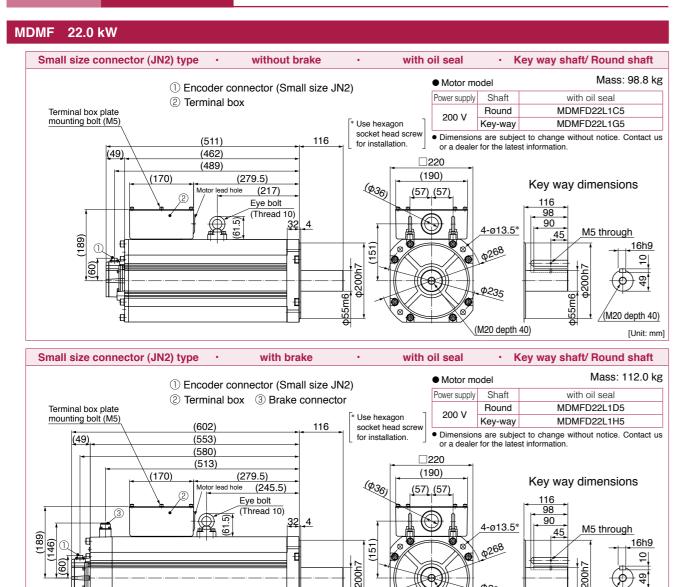


\* For motors specifications, refer to P.110, P.111.

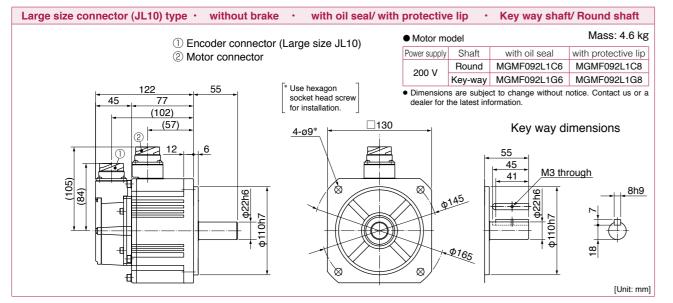
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# Dimensions

## MDMF 22.0 kW / MGMF 0.85 kW



#### MGMF 0.85 kW



5m6

\* For motors specifications, refer to P.111, P.112.

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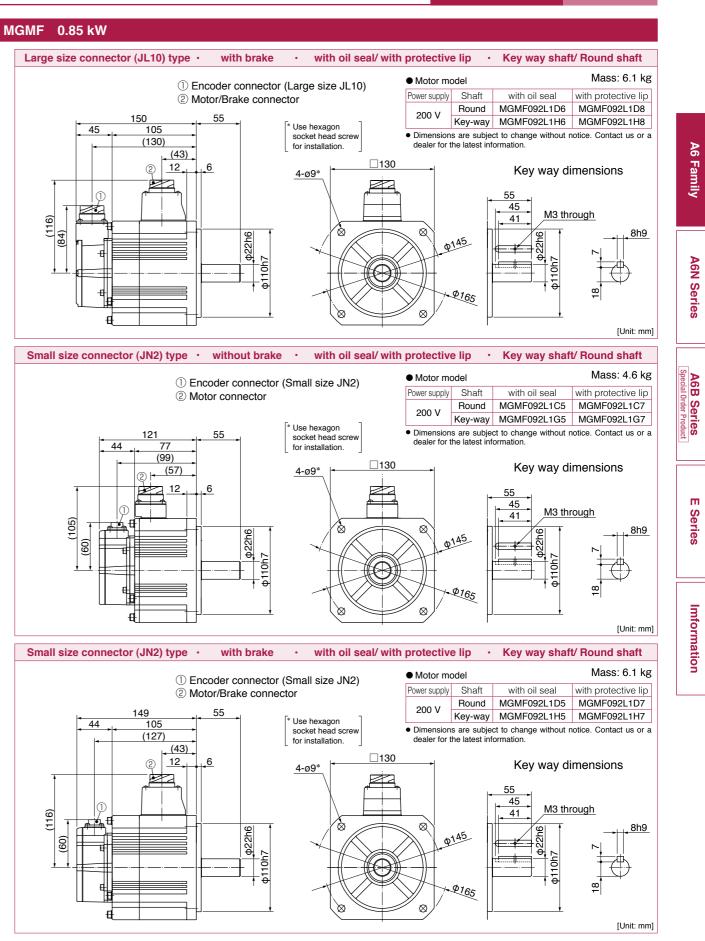
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(M20 depth 40)

[Unit: mm]

(M20 depth 40)

# MGMF 0.85 kW



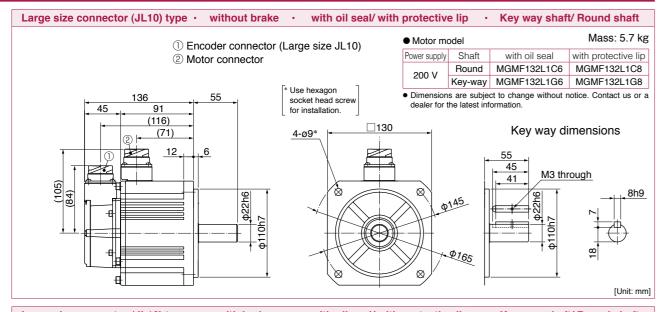
\* For motors specifications, refer to P.112.

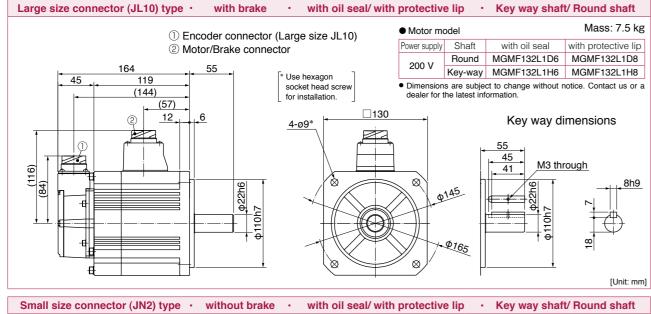
# Dimensions

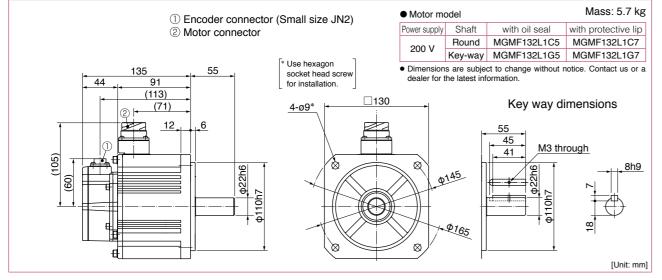
#### A6 Series Dimensions

#### MGMF 1.3 kW



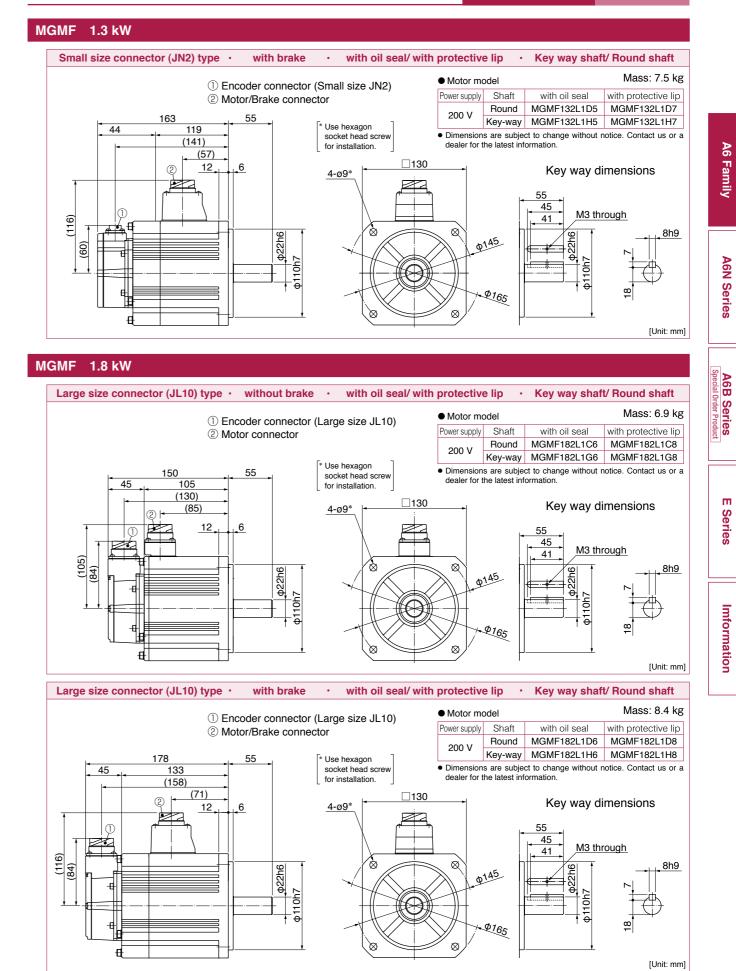






\* For motors specifications, refer to P.113.

## MGMF 1.3 kW to 1.8 kW



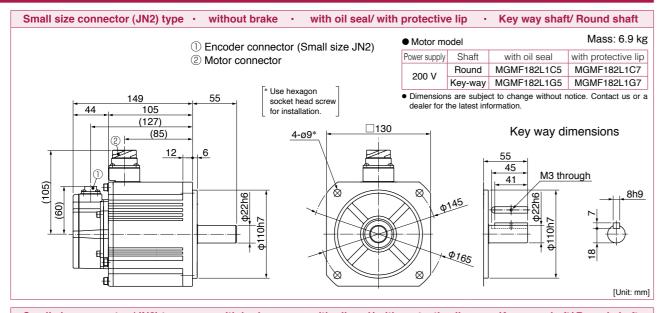
\* For motors specifications, refer to P.113, P.114.

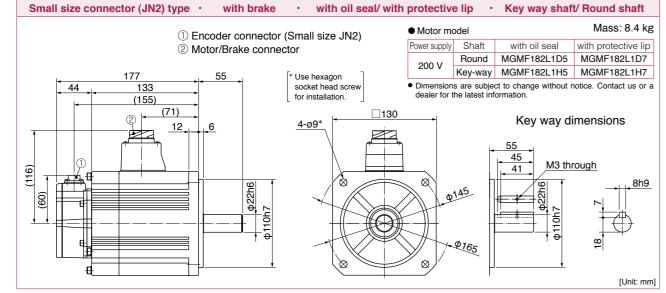
Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/ -196-

# Dimensions

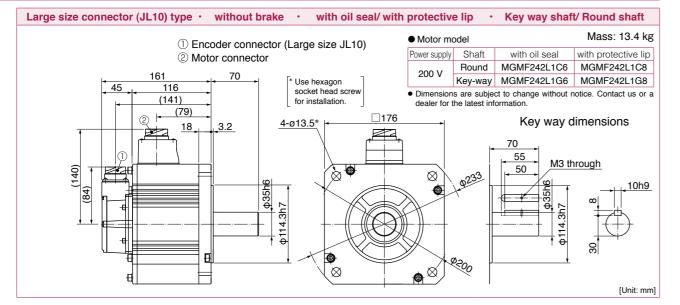
#### MGMF 1.8 kW to 2.4 kW

## MGMF 1.8 kW





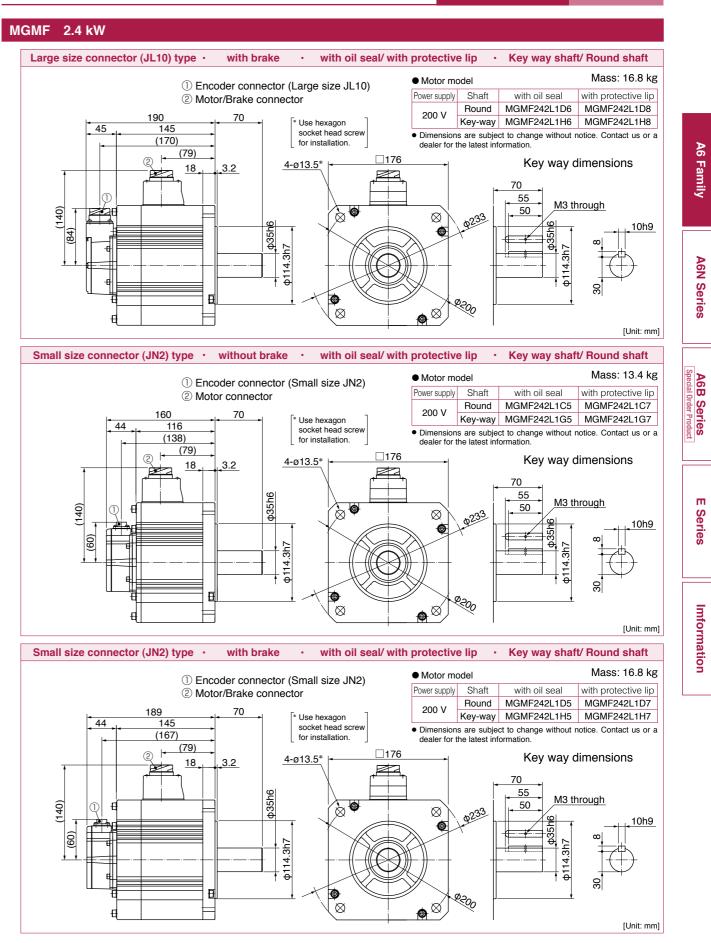
## MGMF 2.4 kW



\* For motors specifications, refer to P.114, P.115.

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### MGMF 2.4 kW

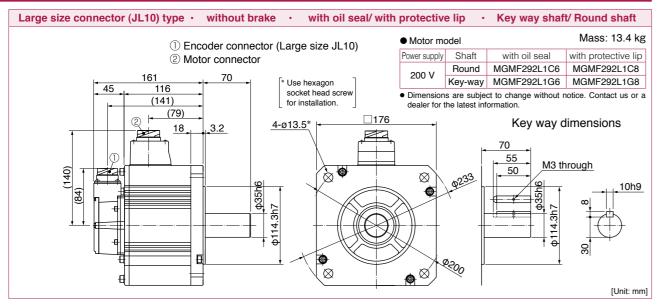


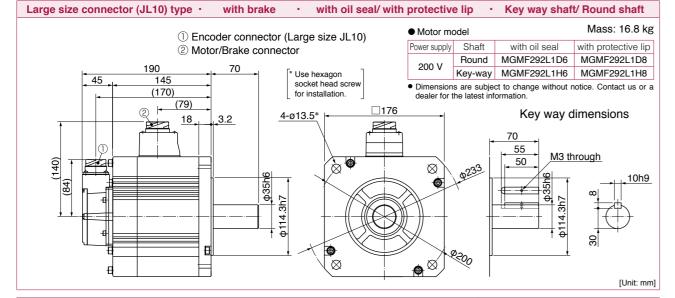
\* For motors specifications, refer to P.115.

# Dimensions

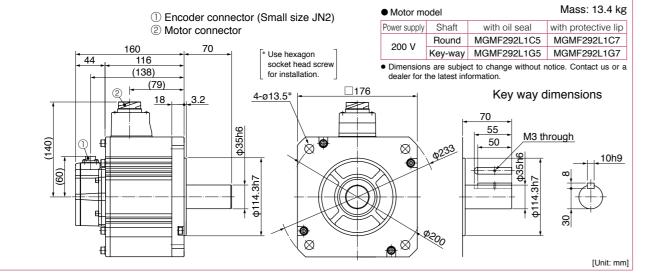
#### Dimensions MGMF 2.9 kW





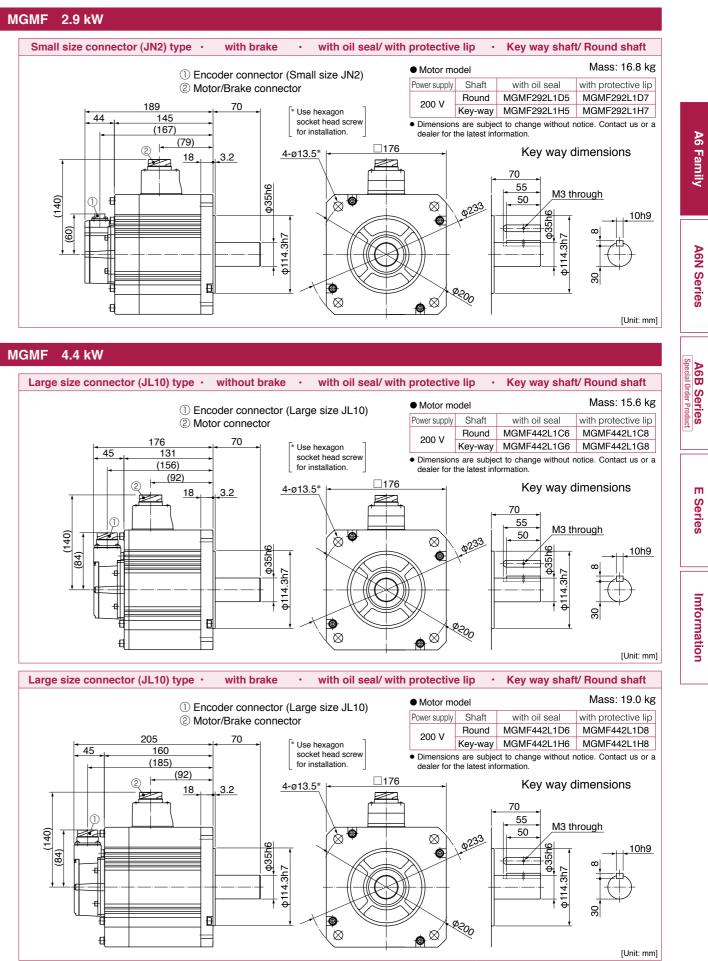


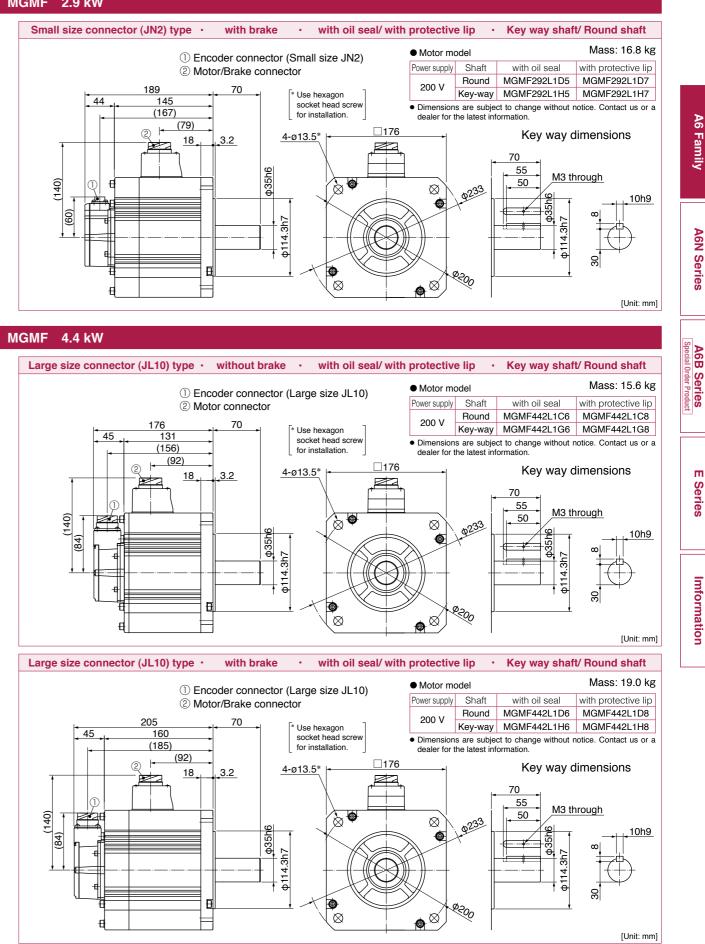
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



\* For motors specifications, refer to P.116.

#### MGMF 2.9 kW to 4.4 kW

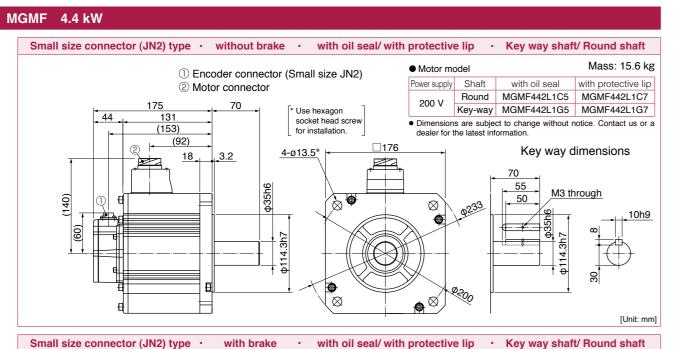


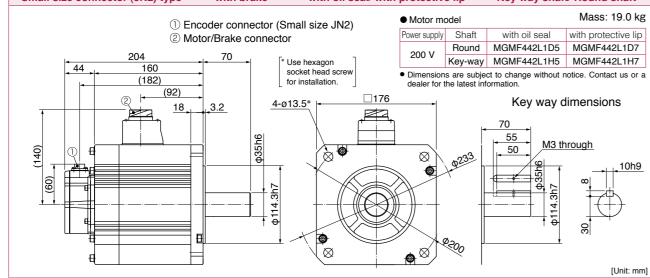


\* For motors specifications, refer to P.116, P.117.

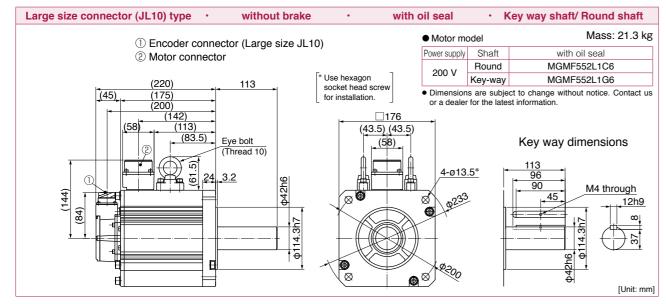
# Dimensions

#### MGMF 4.4 kW to 5.5 kW





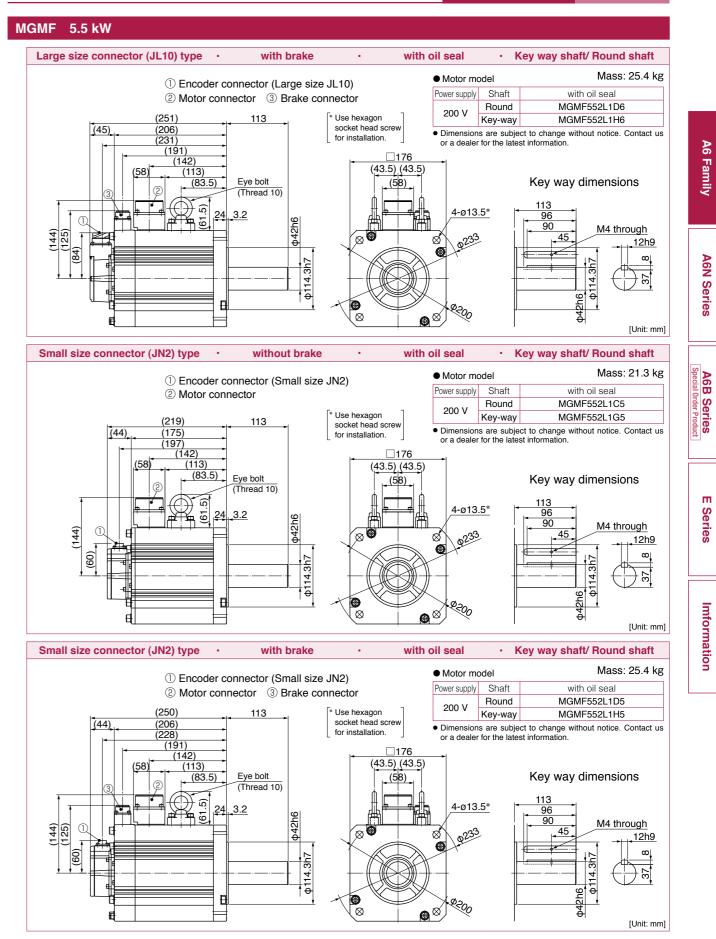
# MGMF 5.5 kW

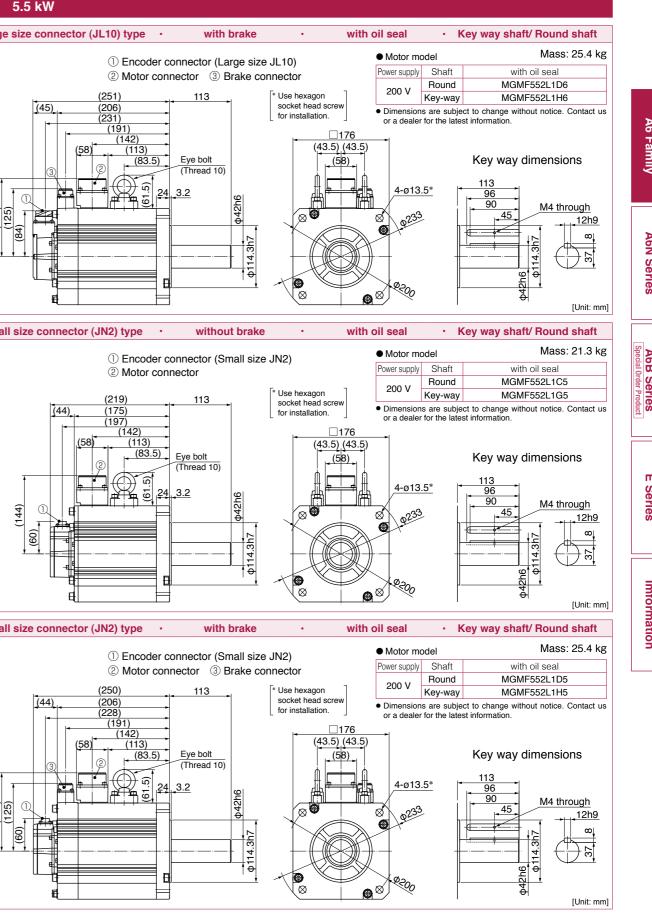


\* For motors specifications, refer to P.117, P.118.

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## MGMF 5.5 kW





\* For motors specifications, refer to P.118.

# Dimensions

## Features

- Line-up IP67 motor: 1.0 kW to 7.5 kW
- Max speed: 6500r/min (MHMF 50 W to 400 W)
- · Low inertia (MSMF) to High inertia (MHMF).
- · Low cogging torque: Rated torque ratio 0.5 % (typical value).
- · 23-bit absolute encoder (8388608 pulse).

## Motor Lineup

sq. or less

E

80

more

ç

100 mm sq.



Special Order Product Motor Contents
MSMF (200 V) 50 W to 5.0 kW P.2
MQMF (200 V) 100 W to 400 W P.2
MHMF (200 V) 50 W to 7.5 kW P.2
MDMF (200 V) 1.0 kW to 7.5 kW P.2
MGMF (200 V) 0.85 kW to 5.5 kW
Dimensions MSMF (50 W to 1000 W)P.25
MSMF (1.0 kW to 5.0 kW)P.25
MQMF (100 W to 400 W)P.26 MHMF
(50 W to 1000 W)P.26 MHMF (1.0 kW to 7.5 kW)P.27
MDMF (1.0 kW to 7.5 kW)P.28
MGMF (0.85 kW to 5.5kW)P.28
Motor Specification Description
Environmental Conditions P.30 Notes on [Motor specification] page P.30
Permissible Load at Output Shaft

**Model Designation** 

Refer to P.205 to P.210 for motor and driver combinations. Servo Motor

(1)

2 3 4 5

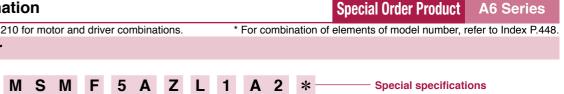
1) Typ Symbol			Тур	e				(7) N	
MSM	Low inertia	(50	) W to 5.						
MQM	Middle inertia	· ·	00 W to 4	,				Sy	/m
MDM	Middle inertia		0 kW to	,				•	_
MGM	Middle inertia			5.5 kW)				AB	+
MHM	High inertia	(50	) W to 7.	5 KW)				C	T
								D	
2) Ser		_						S	_
Symbol F	Series name	•						T	+
г	A6 family							V	
3) Mot	or rated out	tput			_			(7) N	lo
Symbol 5A	Rated outpu	ut D W	Symbol 18	Rated outpo 1.8 kV					
01		5 W	20	2.0 kV	_				
02		D W C	24	2.4 kV	_			S	m
04	400	D W C	29	2.9 kV	V				
08	750	D W C	30	3.0 kV	V			A	+
09		W 00	40	4.0 kV	_			B	+
	(130 mm sq.) (80 mm		44	4.4 kV	_			C	
10 13		kW kW	50 55	5.0 kV 5.5 kV				D	
15	1.3	_	75	5.5 KV 7.5 kV	_			D	
15	1.5	KVV	15	7.5 K	•			S	4
<u>.</u>								T	+
	age specifi				_			U	+
Symbol	S	•	ications		-			V	
2 Z	100 V/200 V		0 V nmon (5	0 W only)				V	
	ary encode	r en	ocifica	tione				(7) N	lo
Symbol	Format		ilse cour		olution	Wire	es		
L	Absolute								
			23-bit	838	38608	7		S	m
Note>									/m
Vhen us	sing a rotary en n data), do not		r as an i	ncremental	system	(not us	ing	Sy C C	/m
Vhen us	sing a rotary en n data), do not		r as an i	ncremental	system	(not us	ing	C C D	/m
Vhen us nulti-tur	n data), do not		r as an i	ncremental	system	(not us	ing	C C D	/m
Vhen us nulti-tur	n data), do not <b>ign order</b>	conn	r as an i ect a ba	ncremental	system	(not us	ing	C C D G	
When us nulti-tur Des Symbol	n data), do not <b>ign order</b> Specifica	conne	r as an i ect a ba	ncremental	system	(not us	ing	C C D	
Vhen us nulti-tur	n data), do not <b>ign order</b>	conne	r as an i ect a ba	ncremental	system	(not us	ing	C C D G G	
When us nulti-tur Des Symbol	n data), do not <b>ign order</b> Specifica	conne	r as an i ect a ba	ncremental	system	(not us	ing	C C D G G H	
Vhen us nulti-tur 6) <b>Des</b> Symbol 1	n data), do not <b>ign order</b> Specifica Stand	conne	r as an i ect a ba	ncremental	system	(not us	ing	C C D G G H H H	
Vhen us nulti-tur 6) <b>Des</b> Symbol 1	n data), do not <b>ign order</b> Specifica	conne	r as an i ect a ba	ncremental	system	(not us	ing	C C D G G H H H	
Vhen us nulti-tur 6) <b>Des</b> Symbol 1	n data), do not <b>ign order</b> Specifica Stand	conne	r as an ii ect a bai	ncremental ttery for ab	system solute er	(not us	ing 5	C C D G G H H H	
Vhen us nulti-tur 6) <b>Des</b> Symbol 1	n data), do not <b>ign order</b> Specifica Stand	ations	r as an i ect a ba	ncremental ttery for ab	system solute er	(not usincoder.		C C D G G H H * End	
Vhen us nulti-tur	n data), do not <b>ign order</b> Specifica Stand	ations	r as an i ect a bat	D	system solute er	(not us nooder.	5	С С С С С С С С С С С С С С С С С С С	
When us multi-tur 6 Des Symbol 1 erv(	n data), do not ign order Specifica Stand D Driver me symbol	ations ard	A	D	system solute er N 3 4 Max	(not us ccoder. 1 (4)	5 5 rent ra	C C C D D D G G G H H H H * End	
Vhen us nulti-tur	n data), do not ign order Specifica Stand D Driver me symbol Frame	ations	A The second sec	D L (2) (2) (2) (2) (3) (3) (4) (4) (5) (4) (5) (5) (5) (5) (5) (5) (5) (5	system solute er	(not us acoder. 1 4 Currer	5	C C C D D D G G G H H H H * End	
Vhen us hulti-tur 6) Des Symbol 1 1 erv(	n data), do not ign order Specifica Stand D Driver me symbol	ations ard	A Dool Fr D E-F	D	system solute er N 3 (4) Max Symbol	(not us acoder. 1 4 Currer	5 5 rent rating	C C D D G G G H H H H F N S (6)	
Vhen us hulti-tur ) Des Symbol 1 erv( ) Fral Symbol MAD	n data), do not ign order Specifica Stand D Driver me symbol Frame A-Frame	ations ard M Symt MEI	A 1 Col Fr D E-F D F-F	D L (2) (2) (2) (3) (4) (3) (4) (4) (4) (4) (5) (4) (4) (4) (4) (4) (4) (4) (4	system solute er N 3 4 Maz Symbol 0	(not us acoder. 1 4 Currer	5 © rent rating 6 A	C C C D D D G G G H H H H H H H S (6)	
Vhen us hulti-tur ) Des Symbol 1 Pra Symbol MAD MBD	n data), do not ign order Specifica Stand D Driver me symbol Frame A-Frame B-Frame	ations ard M Symb MEI MFI	A 1 Col Fr D E-F D F-F	D L 2 2 2 2 2 2 2 2 2 2 2 2 2	system solute er	(not us ncoder. 1 4 Currer	5 5 rent ra 6 A 8 A	C C C D D D G G H H H H H H F End S S (6)	
Vhen us nulti-tur ) Des Symbol 1 Pra Symbol MAD MAD MAD	n data), do not ign order Specifica Stand D Driver D Driver me symbol Frame A-Frame B-Frame C-Frame D-Frame	ations ard M Symb MEI MFI	A 1 Col Fr D E-F D F-F	D L 2 2 2 2 2 2 2 2 2 2 2 2 2	system solute er	(not us ncoder. 1 4 Currer	<b>5</b> (5) <b>rent ra</b> 6 A 8 A 2 A 2 A 4 A	C C C D D G G G H H H H H H H S S (6)	
Vhen us hulti-tur ) Des Symbol 1 PFral Symbol MAD MAD MAD MAD MDD 2) Ser	n data), do not ign order Specifica Stand D Driver D Driver me symbol Frame A-Frame B-Frame C-Frame D-Frame D-Frame	Symb MEI MG	A 1 Col Fr D E-F D F-F	D L 2 2 2 2 2 2 2 2 2 2 2 2 2	system solute er	(not us ncoder. 1 4 Currer	5 6 6 8 8 8 2 2 2 2 4	C C C D D G G G H H H H H H S S (6)	
Vhen us hulti-tur ) Des Symbol 1 Pra Symbol MAD MCD MDD 2 Ser	n data), do not ign order Specifica Stand D Driver D Driver me symbol Frame A-Frame B-Frame D-Frame D-Frame Series na	Symb MEI MEI MG	A 1 Col Fr D E-F D F-F	D L 2 2 2 2 2 2 2 2 2 2 2 2 2	system solute er	(not us needer. 1 4 Currer	<b>5</b> <b>5</b> <b>7ent r</b> 2 <b>6</b> A <b>8</b> A <b>2</b> A <b>2</b> A <b>2</b> A <b>4</b> A <b>10</b> A	C C C D D G G G H H H H H H H S S (6)	
Vhen us hulti-tur ) Des Symbol 1 PFral Symbol MAD MAD MAD MAD MDD 2) Ser	n data), do not ign order Specifica Stand D Driver D Driver me symbol Frame A-Frame B-Frame C-Frame D-Frame D-Frame	Symb MEI MEI MG	A 1 Col Fr D E-F D F-F	D L 2 2 2 2 2 2 2 2 2 2 2 2 2	system solute er	(not us needer. 1 4 Currer	<b>5</b> <b>5</b> <b>7ent r</b> 2 <b>6</b> A <b>8</b> A <b>2</b> A <b>2</b> A <b>2</b> A <b>4</b> A <b>10</b> A	C C C D D G G G H H H H H H H S S (6)	
Vhen us hulti-tur 6) Dess Symbol 1 9) Fra Symbol MAD MBD MAD MBD MCD MDD Symbol L	n data), do not ign order Specifica Stand D Driver D Driver me symbol Frame A-Frame B-Frame D-Frame D-Frame ies Series na A6 famil	symb MEI MEI MEI MG	A 1 Col Fr D E-F D F-F	D L 2 2 2 2 2 2 2 2 2 2 2 2 2	system solute er	(not us nooder. 1 4 Currer 1 2 2 2 2 2 2	5 5 rent ra 6 A 8 A 2 A 2 A 4 A 10 A Special	C C C D D G G G H H H H H * End * En	
Vhen us hulti-tur b Des Symbol 1 erv( Symbol MAD MBD MCD MDD 2 Symbol L Symbol Symbol L S	n data), do not ign order Specifica Stand D Driver D Driver me symbol Frame A-Frame B-Frame C-Frame D-Frame ies Series na A6 famil	symt MEI MEI MG	A 1 1 1 1 1 1 1 1 1 1 1 1 1	D L 2 2 2 2 2 2 2 2 2 2 2 2 2	system solute er	(not us incoder. 1 4 Currer 1 2 2 4 Spply V4 3-ph	5 5 rent rating 6 A 8 A 2 A 2 A 4 A 10 A Oltage Speci mase 20	C C C D D D G G H H H H H H H S S (6) S S M H S S (6) S S M H S S S (6) S S S S S S S S S S S S S S S S S S S	
Vhen us hulti-tur 6) Dess Symbol 1 9) Fra Symbol MAD MBD MAD MBD MCD MDD Symbol L	n data), do not ign order Specifica Stand D Driver D Driver me symbol Frame A-Frame B-Frame D-Frame D-Frame ies Series na A6 famil	symt MEI MEI MG MG	A 1 Col Fr D E-F D F-F D G-F D G-F	D L ame rame rame rame	system solute er	(not us incoder. 1 4 Currer 1 2 2 4 Spply V4 3-ph	5 5 rent ra 6 A 8 A 2 A 2 A 4 A 10 A Special	C C C D D D G G H H H H H H H S S (6) S S M H S S (6) S S M H S S S (6) S S S S S S S S S S S S S S S S S S S	
Vhen us hulti-tur b Des Symbol 1 erv( Symbol MAD MBD MCD MDD 2 Symbol L 3 Safe Symbol	n data), do not ign order Specifica Stand D Driver D Driver me symbol Frame A-Frame B-Frame C-Frame D-Frame ies Series na A6 famil ety Function Specifi	symt MEI MG MG me ly n icatio safety	A 1 1 1 1 1 1 1 1 1 1 1 1 1	D L ame rame rame rame	system solute er	(not us incoder. 1 4 Currer 1 2 2 4 Spply V4 3-ph	5 5 rent rating 6 A 8 A 2 A 2 A 4 A 10 A Oltage Speci mase 20	C C C D D D G G H H H H H H H S S (6) S S M H S S (6) S S M H S S S (6) S S S S S S S S S S S S S S S S S S S	

<Cautions> Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

-203-

Panasonic Corpora industrial.panasonic.com/ac/e/

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	V	
	7 M	ol
/ires		
7	Syr	nt
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er.	С	
	D	
	D	
	G	
	G	Г



A6 Family

A6N Series

A6B Series Special Order Product

Ш

Series

Imformation

# (6)

#### Notor specifications: 80 mm sq. or less Leadwire type IP65 MSMF 50 W to 1000 W

	Sh	aft	Holding	g brake	Oil seal		
loc	Round	Key-way, center tap	without	with	without	with	
2			۲				
2	•						
2			۲				
2	•						
2			•		•		
2							
2		•	•				
2							

#### Notor specifications: 80 mm sq. or less Leadwire type IP65 MHMF 50 W to 1000 W, MQMF 100 W to 400 W

	Sh	aft	Holding	g brake	Oil seal				
loc	Round	Key-way, center tap	without	with	without	with	With protective lip		
2			۲						
2									
2	•		•			•			
4			•						
2	•			•		•			
4									
2			۲						
2									
2			۲						
4			۲						
2		•				•			
4									

#### tor specifications: 100 mm sq. or more Encoder connector : JL10 IP67 MSMF, MHMF, MDMF, MGMF

	Sh	aft	Holding	g brake	Oil	seal
loc	Round	Key-way	without	with	with	With protective lip
6	•		•		•	
8						
6						
8						
6						
8						
6				•	•	
8						

coder connector JL10: Also applicable to screwed type



### **Special specifications**

	6 I/f specifications	⑦ Classical C	ssification of type
Current rating	Symbol	Symbol	Specification
60 A	(specification)		•
80 A		E	Basic type (Pulse train only)
100 A	S		Multi fanction type
120 A	(Analog/Pulse)	F	(Pulse, analog, full-closed)
160 A		_	RS485 communication type
		G	(Pulse train only)

#### cifications

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			Motor	r			Driver						Optional	parts			
						A6SF series	A6 G series		Power	Encoder	Cable Note)3	Motor Ca	ble Note)3				
					Rating/	Multi fanction type	RS485 communication		capacity	23-bit	Absolute			Brake			
N	Motor series	Power supply	Output (W)	Part No. Note)1	Spec. Dimensions (page)	(Pulse, analog, full-closed)	A6 SE series Basic (Pulse signal input)	Frame	(rated load (kVA)	Use in the absolute system (with battery box) Note)5		without Brake	with Brake	Cable Note)3	External Regenerative Resistor	Reactor	Noise Filter
							Note)2, Note)4			Fixe	d cable	Movab	le cable	Movable cable			
			50	MSMF5AZL1 🗌 2M	211 253	MADLT05SF	MADLN05S	_							DV0P4281		
			100	MSMF012L1 🗌 2M	212 253	MADLT05SF	MADLN05S	A-frame ★	Approx. 0.5							DV0P227 DV0P220	DV0P4170
MSMF Leadwire type 3000 r/min	Single phase/	200	MSMF022L1 🗆 2M	213 254	MADLT15SF	MADLN15S			MFECA 0**0EAE	MFECA 0 * * 0EAD		MCA	MFMCB			DV0PM20042	
ıertia	. ,	3-phase 200 V	400	MSMF042L1 🗆 2M	214 255	MBDLT25SF	MBDLN25S	B-frame ★	Approx. 0.9	(For fixed)	(For fixed)	0**	0EED	0 * * 0GET Note)6	DV0P4283	DV0P228	
			750	MSMF082L1 🗌 2M	215 255	MCDLT35SF	MCDLN35S	C-frame	Approx. 1.8							DV0P220	DV0PM20042
			1000	MSMF092L1 🗌 2M	216 256	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 2.4						DV0P4284	DV0P228 DV0P222	DV0P4220
Middle	MQMF	Single	100	MQMF012L1  2M MQMF012L1  4M	223 261	MADLT05SF	MADLN05S	- A-frame	Approx.						DV0P4281	DV0P227	
inertia F	(Leadwire type 3000 r/min	Single phase/ 3-phase	200	MQMF022L1  2M MQMF022L1  4M	224 263	MADLT15SF	MADLN15S◇	A-trame ★	0.5	MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET Note)6		DV0P220	DV0P4170 DV0PM20042	
Flat type	IP65	200 V	400	MQMF042L1   2M MQMF042L1   4M	225 265	MBDLT25SF	MBDLN25S	B-frame ★	Approx. 0.9					INOTE)6	DV0P4283	DV0P228 DV0P220	
			50	MHMF5AZL1 🗌 2M MHMF5AZL1 🗌 4M	226 267	MADLT05SF	MADLN05S								DV0P4281		
			100	MHMF012L1   2M MHMF012L1   4M	227 269	MADLT05SF	MADLN05S	A-frame ★	Approx. 0.5						DV0P4281	DV0P227 DV0P220	DV0P4170
High i	MHMF (Leadwire type	Single phase/	200	MHMF022L1   2M   MHMF022L1   4M	228 271	MADLT15SF	MADLN15S			MFECA	MFECA	MF	МСА	MFMCB			DV0PM20042
High inertia	3000 r/min IP65	3-phase 200 V	400	MHMF042L1   2M   MHMF042L1   4M	229 273	MBDLT25SF	MBDLN25S	B-frame ★	Approx. 0.9	0 * * 0EAE (For fixed)	0 * * 0EAD (For fixed)	0**	0EED	0 * *0GET Note)6	DV0P4283	DV0P228	
			750	MHMF082L1   2M MHMF082L1   4M	230 275	MCDLT35SF	MCDLN35S	C-frame	Approx. 1.8							DV0P220	DV0PM20042
			1000	MHMF092L1  2M MHMF092L1 4M	231 277	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.4						DV0P4284	DV0P228	DV0P4220

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

external regenerative resistor.

: Represents the motor specifications. (refer to "Model designation" P.204.) Note)1

Note)  $2 \Leftrightarrow$  : Represents the driver specifications. (refer to "Model designation" P.204.)

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

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

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

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

A6 Series Special Order Product

			Motor				Driver					Opt	ional parts 🕨 ref	er to P.306		
		Bower	Outeut	Part No.	Rating/	A6 SF series Multi fanction type (Pulse, analog, full-closed)	A6 SG series RS485 communication A6 SE series		Power capacity	Encoder Cat JL10 (Lat One-touch WMS scree 23-bit Al	rge size) lock type wed type	Motor Cabl JL (One-touch JL04 scre	10 lock type			
M	otor series	Power supply	Output (W)	Note)1	Spec. Dimensions (page)		Basic (Pulse signal input) Note)2, Note)4	Frame	(rated load ) (kVA)	Use in the absolute system (with battery box) Note)7	Use in the Incremental system (without battery box)	without Brake	with Brake	External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter
										Fixed	cable	Movabl	e cable			
		Single phase/	1000	MSMF102L1  6M MSMF102L1 8M	217 257	MDDLT55SF	MDDLN55S	- D-frame	Approx. 2.4			MFMCD 0 * * 2EUD	MFMCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220
	MSMF	3-phase 200 V	1500	MSMF152L1  6M MSMF152L1  8M	218 257	MDDLT55SF	MDDLN55S $\diamondsuit$		Approx. 2.9	MFECA	MFECA	MFMCD	MFMCA		DV0PM20047 / DV0P222	
Low i	Large size JL10 type		2000	MSMF202L1  6M MSMF202L1  8M	219 258	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8	0 * * 0EPE	0**0EPD	0 * * 2ECD	0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043
inertia	3000 r/min	3-phase	3000	MSMF302L1  6M MSMF302L1 8M	220 259	MFDLTA3SF	MFDLNA3S		Approx. 5.2	MFECA 0 * * 0ESE	MFECA 0 * * 0ESD		MFMCA		DV0P224	
-	IP67	200 V	4000	MSMF402L1  6M MSMF402L1  8M	221 259	MFDLTB3SF		F-frame	Approx. 6.5	0 * * 0E3E	0**0E3D	0 * * 3EUT	0 * * 3FUT	DV0P4285 ×2 in parallel		DV0P3410
			5000	MSMF502L1 GM MSMF502L1 BM	222 260	MFDLTB3SF	MFDLNB3S		Approx. 7.8			MFMCA 0 * * 3ECT	MFMCA 0 * * 3FCT	AL III parallor	DV0P225	
		Single phase/	1000	MDMF102L1 C 6M MDMF102L1 8M	239 283	MDDLT45SF	MDDLN45S	_	Approx. 2.4			MFMCD	MFMCA		DV0P228 / DV0P222	
	MDMF	3-phase 200 V	1500	MDMF152L1 C 6M MDMF152L1 8M	240 284	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.9			0 * * 2EUD	0 * * 2FUD	DV0P4284	DV0PM20047 / DV0P222	DV0P4220
	Large size JL10 type		2000	MDMF202L1  GM MDMF202L1  SM	241 285	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8	MFECA 0 * * 0EPE	MFECA 0 * *0EPD	MFMCD 0 * * 2ECD	MFMCA 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043
	2000 r/min	3-phase	3000	MDMF302L1  6M MDMF302L1 8M	242 285	MFDLTA3SF	MFDLNA3S		Approx. 5.2	MFECA	MFECA	MFMCA	MFMCA		DV0P224	
	IP67	200 V	4000	MDMF402L1 GM MDMF402L1 6M MDMF402L1 8M	243 286	MFDLTB3SF	MFDLNB3S	F-frame	Approx. 6.5	0 * * 0ESE	0**0ESD	0 * * 3EUT	0 * * 3FUT	DV0P4285 ×2 in parallel		DV0P3410
M			5000	MDMF502L1 C 6M MDMF502L1 8M	245 287	MFDLTB3SF	MFDLNB3S		Approx. 7.8			MFMCA 0 * * 3ECT	MFMCA 0 * * 3FCT		DV0P225	
Middle i		Single phase/	850	MGMF092L1  6M MGMF092L1  8M	246 288	MDDLT45SF	MDDLN45S		Approx. 2.0			MFMCD	MFMCA		DV0P228 / DV0P221	
inertia		3-phase 200 V	1300	MGMF132L1  GM MGMF132L1  SM	247 289	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.6			0**2EUD 0**2FUD	DV0P4284	DV0PM20047 / DV0P222	DV0P4220	
<u>س</u>	MGMF Large size	200 1	1800	MGMF182L1 GM MGMF182L1 GM MGMF182L1 M8M	248 289	MEDLT83SF	MEDLN83S		Approx. 3.4	MFECA	MFECA	MFMCD 0 * * 2ECD	MFMCA 0 * * 2FCD		DV0P223	
	JL10 type /Low speed/\							E-frame		0 * * 0EPE	0 * * 0EPD	MFMCE 0 * * 3EUT	MFMCD 0 * * 3FUT	DV0P4285		DV0PM20043
	High torque type	3-phase	2400	MGMF242L1 🗌 6M MGMF242L1 🗌 8M	249 290	MEDLT93SF	MEDLN93S		Approx. 4.5	MFECA 0 * * 0ESE	MFECA 0 * * 0ESD	MFMCE	MFMCD		DV0P224	
	1500 r/min IP67	200 V	2900	MGMF292L1   6M MGMF292L1  8M	250 291	MFDLTB3SF	MFDLNB3S		Approx. 5.0			0 * * 3ECT MFMCA 0 * * 3EUT	0 * * 3FCT MFMCA 0 * * 3FUT	D)/02/02-		
			4400	MGMF292L1 6M MGMF442L1 6M MGMF442L1 8M	291 251 291	MFDLTB3SF	MFDLNB3S	F-frame	Approx. 7.0			MFMCA	MFMCA	DV0P4285 ×2 in parallel	DV0P225	DV0P3410
		Single	1000	MGMF442L1  8M MHMF102L1  6M MHMF102L1  8M	291 232 279	MDDLT45SF	MDDLN45S		Approx. 2.4			0 * * 3ECT MFMCD 0 * * 2EUD	0 * * 3FCT MFMCA		DV0P228 / DV0P222	
		phase/ 3-phase	1500	MHMF152L1   6M	233	MDDLT55SF	MDDLN55S	D-frame	2.4 Approx. 2.9			0 * * 2EUD MFMCD	0 * * 2FUD MFMCA	DV0P4284	DV0PM20047 / DV0P222	DV0P4220
_	MHMF	200 V		MHMF152L1 🗌 8M	279				2.9	MFECA	MFECA	0 * * 2ECD MFMCE	0 * * 2FCD MFMCE			
High ine	Large size JL10 type		2000	MHMF202L1  6M MHMF202L1 8M	234 280	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8	0 * * 0EPE	0 * * 0EPD	0 * * 2EUD MFMCE	0 * * 2FUD MFMCE	DV0P4285 Note)6	DV0P223	DV0PM20043
inertia	2000 r/min IP67	3-phase 200 V	3000	MHMF302L1 C 6M	235	MFDLTA3SF	MFDLNA3S (>		Approx. 5.2	MFECA 0 * * 0ESE	MFECA 0 * *0ESD	0 * * 2ECD MFMCA	0 * * 2FCD MFMCA		DV0P224	
		200 V	4000	MHMF302L1  8M MHMF402L1  6M MHMF402L1  8M	281 236 291	MFDLTB3SF	MFDLNB3S	- F-frame	5.2 Approx. 6.5			0 * * 3EUT	0 * * 3FUT	DV0P4285		DV0P3410
			5000	MHMF402L1 _ 8M MHMF502L1 _ 6M MHMF502L1 _ 8M	281 237 282	MFDLTB3SF	MFDLNB3S	-	6.5 Approx. 7.8			MFMCA 0 * * 3ECT	MFMCA 0 * * 3FCT	×2 in parallel	DV0P225	

 $\diamond$  : Represents the driver specifications. (refer to "Model designation" P.204.) Note)2

Note)3 \*\*: Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030EPE

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

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and JL04V type cables can also be used.

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

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

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

A6N Series A6B Series Special Order Product

A6 Family

E Series

Imformation

			Motor	r			Driver					Opt	ional parts 🕨 ref	er to P.306			
										Encoder Ca	ble Note)2,3	Motor	Cable				
					Rating/	A6SF series Multi fanction type	A6SG series De RS485 communication		Power capacity	JL10 (La One-touch N/MS scr		Note	e)6	External			
	Motor series	Power	Output		Spec.	(Pulse, analog, full-closed)	A6SE series	Frame	(rated load	23-bit A	Absolute			Regenerative	e Reactor	Noise Filter	_
		supply	(W)	Note)1	Dimensions (page)	( ,	Basic (Pulse signal input)		\load / (kVA)	Use in the absolute system (with battery box) Note)4	Use in the Incremental system (without battery box)	without Brake	with Brake	Resistor	(Single phase / 3-phase)		
										Fixed	l cable						illy
Middle	MDMF Large size JL10 type 1500 r/min IP67	3-phase 200 V	7500	MDMF752L1 🗌 6M	245 287	MGDLTC3SF	_	G-frame	Approx. 11	MFECA 0**0EPE  MFECA 0**0ESE	MFECA 0**0EPD MFECA 0**0ESD	Note)6	Note)6	DV0P4285 ×3 in parallel	— Note)5	HF3080C-SZA (Recommended) components P.413	
Middle inertia	MGMF Large size JL10 type (Low speed/ High torque type 1500 r/min IP67	3-phase 200 V	5500	MGMF552L1 🗌 6M	252 292	MGDLTC3SF	_	G-frame	Approx. 8.5	MFECA 0**0EPE 	MFECA 0**0EPD MFECA 0**0ESD	Note)6	Note)6	DV0P4285	— Note)5	HF3080C-SZA (Recommended) components P.413	Special Order Product
High inertia	MHMF Large size JL10 type 1500 r/min IP67	3-phase 200 V	7500	MHMF752L1 🗌 6M	238 283	MGDLTC3SF	_	G-frame	Approx. 11	MFECA 0 * * 0EPE  MFECA 0 * * 0ESE	MFECA 0 * * 0EPD  MFECA 0 * * 0ESD	Note)6	Note)6	×3 in parallel	_ Note)5	HF3080C-SZA (Recommended) components P.413	E Series

#### About dynamic brake

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

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

Recommended resistance: 1.2  $\Omega$  400 W or more x 3 pieces

For inquiries: Iwaki Musen Kenkyusho Co., Ltd. Tel: +81-44-833-4311

## Connector kit (option) Component parts Note)6

	D	river	Option No.	Encoder C	able	Motor	Cable	Brake	Cable
Motor	Aotor Frame Connection for mo		Connector Kit for motor, encoder connection	Motor side	Driver side	Motor side	Driver side	Motor side	Power supply for brake
			DV0PM20107	Large size connector				not included	
MDMF 7.5 kW MGMF 5.5 kW	G	МЕ	DV0PM20108	One-touch lock type	For	Connector	(to be supplied) by customer	Connector Screwed type	(to be supplied)
MHMF 7.5 kW	G	M5	DV0PM20111	Large size connector	Connector X6	Screwed type	M5 Round terminal	not included	(by customer)
			DV0PM20112	Screwed type				Connector Screwed type	

Note)2 \*\*: Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE

Note)3 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.

Note)4 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Note)5 Please prepare reactor for customer.

Note)6 We recommend purchasing an optional connector kit.

Imformation

#### A6 Series **Motor Specifications**

#### Special Order Product

# 200 V MSMF 50 W [Low inertia 38 mm sq.]

Please contact us for more information.

## Specifications

				AC200 V
Motor model *1			IP65	MSMF5AZL1
		Multif	iunction type	MADLT05SF
Applicable	Model No	RS48	5 communication type	<sup>2</sup> MADLN05SG
driver		Basic	type *2	MADLN05SE
	Fram	e sym	lod	A-frame
Power supply	capacit	у	(kVA)	) 0.5
Rated output			(W)	) 50
Rated torque			(N·m)	) 0.16
Continuous sta	all torqu	le	(N·m)	) 0.16
Momentary Ma	ax. pea	k torqu	ue (N·m)	) 0.48
Rated current			(A(rms))	) 1.1
Max. current			(A(o-p))	) 4.7
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4281	No limit Note)2
Rated rotation	al spee	d	(r/min)	) 3000
Max. rotationa	l speed		(r/min)	) 6000
Moment of ine	rtia		Without brake	0.026
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	0.029
Recommender ratio of the loa				30 times or less
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutio	n per single turn	8388608

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

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

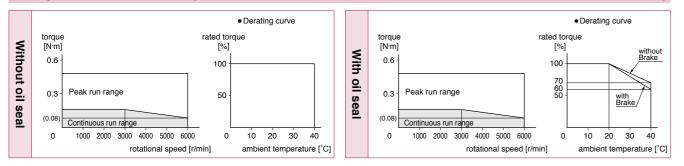
#### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



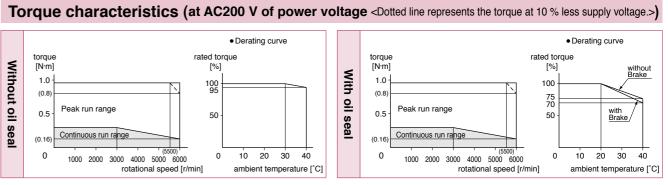
#### Dimensions

	Round shaft/ Key way, center tap shaft							
Motor specifications		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.253			P.253				

**Special Order** 200 V MSMF 100 W [Low inertia 38 mm sq.] Product

#### **Specifications**

				AC200 V		specifications (For details		
Motor model *1			IP65	MSMF012L1		ake will be released when it is use this for braking the motor i		
		Multif	unction type	MADLT05SF	Static fri	ction torque (N·m)	0.294 or more	
Applicable	Model No.	RS48	5 communication type *2	MADLN05SG	Engagin	g time (ms)	35 or less	
driver	110.	Basic	type <sup>*2</sup>	MADLN05SE	Releasir	ng time (ms) Note)4	20 or less	
	Fram	e syml	loc	A-frame	Exciting	current (DC) (A)	0.30	
Power supply	capacit	у	(kVA)	0.5	Releasir	ng voltage (DC) (V)	1 or more	
Rated output			(W)	100	Exciting	voltage (DC) (V)	24±1.2	
Rated torque			(N·m)	0.32	• Dormi	• Permissible load (For details, refer to P.304)		
Continuous sta	all torqu	ie	(N·m)	0.32	• Feilin	•	,	
Momentary Max. peak torque (N·m)		ie (N·m)	0.95	During	Radial load P-direction (N)	147		
Rated current	Rated current (A(rms))		(A(rms))	1.1	assembly	Thrust load A-direction (N)	88.0	
Max. current			(A(o-p))	4.7		Thrust load B-direction (N)	117.6	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	68.6	
frequency (time		Note)1	DV0P4281	No limit Note)2	operation	Thrust load A, B-direction (N)	58.8	
Rated rotation	al spee	d	(r/min)	3000	<ul> <li>For detail</li> </ul>	For details of Note)1 to Note)4, refer to P.303.		
Max. rotationa	l speed		(r/min)	6000		ons of Driver, refer to P.57.		
Moment of ine	rtia		Without brake	0.048		the motor part number repre cations.	esents the moto	
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	0.051		type and RS485 communicat	ion type are	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	"Position control type". Detail of model designation, refer to P.204.					
Rotary encode	er speci	ficatio	າຣ <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment		
	Re	solutio	n per single turn	8388608	system (not using multi-turn data), do not conne a battery for absolute encoder.			



#### Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.253		_	P.254		_		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

Imformation

· Please contact us for more information.

#### A6 Series **Motor Specifications**

#### Special Order Product

# 200 V MSMF 200 W [Low inertia 60 mm sq.]

Please contact us for more information.

## Specifications

					AC200 V
Motor model *1		IP65			MSMF022L1
		Multi	function type		MADLT15SF
Applicable	Model No.	RS48	5 communication	type *2	MADLN15SG
driver	110.	Basic	c type *2		MADLN15SE
	Fram	e sym	bol		A-frame
Power supply	capacit	у		(kVA)	0.5
Rated output				(W)	200
Rated torque				(N·m)	0.64
Continuous sta	all torqu	ie		(N·m)	0.64
Momentary Ma	ax. pea	k torqı	le	(N·m)	1.91
Rated current			(A(	rms))	1.5
Max. current			(A	(o-p))	6.5
Regenerative	brake		Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4283		No limit Note)2
Rated rotation	al spee	d	1)	r/min)	3000
Max. rotationa	l speed		1)	/min)	6000
Moment of ine	rtia		Without brak	æ	0.14
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake		0.17
Recommender ratio of the loa		Note)3	30 times or less		
Rotary encode	er speci	ficatio	ns <sup>™</sup>		23-bit Absolute
	Re	solutic	on per single tu	ırn	8388608

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

Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) 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

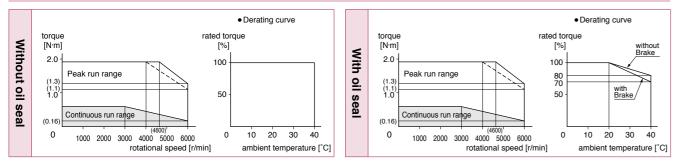
#### • Permissible load (For details, refer to P.304)

<b>.</b> .	Radial load P-direction (N)	392
During assembly	Thrust load A-direction (N)	
accountry	Thrust load B-direction (N)	
During	Radial load P-direction (N)	245
operation	Thrust load A. B-direction (N)	98.0

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



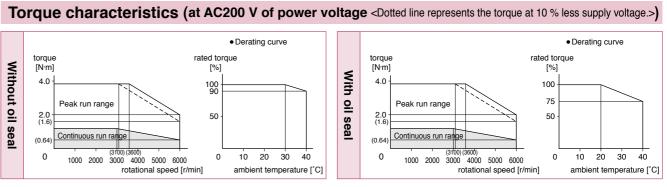
#### Dimensions

	Round shaft/ Key way, center tap shaft							
Motor specifications		without brake		with brake				
·	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.254			P.254				

**Special Order** 200 V MSMF 400 W [Low inertia 60 mm sq.] Product

#### **Specifications**

				AC200 V		specifications (For details			
Motor model *1			IP65	MSMF042L1		ake will be released when it is e use this for braking the motor in			
			unction type	MBDLT25SF	Static fri	Static friction torque (N·m)			
Applicable driver	Model No.	RS48	5 communication type *2	MBDLN25SG	Engagin	g time (ms)	50 or less		
	110.	Basic	type <sup>*2</sup>	MBDLN25SE	Releasir	ng time (ms) Note)4	15 or less		
	Fram	e syml	lool	B-frame	Exciting	current (DC) (A)	0.36		
Power supply	capacit	у	(kVA)	0.9	Releasir	ng voltage (DC) (V)	1 or more		
Rated output			(W)	400	Exciting	voltage (DC) (V)	24±1.2		
Rated torque			(N·m)	1.27	• Pormi	Permissible load (For details, refer to P.304)			
Continuous st	all torqu	ie	(N·m)	1.27	• Fermi				
Momentary M	ax. pea	k torqu	ıe (N⋅m)	3.82	Durina	Radial load P-direction (N)	392		
Rated current			(A(rms))	2.4	assembly	Thrust load A-direction (N)	147		
Max. current			(A(o-p))	10.2		Thrust load B-direction (N)	196		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	245		
frequency (time		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	98.0		
Rated rotation	al spee	d	(r/min)	3000	For deta	ails of Note)1 to Note)4, refer	to P.303.		
Max. rotationa	l speed		(r/min)	6000		ons of Driver, refer to P.57.			
Moment of ine	ertia		Without brake	0.27		*1 in the motor part number represents the m specifications.			
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	0.30		type and RS485 communicati	on type are		
	Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.204.				
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment			
	Re	solutio	n per single turn	8388608		system (not using multi-turn data), do not connect a battery for absolute encoder.			



#### Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.255		_	P.255		_		

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

Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

Imformation

· Please contact us for more information.

### Special Order Product

# 200 V MSMF 750 W [Low inertia 80 mm sq.]

Please contact us for more information.

# Specifications

				AC200 V
Motor model *1	IP65			MSMF082L1
		Multi	function type	MCDLT35SF
Applicable	Model No.	RS48	5 communication type *	MCDLN35SG
driver	110.	Basic	type <sup>*2</sup>	MCDLN35SE
	Fram	e sym	bol	C-frame
Power supply capacity (kVA)				1.8
Rated output			(W)	750
Rated torque			(N·m)	2.39
Continuous sta	all torqu	ie	(N·m)	2.39
Momentary Ma	ax. pea	k torqı	ue (N·m)	7.16
Rated current			(A(rms))	4.1
Max. current			(A(o-p))	17.4
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4283	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.96
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	1.06
Recommender ratio of the loa		20 times or less		
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) 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

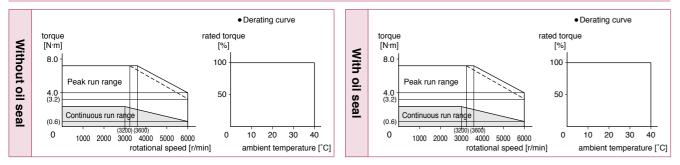
### • Permissible load (For details, refer to P.304)

<b>-</b> ·	Radial load P-direction (N)	686
During assembly	Thrust load A-direction (N)	294
assembly	Thrust load B-direction (N)	392
During	Radial load P-direction (N)	392
operation	Thrust load A. B-direction (N)	147

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



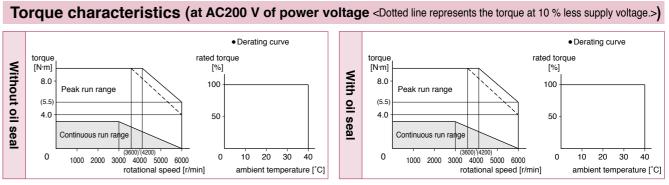
## Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.255			P.256				

**Special Order** 200 V MSMF 1000 W [Low inertia 80 mm sq.] Product

## **Specifications**

				AC200 V		specifications (For details			
Motor model *1			IP65	MSMF092L1	This brake will be released when it is energized. Do not use this for braking the motor in motion.				
			unction type	MDDLT45SF	Static fri	ction torque (N·m)	3.80 or more		
Applicable	Model No.	RS485	5 communication type *2	MDDLN45SG	Engagin	g time (ms)	70 or less		
driver		Basic	type *2	MDDLN45SE	Releasir	ng time (ms) Note)4	20 or less		
	Fram	e syml	loc	D-frame	Exciting	current (DC) (A)	0.42		
Power supply	capacit	у	(kVA)	2.4	Releasir	ng voltage (DC) (V)	1 or more		
Rated output			(W)	1000	Exciting	voltage (DC) (V)	24±2.4		
Rated torque			(N·m)	3.18	• Dormi	Permissible load (For details, refer to P.304)			
Continuous sta	all torqu	e	(N·m)	3.18	• Fermi				
Momentary Ma	ax. pea	k torqu	ie (N·m)	9.55	During	Radial load P-direction (N)	686		
Rated current	Rated current (A(rms))		(A(rms))	5.7	assembly	Thrust load A-direction (N)	294		
Max. current			(A(o-p))	24.2		Thrust load B-direction (N)	392		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	392		
frequency (time		Note)1	DV0P4284	No limit Note)2	operation	Thrust load A, B-direction (N)	147		
Rated rotation	al spee	d	(r/min)	3000		<ul> <li>For details of Note)1 to Note)4, refer to P.303.</li> </ul>			
Max. rotationa	l speed		(r/min)	6000		Dimensions of Driver, refer to P.58.			
Moment of ine	rtia		Without brake	1.26		the motor part number repre cations.	sents the motor		
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	1.36		type and RS485 communicati	on type are		
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	"Position control type". Detail of model designation, refer to P.204.						
Rotary encode	er speci	fication	1S <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.			
	Re	solutio	n per single turn	8388608	-				



### Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft						
		without brake		with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Leadwire type (IP65)	P.256		_	P.256		_	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

Imformation

· Please contact us for more information.

### Special Order Product

# 200 V MSMF 1.0 kW [Low inertia 100 mm sq.]

Please contact us for more information.

## **Specifications**

				AC200 V		
Motor model *1	IP67			MSMF102L1		
		Multi	function type	MDDLT55SF		
Applicable	Model No	RS48	5 communication type *2	MDDLN55SG		
driver		Basic	c type <sup>∗</sup> ²	MDDLN55SE		
	Fram	e sym	bol	D-frame		
Power supply capacity (kVA)				2.4		
Rated output			(W)	1000		
Rated torque			(N·m)	3.18		
Continuous sta	all torqu	ie	(N·m)	3.82		
Momentary Ma	ax. peal	k torqu	ue (N·m)	9.55		
Rated current			(A(rms))	6.6		
Max. current			(A(o-p))	28		
Regenerative	brake		Without option	No limit Note)2		
frequency (time	es/min)	Note)1	DV0P4284	No limit Note)2		
Rated rotation	al spee	d	(r/min)	3000		
Max. rotationa	l speed		(r/min)	5000		
Moment of ine	rtia		Without brake	2.15		
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	2.47		
Recommender ratio of the loa		15 times or less				
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute		
	Re	solutic	on per single turn	8388608		

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

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

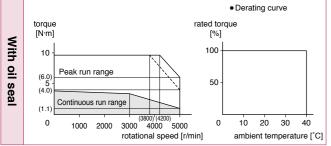
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



### Dimensions

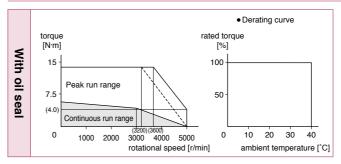
Motor specifications	Key way shaft/ Round shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.257			P.257			

**Special Order** 200 V MSMF 1.5 kW [Low inertia 100 mm sq.] Product

### Specifications

				AC200 V		specifications (For details ake will be released when it is e		
Motor model *1			IP67	MSMF152L1		n motion.		
			unction type	MDDLT55SF	Static fri	ction torque (N·m)	8.0 or more	
Applicable	Model No.	RS485	communication type *2	MDDLN55SG	Engagin	g time (ms)	50 or less	
driver	140.	Basic	type *2	MDDLN55SE	Releasir	ng time (ms) Note)4	15 or less	
	Fram	e syml	ool	D-frame	Exciting	current (DC) (A)	0.81	
Power supply	capacit	y	(kVA)	2.9	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	1500	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	4.77		ssible load (For details, refe	or to D 204)	
Continuous sta	all torqu	е	(N·m)	5.72	• Perili			
Momentary Max. peak torque (N·m)		ie (N·m)	14.3	During	Radial load P-direction (N)	980		
Rated current	Rated current (A(rms))		8.2	assembly	Thrust load A-direction (N)	588		
Max. current			(A(o-p))	35	,	Thrust load B-direction (N)		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	490	
frequency (time		Note)1	DV0P4284	No limit Note)2	operation	Thrust load A, B-direction (N)	196	
Rated rotation	al spee	d	(r/min)	3000	<ul> <li>For detail</li> </ul>	uils of Note)1 to Note)4, refer t	o P.303.	
Max. rotationa	l speed		(r/min)	5000	<ul> <li>Dimensions of Driver, refer to P.58.</li> <li>*1</li></ul>			
Moment of ine	rtia		Without brake	3.10				
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	3.45		*2 Basic type and RS485 communication type are		
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	"Position control type". Detail of model designation, refer to P.204.					
Rotary encode	er speci	fication	າຣ <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an increme			
	Re	solutio	n per single turn	8388608	,	n (not using multi-turn data), erv for absolute encoder.	ao not conne	

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



### **Dimensions**

Motor specifications	Key way shaft/ Round shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.257			P.258			

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

· Please contact us for more information

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### Special Order Product

# 200 V MSMF 2.0 kW [Low inertia 100 mm sq.]

Please contact us for more information.

# Specifications

				AC200 V		
Motor model *1	IP67			MSMF202L1		
		Multi	function type	MEDLT83SF		
Applicable	Model No.	RS48	5 communication type $^{*2}$	MEDLN83SG		
driver	110.	Basic	type <sup>*2</sup>	MEDLN83SE		
	Fram	e sym	bol	E-frame		
Power supply	capacit	у	(kVA)	3.8		
Rated output			(W)	2000		
Rated torque			(N·m)	6.37		
Continuous sta	all torqu	ie	(N·m)	7.64		
Momentary Ma	ax. pea	k torqı	ue (N·m)	19.1		
Rated current			(A(rms))	11.3		
Max. current			(A(o-p))	48		
Regenerative	brake		Without option	No limit Note)2		
frequency (time	s/min)	Note)1	DV0P4285	No limit Note)2		
Rated rotation	al spee	d	(r/min)	3000		
Max. rotationa	l speed		(r/min)	5000		
Moment of ine	rtia		Without brake	4.06		
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	4.41		
Recommender ratio of the loa		15 times or less				
Rotary encode	er speci	ficatio	ns*3	23-bit Absolute		
	Re	solutic	on per single turn	8388608		

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

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

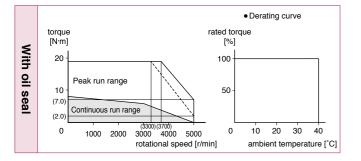
### • Permissible load (For details, refer to P.304)

<b>.</b> .	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
accountry	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



## Dimensions

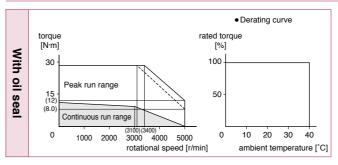
Motor specifications	Key way shaft/ Round shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.258			P.258			

Special Order 200 V MSMF 3.0 kW [Low inertia 120 mm sq.] Product

### Specifications

				AC200 V		specifications (For details		
Motor model *1			IP67	MSMF302L1		ake will be released when it is e use this for braking the motor ir		
		Multif	unction type	MFDLTA3SF	Static fri	ction torque (N·m)	12.0 0	
Applicable	Model No.	RS485	communication type *2	MFDLNA3SG	Engagin	g time (ms)	80 c	
driver	NO.	Basic	type *2	MFDLNA3SE	Releasir	ig time (ms) Note)4	15 c	
	Fram	e syml	ool	F-frame	Exciting	current (DC) (A)	0	
Power supply	capacit	4	(kVA)	5.2	Releasir	ig voltage (DC) (V)	2 or	
Rated output			(W)	3000	Exciting	voltage (DC) (V)	24	
Rated torque			(N·m)	9.55			r to P3	
Continuous sta	all torqu	е	(N·m)	11.0	Permissible load (For details, ref			
Momentary Ma	ax. peal	torque (N·m)		28.6	During	Radial load P-direction (N)	9	
Rated current			(A(rms))	18.1	assembly	Thrust load A-direction (N)	5	
Max. current			(A(o-p))	77		Thrust load B-direction (N)	6	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	4	
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	1	
Rated rotation	al spee	d	(r/min)	3000	<ul> <li>For detail</li> </ul>	ils of Note)1 to Note)4, refer t	o P.303	
Max. rotationa	l speed		(r/min)	5000	Dimensions of Driver, refer to P.59.			
Moment of ine	rtia		Without brake	7.04	*1 in the motor part number represents the specifications.			
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	7.38		*2 Basic type and RS485 communication type are		
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less	"Position control type". Detail of model designation, refer to P.204.				
Rotary encode	er speci	icatio	າຣ <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an increme system (not using multi-turn data), do not cor			
	Re	solutio	n per single turn	8388608	•	ery for absolute encoder.		

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



### **Dimensions**

Motor specifications	Key way shaft/ Round shaft								
		without brake		with brake					
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal			
Encoder connector Large size (JL10) type		P.259		—	P.259				

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Motor Specifications

A6 Series

· Please contact us for more information.

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Imformation

A6B Series Special Order Product

### Special Order Product

# 200 V MSMF 4.0 kW [Low inertia 130 mm sq.]

Please contact us for more information.

# Specifications

				AC200 V
Motor model *1	IP67			MSMF402L1
		Multi	iunction type	MFDLTB3SF
Applicable	Model No	RS48	5 communication type *2	MFDLNB3SG
driver	140.	Basic	type *2	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply capacity (kVA)				6.5
Rated output			(W)	4000
Rated torque			(N·m)	12.7
Continuous sta	all torqu	ie	(N·m)	15.2
Momentary Ma	ax. peal	38.2		
Rated current			(A(rms))	19.6
Max. current			(A(o-p))	83
Regenerative	brake		Without option	No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	4500
Moment of ine	rtia		Without brake	14.4
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	15.6
Recommended moment of inertia ratio of the load and the rotor Note)3				15 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutio	n per single turn	8388608

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

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

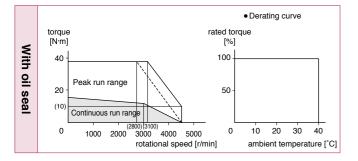
### • Permissible load (For details, refer to P.304)

<b>.</b> .	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	784
operation	Thrust load A. B-direction (N)	343

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



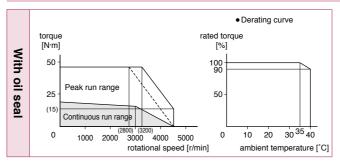
## Dimensions

Motor specifications	Key way shaft/ Round shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.259			P.260			

### **Special Order** 200 V MSMF 5.0 kW [Low inertia 130 mm sq.] Product

### Specifications

				AC200 V		specifications (For details ake will be released when it is e		
Motor model *1			IP67	MSMF502L1		n motion.		
			unction type	MFDLTB3SF	Static fri	ction torque (N·m)	22.0 or	
Applicable	Model No.	RS485	communication type *2	MFDLNB3SG	Engagin	g time (ms)	110 or	
driver	140.	Basic	type *2	MFDLNB3SE	Releasir	ng time (ms) Note)4	50 or	
	Fram	e syml	ool	F-frame	Exciting	current (DC) (A)	0.9	
Power supply	capacit	4	(kVA)	7.8	Releasir	ng voltage (DC) (V)	2 or m	
Rated output			(W)	5000	Exciting	voltage (DC) (V)	24±2	
Rated torque			(N·m)	15.9	• Dormi	ssible load (For details, refe	or to P 20/	
Continuous sta	all torqu	е	(N·m)	19.1	• Perili		980	
Momentary Ma	ax. peal	< torqu	e (N·m)	47.7	Durina	Radial load P-direction (N)		
Rated current			(A(rms))	24.0	assembly	I brust load A-direction (N)		
Max. current			(A(o-p))	102		Thrust load B-direction (N)	686	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	784	
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	343	
Rated rotation	al spee	d	(r/min)	3000	<ul> <li>For detail</li> </ul>	uils of Note)1 to Note)4, refer t	to P.303.	
Max. rotationa	l speed		(r/min)	4500		<ul> <li>Dimensions of Driver, refer to P.59.</li> <li>*1 in the motor part number represents the r specifications.</li> </ul>		
Moment of ine	rtia		Without brake	19.0				
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	20.2	<ul> <li>*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.</li> <li>*3 When using a rotary encoder as an increme system (not using multi-turn data), do not control</li> </ul>			
Recommende ratio of the loa				15 times or less				
Rotary encode	er speci	icatio	າຣ <sup>*3</sup>	23-bit Absolute				
	Re	solutio	n per single turn	8388608	•	erv for absolute encoder.		



### **Dimensions**

Motor specifications	Key way shaft/ Round shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.260			P.260			

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

· Please contact us for more information.

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

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### Special Order Product

200 V MQMF 100 W [Middle inertia Flat type 60 mm sq.]

Please contact us for more information.

# Specifications

					AC200 V		
Motor model *1			IP65	MQMF012L1			
		Multi	function type		MADLT05SF		
Applicable	Model No	RS48	5 communication typ	e *2	MADLN05SG		
driver	110.	Basic	type <sup>*2</sup>		MADLN05SE		
	Fram	e sym	bol		A-frame		
Power supply	capacit	у	(kV	A)	0.5		
Rated output			(\	N)	100		
Rated torque			(N·ı	m)	0.32		
Continuous sta	all torqu	ie	(N·ı	m)	0.33		
Momentary Ma	ax. pea	k torqı	Je (N∙i	m)	1.11		
Rated current			(A(rms	S))	1.1		
Max. current			(A(o-p	)))	5.5		
Regenerative	brake		Without option		No limit Note)2		
frequency (time	es/min)	Note)1	DV0P4281		No limit Note)2		
Rated rotation	al spee	d	(r/min)		3000		
Max. rotationa	l speed		(r/mi	in)	6500		
Moment of ine	rtia		Without brake		0.15		
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake		0.18		
Recommender ratio of the loa		e)3	20 times or less				
Rotary encode	er speci	ficatio	ns <sup>⁺3</sup>		23-bit Absolute		
	Re	solutic	on per single turn		8388608		

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

Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

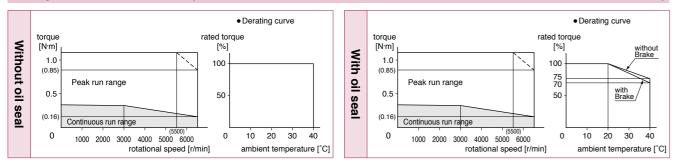
### • Permissible load (For details, refer to P.304)

<b>.</b> .	Radial load P-direction (N)	147
During assembly	Thrust load A-direction (N)	88
accountry	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A. B-direction (N)	58.8

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



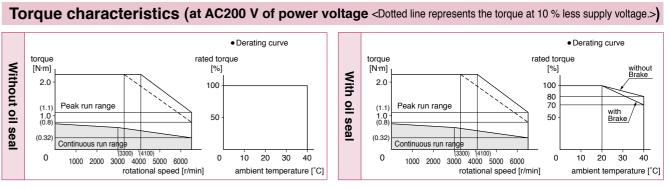
## Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.261	P.261	P.261	P.262	P.262	P.262		

**Special Order** 200 V MQMF 200 W [Middle inertia Flat type 80 mm sq.] Product

### Specifications

opcome		U						
				AC200 V		specifications (For details	-	
Motor model *1			IP65	MQMF022L1	(This brake will be released when it is energized.) Do not use this for braking the motor in motion. )			
		Multif	unction type	MADLT15SF	MADLT15SF Static friction torque (N·m)		1.6 or more	
Applicable	Model No.	RS485	5 communication type *2	MADLN15SG	Engagin	g time (ms)	70 or less	
driver	110.	Basic	type *2	MADLN15SE	Releasir	ng time (ms) Note)4	20 or less	
	Frame	e syml	lool	A-frame	Exciting	current (DC) (A)	0.36	
Power supply	capacity	4	(kVA)	0.5	Releasir	ng voltage (DC) (V)	1 or more	
Rated output			(W)	200	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	0.64	• Dormi	ssible load (For details, refe	r to P 204)	
Continuous sta	all torqu	е	(N·m)	0.76	• Perili			
Momentary Max. peak torque (N·m)		ie (N·m)	2.23	Durina	Radial load P-direction (N)	392		
Rated current			1.4	assembly	Thrust load A-direction (N)	147		
Max. current			(A(o-p))	6.9		Thrust load B-direction (N)	196	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	245	
frequency (time		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	98	
Rated rotation	al spee	d	(r/min)	3000	<ul> <li>For detail</li> </ul>	ails of Note)1 to Note)4, refer t	o P.303.	
Max. rotationa	l speed		(r/min)	6500		ons of Driver, refer to P.57.		
Moment of ine	rtia		Without brake	0.50		n the motor part number repres cations.	sents the mo	
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	0.59		type and RS485 communication	on type are	
Recommende ratio of the loa				20 times or less	Detail	"Position control type". Detail of model designation, refer to P.204.		
Rotary encode	er specit	icatio	າຣ <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an increment system (not using multi-turn data), do not connect			
	Re	solutio	n per single turn	8388608	,	ery for absolute encoder.		



### Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft								
		without brake		with brake					
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal			
Leadwire type (IP65)	P.263	P.263	P.263	P.264	P.264	P.264			

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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# Motor Specifications

A6 Series

· Please contact us for more information.

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### Special Order Product

200 V MQMF 400 W [Middle inertia Flat type 80 mm sq.]

Please contact us for more information.

# Specifications

					AC200 V		
Motor model *1			IP65		MQMF042L1		
			function type		MBDLT25SF		
Applicable	Model No.	RS48	5 communication t	ype *2	MBDLN25SG		
driver	110.	Basic	type <sup>*2</sup>		MBDLN25SE		
	Fram	e sym	bol		B-frame		
Power supply	capacit	у	(ł	kVA)	0.9		
Rated output				(W)	400		
Rated torque			I)	N·m)	1.27		
Continuous sta	all torqu	ie	1)	N∙m)	1.40		
Momentary Ma	ax. peal	k torqı	le (I	N∙m)	4.46		
Rated current			(A(r	ms))	2.1		
Max. current			(A(d	A(o-p)) 10.4			
Regenerative	brake		Without option		No limit Note)2		
frequency (time	s/min)	Note)1	DV0P4283		No limit Note)2		
Rated rotation	al spee	d	(r/min)		3000		
Max. rotationa	l speed		(r/min)		6500		
Moment of ine	rtia		Without brake	e	0.98		
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake		1.06		
Recommender ratio of the loa		20 times or less					
Rotary encode	er speci	ficatio	ns <sup>*3</sup>		23-bit Absolute		
	Re	solutic	n per single tur	'n	8388608		

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

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

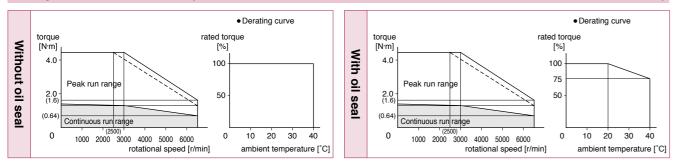
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



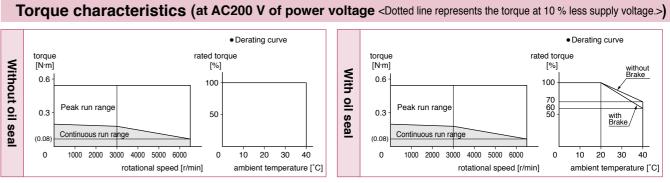
## Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.265	P.265	P.265	P.266	P.266	P.266		

**Special Order** 200 V MHMF 50 W [High inertia 40 mm sq.] Product

### **Specifications**

				AC200 V		specifications (For details			
Motor model *1			IP65	MHMF5AZL1		ake will be released when it is e use this for braking the motor in			
			unction type	MADLT05SF	Static fri	ction torque (N·m)	0.38 or more		
Applicable	Model No.	RS48	5 communication type *2	MADLN05SG	Engagin	g time (ms)	35 or less		
driver	110.	Basic	type *2	MADLN05SE	Releasir	ng time (ms) Note)4	20 or less		
	Fram	e syml	bol	A-frame	Exciting	current (DC) (A)	0.30		
Power supply	capacit	у	(kVA)	0.5	Releasir	ng voltage (DC) (V)	1 or more		
Rated output			(W)	50	Exciting	voltage (DC) (V)	24±2.4		
Rated torque			(N·m)	0.16	• Pormi	ccible load (Ear dataile, raf	r to P 304		
Continuous sta	all torqu	e	(N·m)	0.18	• Fermi	• Permissible load (For details, refer to			
Momentary Ma	ax. pea	k torqu	ıe (N·m)	0.56	During	Radial load P-direction (N)	147		
Rated current	Rated current (A(rms))		(A(rms))	1.1	assembly	Thrust load A-direction (N)	88		
Max. current			(A(o-p))	5.5		Thrust load B-direction (N)	117.6		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	68.6		
frequency (time		Note)1	DV0P4281	No limit Note)2	operation	Thrust load A, B-direction (N)	49		
Rated rotation	al spee	d	(r/min)	3000	For deta	ails of Note)1 to Note)4, refer	to P.303.		
Max. rotationa	l speed		(r/min)	6500		ions of Driver, refer to P.57.			
Moment of ine	rtia		Without brake	0.038		*1 in the motor part number represents the mospecifications.			
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	0.042		type and RS485 communicati	on type are		
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	Detail	"Position control type". Detail of model designation, refer to P.204.					
Rotary encode	er speci	ficatio	າຣ <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incrementa system (not using multi-turn data), do not connec a battery for absolute encoder.			
	Re	solutio	n per single turn	8388608	,				



### Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.267	P.267	P.267	P.268	P.268	P.268		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

Ш Series

Imformation

· Please contact us for more information.

### Special Order Product

# 200 V MHMF 100 W [High inertia 40 mm sq.]

Please contact us for more information.

## Specifications

				AC200 V		
Motor model *1			IP65	MHMF012L1		
		Multi	function type	MADLT05SF		
Applicable	Model No	RS48	5 communication type **	MADLN05SG		
driver	110.	Basic	type <sup>*2</sup>	MADLN05SE		
	Fram	e sym	bol	A-frame		
Power supply	capacit	y	(kVA)	0.5		
Rated output			(W)	100		
Rated torque			(N·m)	0.32		
Continuous sta	all torqu	e	(N·m)	0.33		
Momentary Ma	ax. peal	< torqu	ue (N·m)	1.11		
Rated current			(A(rms))	1.1		
Max. current			(A(o-p))	5.5		
Regenerative	brake		Without option	No limit Note)2		
frequency (time	es/min)	Note)1	DV0P4281	No limit Note)2		
Rated rotation	al spee	d	(r/min)	3000		
Max. rotationa	l speed		(r/min)	6500		
Moment of ine	rtia		Without brake	0.071		
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	0.074		
Recommender ratio of the loa				30 times or less		
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute		
	Re	solutic	on per single turn	8388608		

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

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

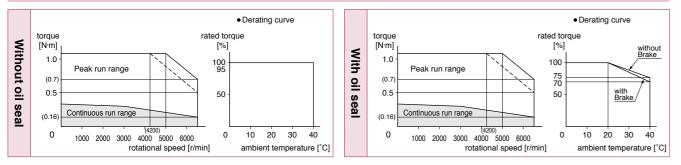
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



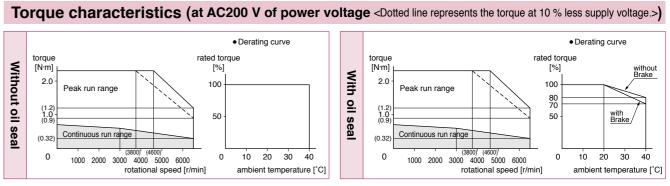
## Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.269	P.269	P.269	P.270	P.270	P.270		

**Special Order** 200 V MHMF 200 W [High inertia 60 mm sq.] Product

## **Specifications**

				AC200 V		specifications (For details			
Motor model *1			IP65	MHMF022L1	(This brake will be released when it is energized.) (Do not use this for braking the motor in motion. )				
			unction type	MADLT15SF	Static fri	Static friction torque (N·m)			
Applicable	Model No.	RS48	5 communication type *2	MADLN15SG	Engagin	g time (ms)	50 or less		
driver		Basic	type <sup>*2</sup>	MADLN15SE	Releasir	ng time (ms) Note)4	20 or less		
	Fram	e sym	loc	A-frame	Exciting	current (DC) (A)	0.36		
Power supply	capacit	y	(kVA)	0.5	Releasir	ng voltage (DC) (V)	1 or more		
Rated output			(W)	200	Exciting	voltage (DC) (V)	24±2.4		
Rated torque			(N·m)	0.64	• Dormi	ssible load (For details, refe	r to P304)		
Continuous sta	all torqu	е	(N·m)	0.76	• Ferrin		,		
Momentary Ma	ax. pea	< torqu	ıe (N⋅m)	2.23	During	Radial load P-direction (N)	392		
Rated current	Rated current (A(rms))		(A(rms))	1.4	assembly	Thrust load A-direction (N)	147		
Max. current			(A(o-p))	6.9		Thrust load B-direction (N)	196		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	245		
frequency (time		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	98		
Rated rotation	al spee	d	(r/min)	3000		ails of Note)1 to Note)4, refer t	to P.303.		
Max. rotationa	l speed		(r/min)	6500		ions of Driver, refer to P.57.			
Moment of ine	rtia		Without brake	0.29		n the motor part number repre ications.	sents the motor		
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	0.31		type and RS485 communicati	on type are		
	Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.204.				
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incrementa system (not using multi-turn data), do not connec a battery for absolute encoder.			
	Re	solutio	n per single turn	8388608					



### Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.271	P.271	P.271	P.272	P.272	P.272		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

Imformation

· Please contact us for more information.

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### Special Order Product

# 200 V MHMF 400 W [High inertia 60 mm sq.]

Please contact us for more information.

## Specifications

				AC200 V
Motor model *1			IP65	MHMF042L1
		Multi	function type	MBDLT25SF
Applicable	Model No	RS48	5 communication type	<sup>2</sup> MBDLN25SG
driver		Basic	c type *2	MBDLN25SE
	Fram	e sym	bol	B-frame
Power supply	capacit	у	(kVA	) 0.9
Rated output			(W)	) 400
Rated torque			(N·m	) 1.27
Continuous sta	all torqu	ie	(N·m	) 1.40
Momentary Ma	ax. pea	k torqu	ue (N·m	) 4.46
Rated current			(A(rms)	) 2.1
Max. current			(A(o-p)	) 10.4
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4283	No limit Note)2
Rated rotation	al spee	d	(r/min	) 3000
Max. rotationa	l speed		(r/min	) 6500
Moment of ine	rtia		Without brake	0.56
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	0.58
Recommender ratio of the loa				30 times or less
Rotary encode	er speci	ficatio	ns <sup>⁺3</sup>	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

•	,
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

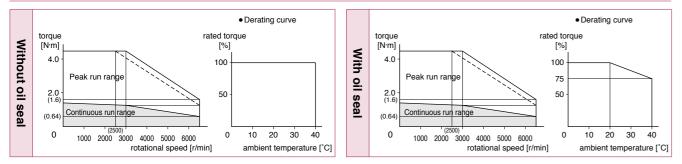
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. • Dimensions of Driver, refer to P.57.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



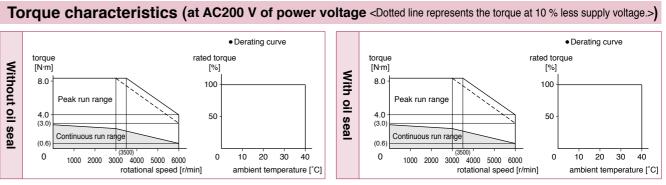
## Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft						
		without brake		with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Leadwire type (IP65)	P.273	P.273	P.273	P.274	P.274	P.274	

**Special Order** 200 V MHMF 750 W [High inertia 80 mm sq.] Product

## **Specifications**

				AC200 V		specifications (For details			
Motor model *1			IP65	MHMF082L1	(This brake will be released when it is energized. Do not use this for braking the motor in motion.				
			unction type	MCDLT35SF	Static fri	ction torque (N·m)	3.8 or more		
Applicable	Model No.	RS48	5 communication type *2	MCDLN35SG	Engagin	g time (ms)	70 or less		
driver	110.	Basic	type *2	MCDLN35SE	Releasir	ng time (ms) Note)4	20 or less		
	Fram	e sym	lool	C-frame	Exciting	current (DC) (A)	0.42		
Power supply	capacit	у	(kVA)	1.8	Releasir	ng voltage (DC) (V)	1 or more		
Rated output			(W)	750	Exciting	voltage (DC) (V)	24±2.4		
Rated torque			(N·m)	2.39	• Dormi	anible land (Ear dataile, rafe	r to P 204		
Continuous sta	all torqu	ie	(N·m)	2.86	• Perili	Permissible load (For details, refer to F			
Momentary Ma	ax. pea	k torqu	ıe (N·m)	8.36	During	Radial load P-direction (N)	686		
Rated current	Rated current (A(rms))		(A(rms))	3.8	assembly	Thrust load A-direction (N)	294		
Max. current			(A(o-p))	18.8		Thrust load B-direction (N)	392		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	392		
frequency (time		Note)1	DV0P4283	No limit Note)2	operation	Thrust load A, B-direction (N)	147		
Rated rotation	al spee	d	(r/min)	3000	For deta	ails of Note)1 to Note)4, refer t	to P.303.		
Max. rotationa	l speed		(r/min)	6000		ons of Driver, refer to P.58.			
Moment of ine	rtia		Without brake	1.56		*1 in the motor part number represents the m specifications.			
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	1.66		type and RS485 communicati	on type are		
Recommended moment of inertia ratio of the load and the rotor Note)3		20 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.204.					
Rotary encode	er speci	ficatio	າຣ <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incrementa system (not using multi-turn data), do not connec a battery for absolute encoder.			
	Re	solutio	n per single turn	8388608	,				



### Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.275	P.275	P.275	P.276	P.276	P.276		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

m Series

Imformation

· Please contact us for more information.

### Special Order Product

# 200 V MHMF 1000 W [High inertia 80 mm sq.]

Please contact us for more information.

## Specifications

				AC200 V
Motor model *1			IP65	MHMF092L1
		Multi	function type	MDDLT55SF
Applicable	Model No	RS48	5 communication type	<sup>2</sup> MDDLN55SG
driver		Basic	c type *2	MDDLN55SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	) 2.4
Rated output			(W)	1000
Rated torque			(N·m)	3.18
Continuous sta	all torqu	ie	(N·m)	3.34
Momentary Ma	ax. peal	k torqu	ue (N·m)	) 11.1
Rated current			(A(rms))	) 5.7
Max. current			(A(o-p))	28.2
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	2.03
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	2.13
Recommender ratio of the loa				15 times or less
Rotary encode	er speci	ficatio	ns <sup>⁺3</sup>	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

, e	,
Static friction torque (N·m)	3.8 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±2.4

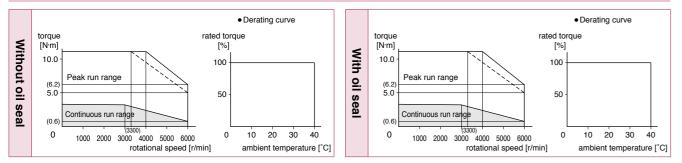
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



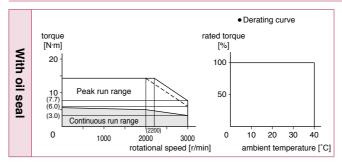
### Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Leadwire type (IP65)	P.277	P.277	P.277	P.278	P.278	P.278		

**Special Order** 200 V MHMF 1.0 kW [High inertia 130 mm sq.] Product

# Specifications

Specifica		3						
				AC200 V	• Brake specifications (For detai			
Motor model *1			IP67	MHMF102L1	(This br (Do not	ake will be released when it is e use this for braking the motor ir	n motion.	
		Multif	unction type	MDDLT45SF	Static fri	ction torque (N·m)	13.7 or mo	
Applicable	Model No.	RS485	5 communication type *2	MDDLN45SG	Engagin	g time (ms)	100 or les	
driver	140.	Basic	type <sup>*2</sup>	MDDLN45SE	Releasir	ng time (ms) Note)4	50 or les	
	Frame	e syml	ool	D-frame	Exciting	current (DC) (A)	0.79	
Power supply	capacit	/	(kVA)	2.4	1	ng voltage (DC) (V)	2 or mor	
Rated output			(W)	1000	]	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	4.77	- Dormi	coible lood (For details, rafe		
Continuous sta	all torqu	е	(N·m)	5.25	• Permi	ssible load (For details, refe		
Momentary Ma	ax. peal	< torqu	ie (N·m)	14.3	During	Radial load P-direction (N)	980	
Rated current			(A(rms))	5.2	assembly	Thrust load A-direction (N)	588	
Max. current			(A(o-p))	22		Thrust load B-direction (N)	686	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	490	
requency (time		Note)1	DV0P4284	No limit Note)2	operation	Thrust load A, B-direction (N)	196	
Rated rotation	al spee	d	(r/min)	2000	<ul> <li>For detail</li> </ul>	ails of Note)1 to Note)4, refer t	o P.303.	
Max. rotationa	l speed		(r/min)	3000		<ul> <li>Dimensions of Driver, refer to P.58.</li> <li>*1</li></ul>		
Moment of ine	rtia		Without brake	22.9				
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	24.1				
Recommende ratio of the loa				5 times or less	<ul> <li>"Position control type".</li> <li>Detail of model designation, refer to P.204.</li> <li>*3 When using a rotary encoder as an increme system (not using multi-turn data), do not conr</li> </ul>			
Rotary encode	er specit	icatio	າຣ <sup>*3</sup>	23-bit Absolute				
	Res	solutio	n per single turn	8388608		erv for absolute encoder.	uo not con	



### **Dimensions**

Motor specifications	Key way shaft/ Round shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.279		—	P.279			

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

· Please contact us for more information.

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

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### Special Order Product

# 200 V MHMF 1.5 kW [High inertia 130 mm sq.]

Please contact us for more information.

# **Specifications**

					AC200 V
Motor model *1	IP67				MHMF152L1
		Multi	unction type		MDDLT55SF
Applicable	Model No.	RS48	5 communication typ	0e *2	MDDLN55SG
driver	110.	Basic	type <sup>*2</sup>		MDDLN55SE
	Fram	e sym	loc		D-frame
Power supply	capacit	у	(k\	/A)	2.9
Rated output			(	W)	1500
Rated torque			(N·	·m)	7.16
Continuous sta	all torqu	le	(N·	·m)	7.52
Momentary Ma	ax. pea	k torqu	ie (N·	·m)	21.5
Rated current			(A(rm	s))	8.0
Max. current			(A(o-	p))	34
Regenerative	brake		Without option		No limit Note)2
frequency (time	s/min)	Note)1	DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/m	iin)	2000
Max. rotationa	l speed		(r/m	iin)	3000
Moment of ine	rtia		Without brake		33.4
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake		34.6
Recommender ratio of the loa		te)3	5 times or less		
Rotary encode	er speci	ficatio	าร <sup>*3</sup>		23-bit Absolute
	Re	solutio	n per single turn		8388608

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

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

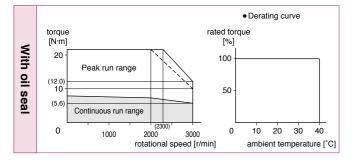
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



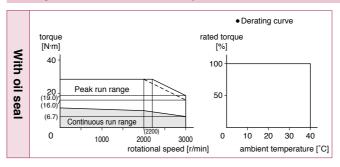
## Dimensions

Motor specifications	Key way shaft/ Round shaft						
		without brake		with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.279			P.280		

**Special Order** 200 V MHMF 2.0 kW [High inertia 176 mm sq.] Product

## Specifications

				AC200 V		specifications (For details		
Motor model *1			IP67	MHMF202L1		ake will be released when it is e use this for braking the motor in		
		Multif	unction type	MEDLT83SF	Static fri	ction torque (N·m)	25.0 or m	
Applicable	Model No.	RS485	communication type *2	MEDLN83SG	Engagin	g time (ms)	80 or les	
driver	NO.	Basic	type *2	MEDLN83SE	Releasir	ng time (ms) Note)4	25 or les	
	Frame	e syml	ool	E-frame	Exciting	current (DC) (A)	1.29	
Power supply	capacity	/	(kVA)	3.8	Releasir	ng voltage (DC) (V)	2 or mor	
Rated output			(W)	2000	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	9.55	• Dormi	ssible load (For details, refe	or to D 204)	
Continuous sta	all torqu	е	(N·m)	11.5	• Perili	•		
Momentary Ma	ax. peak	torqu	e (N·m)	28.6	During	Radial load P-direction (N)	1666	
Rated current			(A(rms))	12.5	assembly	Thrust load A-direction (N)	784	
Max. current			(A(o-p))	53		Thrust load B-direction (N)	980	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	784	
frequency (time		Note)1	DV0P4285	No limit Note)2	operation	Thrust load A, B-direction (N)	343	
Rated rotation	al speed	ł	(r/min)	2000	<ul> <li>For detail</li> </ul>	uils of Note)1 to Note)4, refer t	to P.303.	
Max. rotationa	l speed		(r/min)	3000		<ul> <li>Dimensions of Driver, refer to P.59.</li> <li>*1 in the motor part number represents the r specifications.</li> </ul>		
Moment of ine	rtia		Without brake	55.7				
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	61.0		type and RS485 communicati	on type are	
Recommende ratio of the loa				5 times or less	"Positi Detail	"Position control type". Detail of model designation, refer to P.204.		
Rotary encode	er specif	icatior	າຣ <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an increme system (not using multi-turn data), do not conr			
	Res	olutio	n per single turn	8388608		erv for absolute encoder.	uo not con	



### **Dimensions**

Motor specifications	Key way shaft/ Round shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.280			P.280			

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

· Please contact us for more information.

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

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### Special Order Product

# 200 V MHMF 3.0 kW [High inertia 176 mm sq.]

Please contact us for more information.

## **Specifications**

					AC200 V
Motor model *1	IP67			MHMF302L1	
		Multif	iunction type		MFDLTA3SF
Applicable	Model No.	RS48	5 communication type	*2	MFDLNA3SG
driver	110.	Basic	type <sup>*2</sup>		MFDLNA3SE
	Fram	e sym	lod		F-frame
Power supply	capacit	у	(kVA	()	5.2
Rated output	Rated output			/)	3000
Rated torque			(N·m	I)	14.3
Continuous sta	Continuous stall torque			ı)	17.2
Momentary Ma	ax. pea	k torqu	ue (N·m	I)	43.0
Rated current			(A(rms)	))	17.0
Max. current			(A(o-p)	))	72
Regenerative	brake		Without option		No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285×2		No limit Note)2
Rated rotation	al spee	d	(r/min	ı)	2000
Max. rotationa	l speed		(r/min	ı)	3000
Moment of ine	rtia		Without brake		85.3
of rotor (×10 <sup>-4</sup> kg⋅m <sup>2</sup> )			With brake		90.7
	Recommended moment of inertia ratio of the load and the rotor			)3	5 times or less
Rotary encode	er speci	ficatio	ns *3		23-bit Absolute
	Re	solutio	n per single turn		8388608

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

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

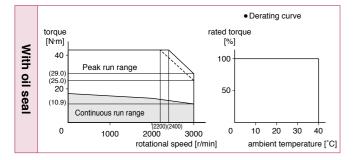
### • Permissible load (For details, refer to P.304)

<b>.</b> .	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N)	784
assembly	Thrust load B-direction (N)	n (N) 784 n (N) 980 n (N) 784
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



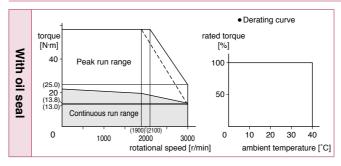
### Dimensions

	Key way shaft/ Round shaft						
	Motor specifications		without brake		with brake		
		without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
	Encoder connector Large size (JL10) type		P.2	281		P.2	281

**Special Order** 200 V MHMF 4.0 kW [High inertia 176 mm sq.] Product

## Specifications

Specifica		5							
				AC200 V		specifications (For details			
Motor model <sup>1</sup> IP67		MHMF402L1		ake will be released when it is e use this for braking the motor in					
		Multif	unction type	MFDLTB3SF	Static friction torque (N·m) 25.		25.0 or more		
Applicable	Model No.	RS485	5 communication type *2	MFDLNB3SG	Engagin	g time (ms)	80 or less		
driver	NO.	Basic	type *2	MFDLNB3SE	Releasir	ng time (ms) Note)4	25 or less		
	Frame	e syml	ool	F-frame	Exciting	current (DC) (A)	1.29		
Power supply	capacity	/	(kVA)	6.5	Releasir	ng voltage (DC) (V)	2 or more		
Rated output			(W)	4000	Exciting	Exciting voltage (DC) (V)			
Rated torque			(N·m)	19.1					
Continuous sta	all torqu	е	(N·m)	22.0	• Permi	ssible load (For details, refe			
Momentary Max. peak torque (N·m)		ie (N·m)	57.3	During	Radial load P-direction (N)	1666			
Rated current	-		(A(rms))	20	assembly	Thrust load A-direction (N)	784		
Max. current			(A(o-p))	85		Thrust load B-direction (N)	980		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	784		
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	343		
Rated rotation	al spee	ł	(r/min)	2000	<ul> <li>For detail</li> </ul>	For details of Note)1 to Note)4, refer to P.303.			
Max. rotationa	l speed		(r/min)	3000		<ul> <li>Dimensions of Driver, refer to P.59.</li> <li>*1 in the motor part number represents the mospecifications.</li> <li>*2 Basic type and RS485 communication type are</li> </ul>			
Moment of ine	rtia		Without brake	104					
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	110					
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	"Position control type". Detail of model designation, refer to P.204.						
Rotary encode	er specif	icatior	າຣ <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incremen			
	Res	olutio	n per single turn	8388608	-	system (not using multi-turn data), do not conner a battery for absolute encoder.			



### **Dimensions**

Motor specifications	Key way shaft/ Round shaft							
		without brake		with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.2	281		P.2	282		

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

· Please contact us for more information.

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

### Special Order Product

# 200 V MHMF 5.0 kW [High inertia 176 mm sq.]

Please contact us for more information.

# **Specifications**

				AC200 V
Motor model *1	IP67			MHMF502L1
		Multi	iunction type	MFDLTB3SF
Applicable	Model No	RS48	5 communication type *2	MFDLNB3SG
driver	140.	Basic	type <sup>*2</sup>	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.8
Rated output			(W)	5000
Rated torque			(N·m)	23.9
Continuous sta	all torqu	ie	(N·m)	26.3
Momentary Ma	ax. pea	k torqı	ie (N·m)	71.6
Rated current			(A(rms))	23.3
Max. current			(A(o-p))	99
Regenerative	brake		Without option	No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	146
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	151
Recommender ratio of the loa				5 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	n per single turn	8388608

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

Static friction torque (N·m)	44.1 or more			
Engaging time (ms)	150 or less			
Releasing time (ms) Note)4	30 or less			
Exciting current (DC) (A)	1.29			
Releasing voltage (DC) (V)	2 or more			
Exciting voltage (DC) (V)	24±2.4			

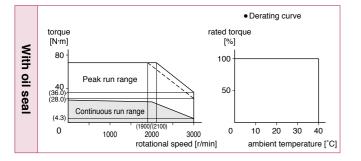
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



### Dimensions

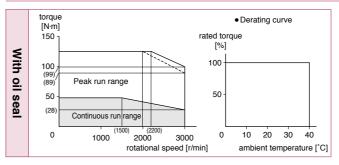
Motor specifications	Key way shaft/ Round shaft						
		without brake		with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.2	282		P.2	282	

Special Order Product	200 V	MHMF	7.5 kW	[High inertia 176
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### **Specifications**

				AC200 V		specifications (For details			
Motor model *1			IP67	MHMF752L1		(This brake will be released when it is energized. Do not use this for braking the motor in motion.)			
		Multif	unction type	MGDLTC3SF	Static fr	iction torque (N·m)	63.0 or mo		
Applicable	Model No.	RS485	5 communication type *2	_	Engagir	ng time (ms)	200 or les		
driver	140.	Basic	type *2	_	Releasi	ng time (ms) Note)4	80 or less		
	Fram	e syml	ool	G-frame	Exciting	current (DC) (A)	1.29		
Power supply	capacit	у	(kVA)	11	Releasi	ng voltage (DC) (V)	2 or more		
Rated output			(W)	7500	Exciting	voltage (DC) (V)	15 or less		
Rated torque			(N·m)	47.8	• Dorm	issible load (For details, refe	r to P304		
Continuous sta	all torqu	ie	(N·m)	47.8	• Ferm				
Momentary Max. peak torque (N·m)		ie (N·m)	125	During	Radial load P-direction (N)	2058			
Rated current			(A(rms))	40.2	assembly	Thrust load A-direction (N)	980		
Max. current			(A(o-p))	154	-	Thrust load B-direction (N)	1176		
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	1176		
frequency (time		Note)1	DV0P4285×3	No limit Note)2	operation	Thrust load A, B-direction (N)	490		
Rated rotation	al spee	d	(r/min)	1500	For det	For details of Note)1 to Note)4, refer to P.303.			
Max. rotationa	l speed		(r/min)	3000		Dimensions of Driver, refer to P.60.			
Moment of ine	rtia		Without brake	272		n the motor part number repre	sents the mo		
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	279		specifications. *2 Basic type and RS485 communication type are			
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	"Posit Detail	"Position control type". Detail of model designation, refer to P.204.					
Rotary encode	er speci	fication	າຣ <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an incremen system (not using multi-turn data), do not conne a battery for absolute encoder.			
	Re	solutio	n per single turn	8388608	,				

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



### **Dimensions**

Motor specifications	Key way shaft/ Round shaft								
		without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal			
Encoder connector Large size (JL10) type		P.283			P.283	_			

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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### mm sq.]

Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

· Please contact us for more information.

-238-

### Special Order Product

# 200 V MDMF 1.0 kW [Middle inertia 130 mm sq.]

Please contact us for more information.

# Specifications

					AC200 V
Motor model *1			IP67		MDMF102L1
		Multi	iunction type		MDDLT45SF
Applicable	Model No.	RS48	5 communication type	e *2	MDDLN45SG
driver	110.	Basic	type *2		MDDLN45SE
	Fram	e sym	lod		D-frame
Power supply	capacit	у	(kV	A)	2.4
Rated output			(V	V)	1000
Rated torque			(N·r	n)	4.77
Continuous sta	all torqu	ie	(N·r	n)	5.25
Momentary Ma	ax. peal	k torqu	ıe (N∙r	n)	14.3
Rated current			(A(rms	5))	5.2
Max. current			(A(o-p	))	22
Regenerative	brake		Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/mi	n)	2000
Max. rotationa	l speed		(r/mi	n)	3000
Moment of ine	rtia		Without brake		6.18
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake		7.40
Recommender ratio of the loa				e)3	10 times or less
Rotary encode	er speci	ficatio	ns <sup>*3</sup>		23-bit Absolute
	Re	solutic	n per single turn		8388608

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

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

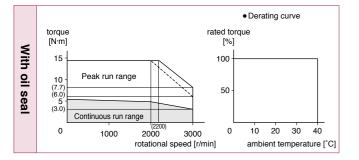
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



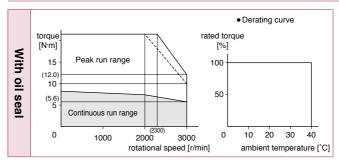
## Dimensions

	Key way shaft/ Round shaft						
Motor specifications	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.2	283		P.2	284	

**Special Order** 200 V MDMF 1.5 kW [Middle inertia 130 mm sq.] Product

## Specifications

Specifica							
				AC200 V		specifications (For details ake will be released when it is e	
Motor model *1			IP67	MDMF152L1		use this for braking the motor in	
		Multif	unction type	MDDLT55SF	Static fri	ction torque (N⋅m)	13.7 or mo
Applicable	Model No.	RS485	5 communication type *2	MDDLN55SG	Engagin	g time (ms)	100 or les
driver		Basic	type *2	MDDLN55SE	Releasir	ig time (ms) Note)4	50 or les
	Frame	e syml	loc	D-frame	Exciting	current (DC) (A)	0.79
Power supply	capacity	/	(kVA)	2.9	Releasir	ig voltage (DC) (V)	2 or more
Rated output			(W)	1500	Exciting	voltage (DC) (V)	24±2.4
Rated torque			(N·m)	7.16	• Dormi	ssible load (For details, refe	r to P 304)
Continuous sta	all torqu	е	(N·m)	7.52	• Fermi	•	
Momentary Ma	ax. peak	c torqu	ie (N·m)	21.5	Durina	Radial load P-direction (N)	980
Rated current			(A(rms))	8.0	assembly	Thrust load A-direction (N)	588
Max. current			(A(o-p))	34		Thrust load B-direction (N)	686
Regenerative	orake		Without option	No limit Note)2	During	Radial load P-direction (N)	490
frequency (time	s/min) I	Note)1	DV0P4284	No limit Note)2	operation	Thrust load A, B-direction (N)	196
Rated rotation	al speed	b	(r/min)	2000		ils of Note)1 to Note)4, refer t	to P.303.
Max. rotationa	l speed		(r/min)	3000		ons of Driver, refer to P.58.	
Moment of ine	rtia		Without brake	9.16		the motor part number repre cations.	sents the m
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	10.4		type and RS485 communicati	on type are
Recommende ratio of the loa				10 times or less	Detail	on control type". of model designation, refer to	
Rotary encode	r specif	icatio	າຣ <sup>*3</sup>	23-bit Absolute		using a rotary encoder as	
	Res	solutio	n per single turn	8388608	•	n (not using multi-turn data), erv for absolute encoder.	uo not coni



### **Dimensions**

	Key way shaft/ Round shaft								
Motor specifications		without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal			
Encoder connector Large size (JL10) type		P.2	284	—	P.2	284			

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Motor Specifications

A6 Series

· Please contact us for more information.

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

A6B Series Special Order Product

Imformation

### Special Order Product

# 200 V MDMF 2.0 kW [Middle inertia 130 mm sq.]

Please contact us for more information.

## Specifications

				AC200 V
Motor model *1			IP67	MDMF202L1
		Multi	function type	MEDLT83SF
Applicable	Model No	RS48	5 communication type	<sup>2</sup> MEDLN83SG
driver		Basic	c type *2	MEDLN83SE
	Fram	e sym	bol	E-frame
Power supply	capacit	y	(kVA	) 3.8
Rated output			(W)	) 2000
Rated torque			(N·m	9.55
Continuous sta	all torqu	e	(N·m	) 10.0
Momentary Ma	ax. peal	< torqu	ue (N·m	) 28.6
Rated current			(A(rms)	9.9
Max. current			(A(o-p)	) 42
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4285	No limit Note)2
Rated rotation	al spee	d	(r/min	) 2000
Max. rotationa	l speed		(r/min	) 3000
Moment of ine	rtia		Without brake	12.1
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	13.3
Recommender ratio of the loa				10 times or less
Rotary encode	er speci	ficatio	ns <sup>⁺3</sup>	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

1 -	1
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

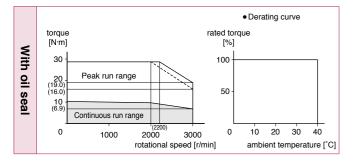
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



## Dimensions

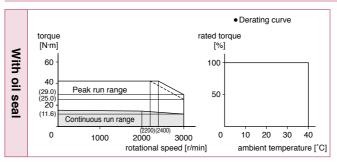
	Key way shaft/ Round shaft						
Motor specifications	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.2	285		P.2	285	

**Special Order** 200 V MDMF 3.0 kW [Middle inertia 130 mm sq.] Product

### Specifications

•								
				AC200 V		specifications (For de ake will be released when i		
Motor model *1			IP67	MDMF302L1		use this for braking the moto		
		Multif	unction type	MFDLTA3SF	Static fri	ction torque (N·m)		
Applicable	Model No.	RS485	communication type *2	MFDLNA3SG	Engagin	g time (ms)		
driver		Basic	type *2	MFDLNA3SE	Releasir	ng time (ms) Note)4		
	Frame	e syml	lool	F-frame	Exciting	current (DC) (A)		
Power supply	capacity	/	(kVA)	5.2	Releasir	ng voltage (DC) (V)		
Rated output	Rated output (W)		3000	Exciting	voltage (DC) (V)			
Rated torque			(N·m)	14.3	• Dormi	ssible load (For details, ro		
Continuous sta	all torqu	е	(N·m)	15.0	• Feilin			
Momentary Ma	ax. peak	torqu	e (N·m)	43.0	During	Radial load P-direction (N)		
Rated current			(A(rms))	16.4	assembly	Thrust load A-direction (N)		
Aax. current			(A(o-p))	70		Thrust load B-direction (N)		
legenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)		
requency (time	es/min) I	Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (I		
lated rotation	al speed	ł	(r/min)	2000	<ul> <li>For detail</li> </ul>	uils of Note)1 to Note)4, refe		
Max. rotationa	l speed		(r/min)	3000		ons of Driver, refer to P.59.		
Moment of ine	rtia		Without brake	18.6		the motor part number representations.		
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	19.6		type and RS485 communic		
Recommende ratio of the loa				10 times or less	Detail	on control type". of model designation, refer		
Rotary encode	er specif	icatior	າຣ <sup>∗3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increme system (not using multi-turn data), do not conr		
	Res	olutio	n per single turn	8388608		r (not using multi-turn data		

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



### **Dimensions**

	Key way shaft/ Round shaft								
Motor specifications	without brake			with brake					
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal			
Encoder connector Large size (JL10) type		P.285			P.286				

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

· Please contact us for more information

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### Special Order Product

# 200 V MDMF 4.0 kW [Middle inertia 176 mm sq.]

Please contact us for more information.

# Specifications

				AC200 V
Motor model *1			IP67	MDMF402L1
		Multi	function type	MFDLTB3SF
Applicable	Model No	RS48	5 communication type *2	MFDLNB3SG
driver	110.	Basic	c type <sup>*2</sup>	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply capacity (kVA)				6.5
Rated output (W)				4000
Rated torque			(N·m)	19.1
Continuous sta	all torqu	22.0		
Momentary Ma	ax. pea	k torqu	ue (N·m)	57.3
Rated current			(A(rms))	20.0
Max. current			(A(o-p))	85
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	46.9
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	52.3
Recommender ratio of the loa		10 times or less		
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

1	1
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

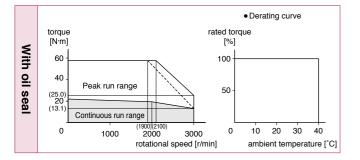
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



## Dimensions

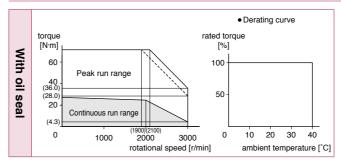
Motor specifications	Key way shaft/ Round shaft							
	without brake			with brake				
	without oil seal	without oil seal with oil seal with oil with oil seal		without oil seal with oil sea		with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.286			P.286			

**Special Order** 200 V MDMF 5.0 kW [Middle inertia 176 mm sq.] Product

## Specifications

				AC200 V		specifications (F	
Motor model *1			IP67	MDMF502L1		ake will be released whe use this for braking the r	
		Multif	unction type	MFDLTB3SF	Static fri	ction torque (N·m)	
Applicable	Model No.	RS485	communication type *2	MFDLNB3SG	Engagin	Engaging time (ms)	
driver		Basic	type *2	MFDLNB3SE	Releasir	ig time (ms) Note)4	
	Frame	syml	ool	F-frame	Exciting	current (DC) (A)	
Power supply	capacity	,	(kVA)	7.8	Releasir	ig voltage (DC) (V)	
Rated output			(W)	5000	Exciting	voltage (DC) (V)	
Rated torque			(N·m)	23.9	• Dormi	ssible load (For details	
Continuous sta	all torqu	е	(N·m)	26.3	• Fermi		
Momentary Ma	ax. peak	torqu	e (N·m)	71.6	During	Radial load P-direction (N)	
Rated current			(A(rms))	23.3	assembly	Thrust load A-direction (N	
Max. current			(A(o-p))	99		Thrust load B-direction (N	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (I	
frequency (time	s/min) M	lote)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction	
Rated rotation	al speed	ł	(r/min)	2000		ils of Note)1 to Note)4, r	
Max. rotationa	l speed		(r/min)	3000		ons of Driver, refer to P.5	
Moment of ine	rtia		Without brake	58.2		the motor part number cations.	
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	63.0		type and RS485 commu	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	"Position control type". Detail of model designation, refer to P.204.			
Rotary encode	er specif	icatio	າຣ <sup>*3</sup>	23-bit Absolute		using a rotary encoder n (not using multi-turn da	
	Res	olutio	n per single turn	8388608		erv for absolute encoder.	

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



### Dimensions

	Key way shaft/ Round shaft								
Motor specifications	without brake			with brake					
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal			
Encoder connector Large size (JL10) type		P.287			P.287				

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Motor Specifications

A6 Series

A6 Family

A6N Series

A6B Series Special Order Product

ш Series

Imformation

· Please contact us for more information.

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### Special Order Product

# 200 V MDMF 7.5 kW [Middle inertia 176 mm sq.]

Please contact us for more information.

## **Specifications**

				AC200 V		
Motor model *1			IP67	MDMF752L1		
		Multi	function type	MGDLTC3SF		
Applicable	Model No	RS48	5 communication type *2	_		
driver	140.	Basic	c type *2	—		
	Fram	e sym	bol	G-frame		
Power supply capacity (kVA)				11		
Rated output			(W)	7500		
Rated torque			(N·m)	47.8		
Continuous stall torque (N·m)				47.8		
Momentary Max. peak torque (N·m)				125		
Rated current	Rated current			40.2		
Max. current			(A(o-p))	154		
Regenerative	brake		Without option	No limit Note)2		
frequency (time	es/min)	Note)1	DV0P4285×3	No limit Note)2		
Rated rotation	al spee	d	(r/min)	1500		
Max. rotationa	l speed		(r/min)	3000		
Moment of ine	rtia		Without brake	122		
of rotor ( $\times 10^{-4}$	kg∙m²)		With brake	127		
Recommender ratio of the loa		10 times or less				
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute		
	Re	solutic	on per single turn	8388608		

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

Static friction torque (N·m)	63.0 or more					
Engaging time (ms)	200 or less					
Releasing time (ms) Note)4	80 or less					
Exciting current (DC) (A)	1.29					
Releasing voltage (DC) (V)	2 or more					
Exciting voltage (DC) (V)	15 or less					

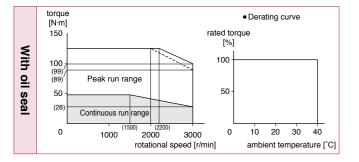
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.60.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



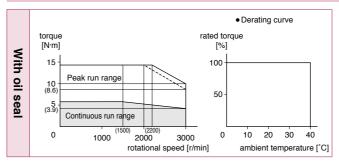
## Dimensions

Motor specifications	Key way shaft/ Round shaft							
	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.287			P.288	_		

Special Order 200 V MGMF 0.85 kW Product

### Specifications

				AC200 V			specifications (For details	. ,	
Motor model <sup>*1</sup> IP67		MGMF092L1		(This brake will be released when it is energized Do not use this for braking the motor in motion.					
		Multif	unction type	MDDLT45SF	Static	c frict	ion torque (N·m)	13.7 or more	
Applicable	Model No.	RS485	5 communication type *2	MDDLN45SG	Enga	ging	time (ms)	100 or less	
driver		Basic	type *2	MDDLN45SE	Relea	asing	time (ms) Note)4	50 or less	
	Fram	e syml	lool	D-frame	Exciti	ing c	urrent (DC) (A)	0.79	
Power supply	capacit	у	(kVA)	2.0	Relea	asing	voltage (DC) (V)	2 or more	
Rated output			(W)	850	Exciti	ing v	oltage (DC) (V)	24±2.4	
Rated torque			(N·m)	5.41	• Dori	Permissible load (For details, refer to P.304)			
Continuous sta	Continuous stall torque (N·m)			5.41	· Fell	-		,	
Momentary Ma	Momentary Max. peak torque (N·m) Rated current (A(rms))		ie (N·m)	14.3	During	-	Radial load P-direction (N)	980	
Rated current			5.9	assemt		Thrust load A-direction (N)	588		
Max. current			(A(o-p))	22			Thrust load B-direction (N)	686	
Regenerative	brake		Without option	No limit Note)2	During		Radial load P-direction (N)	686	
frequency (time		Note)1	DV0P4284	No limit Note)2	operati	ion	Thrust load A, B-direction (N)	196	
Rated rotation	al spee	d	(r/min)	1500	• For d	For details of Note)1 to Note)4, refer to P.303.			
Max. rotationa	l speed		(r/min)	3000		Dimensions of Driver, refer to P.58.			
Moment of ine	rtia		Without brake	6.18			the motor part number repre ations.	sents the motor	
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	7.40			pe and RS485 communicati	on type are	
	Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	Det	"Position control type". Detail of model designation, refer to P.204.				
Rotary encode	er speci	fication	ns <sup>∗3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment system (not using multi-turn data), do not conne a battery for absolute encoder.			
	Re	solutio	n per single turn	8388608					



### Dimensions

	Key way shaft/ Round shaft							
Motor specifications	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.288		—	P.288			

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

Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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Middle inertia Low speed/	
High torque type 130 mm sq.	

Motor Specifications

A6 Series

· Please contact us for more information.

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

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### Special Order 200 V MGMF 1.3 kW Product

Middle inertia Low speed/ High torque type 130 mm sq. Please contact us for more information.

## **Specifications**

					AC200 V		
Motor model *1			IP67		MGMF132L1		
		Multi	function type		MDDLT55SF		
Applicable	Model No.	RS48	5 communication typ	0e <sup>*2</sup>	MDDLN55SG		
driver		Basic	type <sup>*2</sup>		MDDLN55SE		
	Fram	e sym	lod		D-frame		
Power supply	capacit	у	(k\	/A)	2.6		
Rated output			(	W)	1300		
Rated torque			(N·	·m)	8.28		
Continuous sta	all torqu	ie	(N·	·m)	8.28		
Momentary Ma	ax. peal	k torqu	le (N·	·m)	23.3		
Rated current			(A(rm	s))	9.3		
Max. current			(A(o-	p))	37		
Regenerative	brake		Without option		No limit Note)2		
frequency (time	s/min)	Note)1	DV0P4284		No limit Note)2		
Rated rotation	al spee	d	(r/m	in)	1500		
Max. rotationa	l speed		(r/m	in)	3000		
Moment of ine	rtia		Without brake		9.16		
of rotor (×10 <sup>-4</sup> kg⋅m <sup>2</sup> ) W			With brake		10.4		
Recommended moment of inertia ratio of the load and the rotor Note)3			te)3	10 times or less			
Rotary encode	er speci	ficatio	ns <sup>*3</sup>		23-bit Absolute		
	Re	solutio	n per single turn		8388608		

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

1 0	/
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

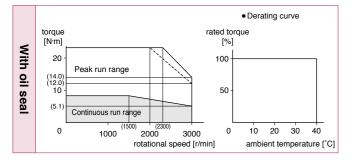
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.58.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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

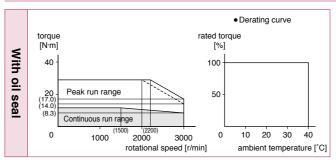


## Dimensions

	Key way shaft/ Round shaft						
Motor specifications	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.289			P.289		

Special Order Product	200 V	MGMF	1.8	kW	Midd

Special Order Product	200 V	M	GMF 1.8 kW	Middle inertia Low spee High torque type 130 m		Motor Specifications	A6 Series	
						Please contact u	is for more information.	
Specifica	ation	S						
				AC200 V	• Brake	e specifications (For deta	ulls, refer to P.305)	
Motor model *1			IP67	MGMF182L1		rake will be released when it is use this for braking the motor		
Wotor moder		N A IA: 6			```	<u> </u>	,	
	Model		unction type	MEDLT83SF		iction torque (N·m)	13.7 or more	
Applicable	No.		communication type *2	MEDLN83SG	Engagir	ng time (ms)	100 or less	
driver		Basic	type *2	MEDLN83SE	Releasi	ng time (ms) Note)4	50 or less	
	Fram	e symt	lool	E-frame	Exciting	current (DC) (A)	0.79	
Power supply	capacit	y	(kVA)	3.4	Releasing voltage (DC) (V) 2 or more		2 or more	
Rated output			(W)	1800	Exciting voltage (DC) (V) 24±2.4		24±2.4	
Rated torque			(N·m)	11.5	- <b>D</b> errecie cible le ch (Fan dataile referete D004)			
Continuous sta	Continuous stall torque (N·m)		11.5	• Perm	Permissible load (For details, refer to F			
Momentary Ma	ax. pea	< torqu	e (N·m)	28.7	During	Radial load P-direction (N)	980	
Rated current			(A(rms))	11.8	assembly	Thrust load A-direction (N)	588	
Max. current			(A(o-p))	42		Thrust load B-direction (N)	686	
Regenerative	hrake		Without option	No limit Note)2	During	Radial load P-direction (N)	686	
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N	l) 196	
Rated rotation	al spee	d	(r/min)	1500	For deta	ails of Note)1 to Note)4, refe	r to P.303.	
Max. rotationa	l speed		(r/min)	3000		ions of Driver, refer to P.59.		
Moment of ine	rtia		Without brake	12.1		n the motor part number rep ications.	resents the motor	
of rotor (×10 <sup>-4</sup>	of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With brake			13.3		type and RS485 communication	ation type are	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	"Position control type". Detail of model designation, refer to P.204.				
Rotary encode	er speci	ficatior	IS <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an incremental			
Resolution per single turn			n per single turn	8388608	system (not using multi-turn data), do not connect a battery for absolute encoder.			



### Dimensions

	Key way shaft/ Round shaft							
Motor specifications	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.289			P.290			

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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A6 Family

A6N Series

A6B

Series

E Series

Imformation

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

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### Special Order 200 V MGMF 2.4 kW Product

[Middle inertia Low speed/ High torque type 176 mm sq. · Please contact us for more information.

### **Specifications**

				AC200 V
Motor model *1			IP67	MGMF242L1
		Multi	function type	MEDLT93SF
Applicable	Model No	RS48	5 communication type *2	MEDLN93SG
driver	110.	Basic	type <sup>*2</sup>	MEDLN93SE
	Fram	e sym	bol	E-frame
Power supply	capacit	у	(kVA)	4.5
Rated output			(W)	2400
Rated torque			(N·m)	15.3
Continuous sta	all torqu	ie	(N·m)	15.3
Momentary Ma	ax. pea	k torqı	ue (N·m)	45.2
Rated current			(A(rms))	16.0
Max. current			(A(o-p))	67
Regenerative	brake		Without option	No limit Note)2
frequency (time	s/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	1500
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	46.9
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )			With brake	52.3
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encode	er speci	ficatio	ns <sup>*3</sup>	23-bit Absolute
	Re	solutic	on per single turn	8388608

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

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

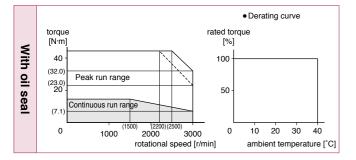
### • Permissible load (For details, refer to P.304)

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

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



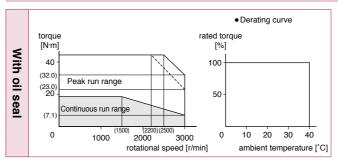
## Dimensions

Motor specifications	Key way shaft/ Round shaft						
	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.290			P.290		

Special Order Middle inertia Lov 200 V MGMF 2.9 kW Product High torque type

# **Specifications**

				AC200 V		specifications (For details		
Motor model *1			IP67	MGMF292L1	(This brake will be released when it is energized. (Do not use this for braking the motor in motion.)			
		Multif	unction type	MFDLTB3SF	Static fri	ction torque (N·m)	25.0 or more	
Applicable	Model No.	RS485	5 communication type *2	MFDLNB3SG	Engagin	g time (ms)	80 or less	
driver		Basic	type *2	MFDLNB3SE	Releasir	ng time (ms) Note)4	25 or less	
	Frame	ə syml	loc	F-frame	Exciting	current (DC) (A)	1.29	
Power supply	capacity	4	(kVA)	5.0	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	2900	Exciting	voltage (DC) (V)	24±2.4	
Rated torque			(N·m)	18.5	• Dormi	Permissible load (For details, refer to P.304)		
Continuous stall torque (N·m)		18.5	· Fermi					
Momentary Ma	Momentary Max. peak torque (N·m)		45.2	During	Radial load P-direction (N)	1666		
Rated current	Rated current (A(rms))		19.3	assembly	Thrust load A-direction (N)	784		
Max. current			(A(o-p))	67		Thrust load B-direction (N)	980	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	1176	
frequency (time		Note)1	DV0P4285×2	No limit Note)2	operation	Thrust load A, B-direction (N)	490	
Rated rotation	al spee	d	(r/min)	1500	<ul> <li>For detail</li> </ul>	ails of Note)1 to Note)4, refer	to P.303.	
Max. rotationa	l speed		(r/min)	3000		<ul> <li>Dimensions of Driver, refer to P.59.</li> <li>*1 in the motor part number represents the mospecifications.</li> <li>*2 Basic type and RS485 communication type are</li> </ul>		
Moment of ine	rtia		Without brake	46.9				
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	52.3				
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	Detail	"Position control type". Detail of model designation, refer to P.204.				
Rotary encode	er specif	ication	15 <sup>*3</sup>	23-bit Absolute		*3 When using a rotary encoder as an increment system (not using multi-turn data), do not connect		
	Res	solutio	n per single turn	8388608		erv for absolute encoder.	do not connect	



### Dimensions

Motor specifications	Key way shaft/ Round shaft							
	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.291			P.291			

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

w speed/ 176 mm sq.	1
176 mm sq.	1

Motor Specifications

A6 Series

· Please contact us for more information

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

A6N Series

Imformation

### Special Order 200 V MGMF 4.4 kW Product

[Middle inertia Low speed/ High torque type 176 mm sq. · Please contact us for more information.

## **Specifications**

					AC200 V	
Motor model *1		IP67			MGMF442L1	
		Multi	iunction type		MFDLTB3SF	
Applicable	Model No	RS48	5 communication type	ə *2	MFDLNB3SG	
driver		Basic	type *2		MFDLNB3SE	
	Fram	e sym	lod		F-frame	
Power supply	capacit	у	(kV	A)	7.0	
Rated output			(V	V)	4400	
Rated torque			(N·r	n)	28.0	
Continuous sta	all torqu	ie	(N·r	n)	28.0	
Momentary Ma	ax. pea	k torqu	ıe (N∙r	n)	70.0	
Rated current			(A(rms	5))	27.2	
Max. current			(A(o-p	))	96	
Regenerative	brake		Without option		No limit Note)2	
frequency (time	s/min)	Note)1	DV0P4285×2		No limit Note)2	
Rated rotation	al spee	d	(r/mi	/min) 1500		
Max. rotationa	l speed		(r/mi	n)	3000	
Moment of ine	rtia		Without brake		58.2	
of rotor (×10 <sup>-4</sup> kg⋅m <sup>2</sup> ) W			With brake		63.0	
Recommender ratio of the loa				ə)3	10 times or less	
Rotary encode	er speci	ficatio	ns <sup>*3</sup>		23-bit Absolute	
	Re	solutic	n per single turn		8388608	

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

Static friction torque (N·m)	44.1 or more					
Engaging time (ms)	150 or less					
Releasing time (ms) Note)4	30 or less					
Exciting current (DC) (A)	1.29					
Releasing voltage (DC) (V)	2 or more					
Exciting voltage (DC) (V)	24±2.4					

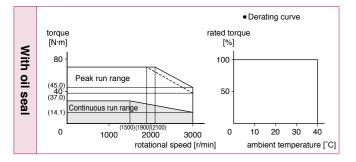
### • Permissible load (For details, refer to P.304)

<b>_</b> .	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N) Thrust load B-direction (N)	784
accountry		980
During	Radial load P-direction (N)	1470
operation	Thrust load A, B-direction (N)	490

• For details of Note)1 to Note)4, refer to P.303. · Dimensions of Driver, refer to P.59.

- \*1 [] in the motor part number represents the motor specifications.
- \*2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.204.
- \*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



## Dimensions

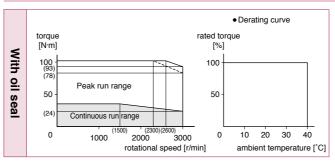
Motor specifications	Key way shaft/ Round shaft						
	without brake			with brake			
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal	
Encoder connector Large size (JL10) type		P.291			P.292		

**Special Order** Middle inertia Lov 200 V MGMF 5.5 kW Product High torque type

# **Specifications**

				AC200 V		specifications (For details		
Motor model *1	IP67		IP67	MGMF552L1	This brake will be released when it is er Do not use this for braking the motor in			
	Multifunction type		unction type	MGDLTC3SF	Static fri	Static friction torque (N·m)		
Applicable	Model No.	RS485	communication type *2	_	Engagin	g time (ms)	200 or less	
driver	110.	Basic	type <sup>*2</sup>	_	Releasir	ng time (ms) Note)4	80 or less	
	Frame	e syml	lool	G-frame	Exciting	current (DC) (A)	1.29	
Power supply	capacity	/	(kVA)	8.5	Releasir	ng voltage (DC) (V)	2 or more	
Rated output			(W)	5500	Exciting	voltage (DC) (V)	15 or less	
Rated torque			(N·m)	35.0	Permissible load (For details, refer to P.304)			
Continuous stall torque (N·m)		35.0			,			
Momentary Max. peak torque (N·m)		e (N·m)	102	During	Radial load P-direction (N)	2058		
Rated current (A(rms))		(A(rms))	39.8	assembly	Thrust load A-direction (N)	980		
Max. current			(A(o-p))	164		Thrust load B-direction (N)	1176	
Regenerative	brake		Without option	No limit Note)2	During	Radial load P-direction (N)	1176	
frequency (time		Note)1	DV0P4285×3	No limit Note)2	operation	Thrust load A, B-direction (N)	490	
Rated rotation	al speed	d	(r/min)	1500	<ul> <li>For detail</li> </ul>	ails of Note)1 to Note)4, refer t	to P.303.	
Max. rotationa	l speed		(r/min)	3000		Dimensions of Driver, refer to P.60.		
Moment of ine	rtia		Without brake	83.0		<ul> <li>*1</li></ul>		
of rotor (×10 <sup>-4</sup>	kg∙m²)		With brake	88.0				
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	"Position control type". Detail of model designation, refer to P.204.					
Rotary encode	er specif	icatior	າຣ <sup>*3</sup>	23-bit Absolute	*3 When using a rotary encoder as an incremer system (not using multi-turn data), do not conn a battery for absolute encoder.			
	Res	olutio	n per single turn	8388608				

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



### Dimensions

Motor specifications	Key way shaft/ Round shaft							
	without brake			with brake				
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal		
Encoder connector Large size (JL10) type		P.292		—	P.292	_		

**<Cautions>** Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

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w	sp	eed/ mm		1
1	76	mm	sq.	l

Motor Specifications

A6 Series

A6 Family

A6N Series

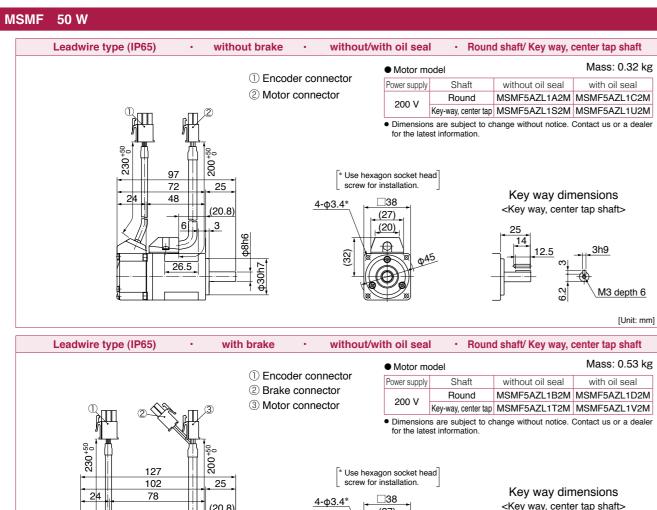
A6B Series Special Order Product

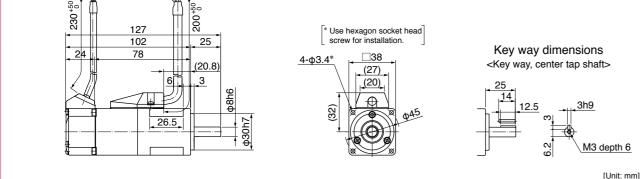
ш Series

Imformation

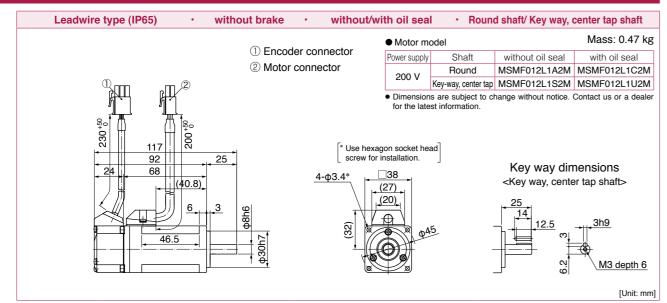
· Please contact us for more information.

### Special Order MSMF 50 W to 100 W Product



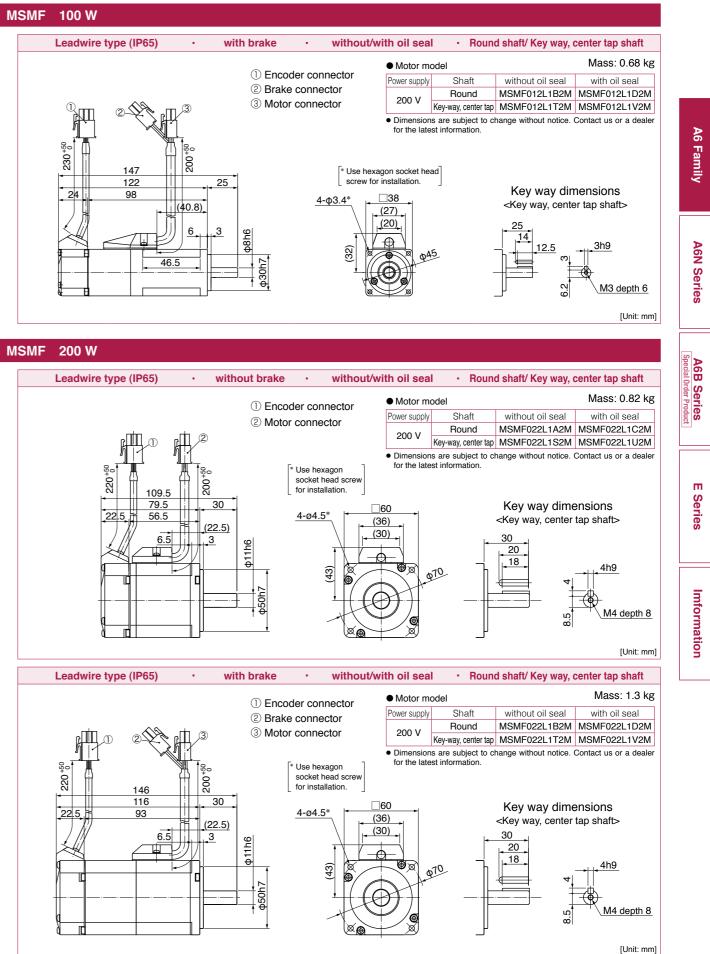


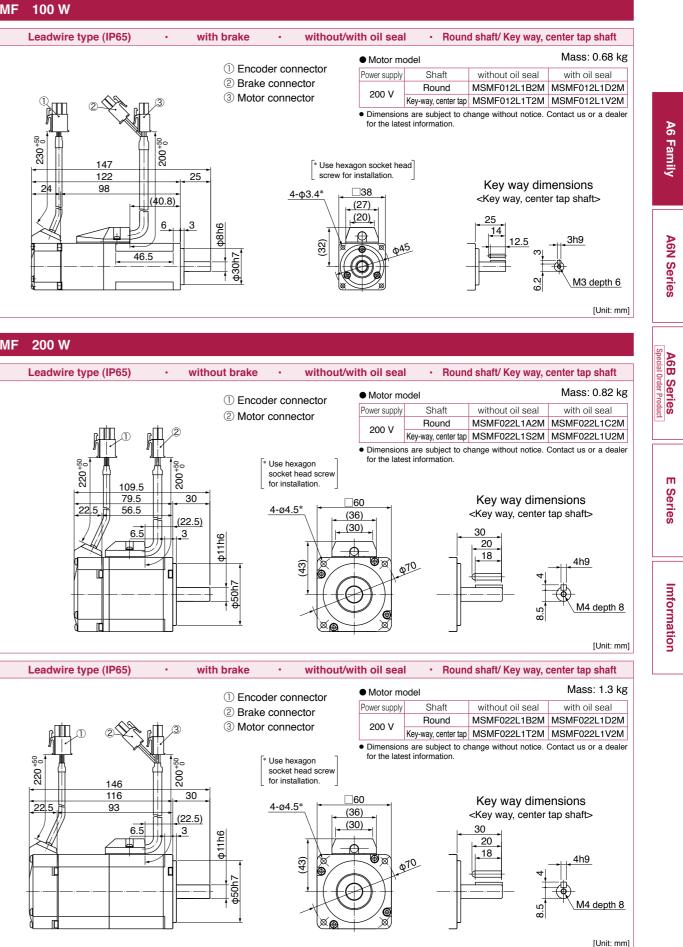
**MSMF 100 W** 



\* For motors specifications, refer to P.211, P.212.

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\* For motors specifications, refer to P.212, P.213.

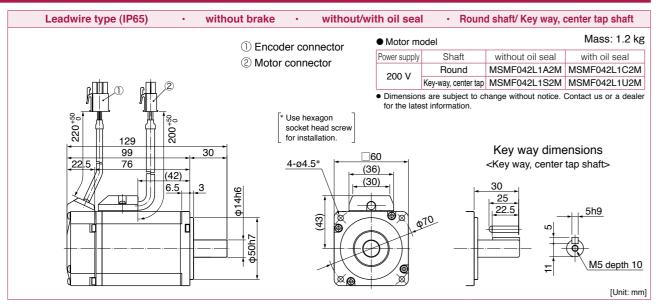
# Dimensions

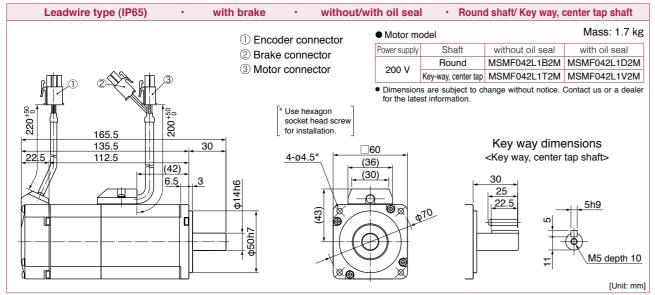
## A6 Series

Dimensions

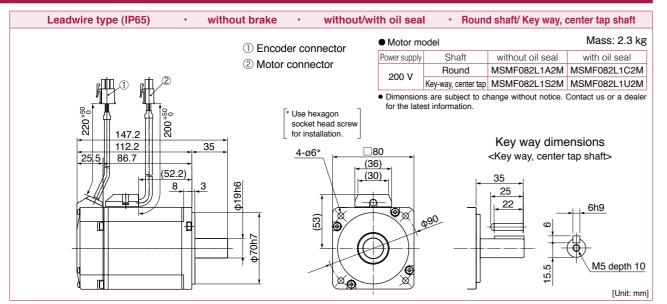
### Special Order MSMF 400 W to 750 W Product

# **MSMF 400 W**



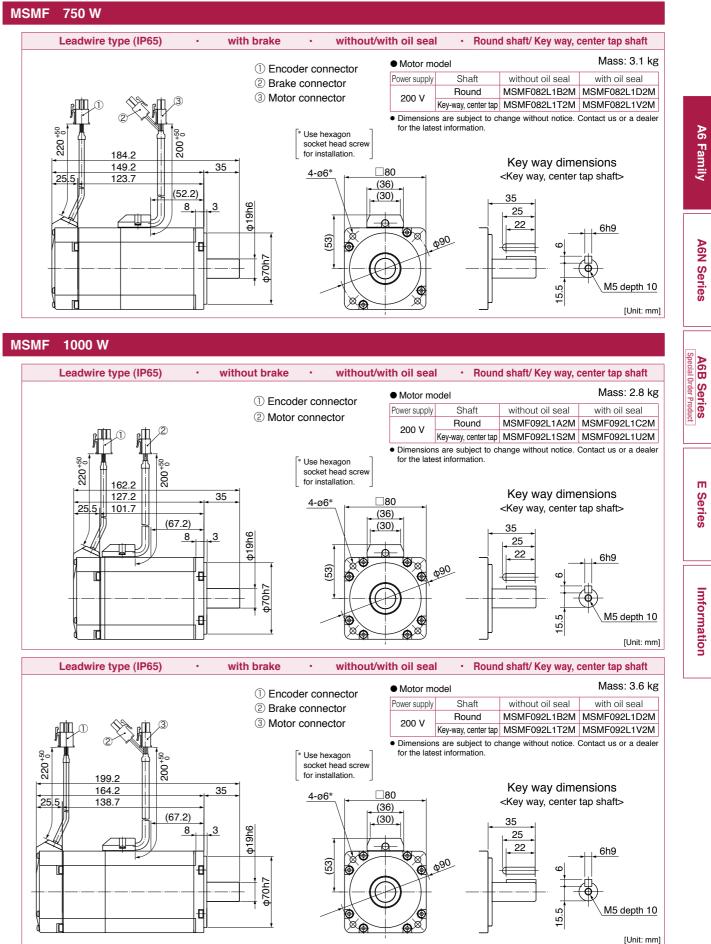


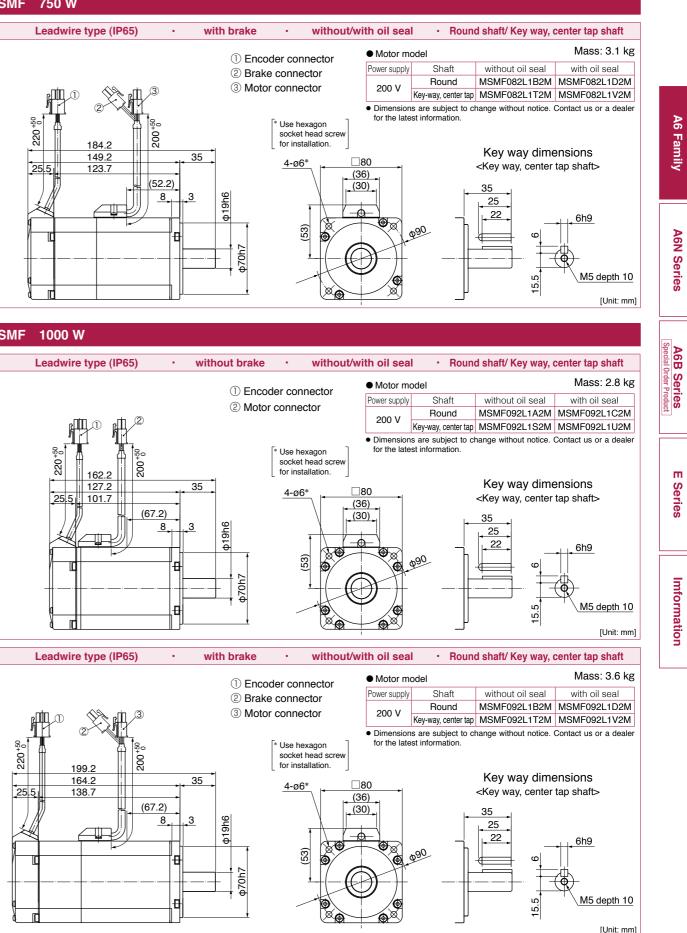
## **MSMF 750 W**

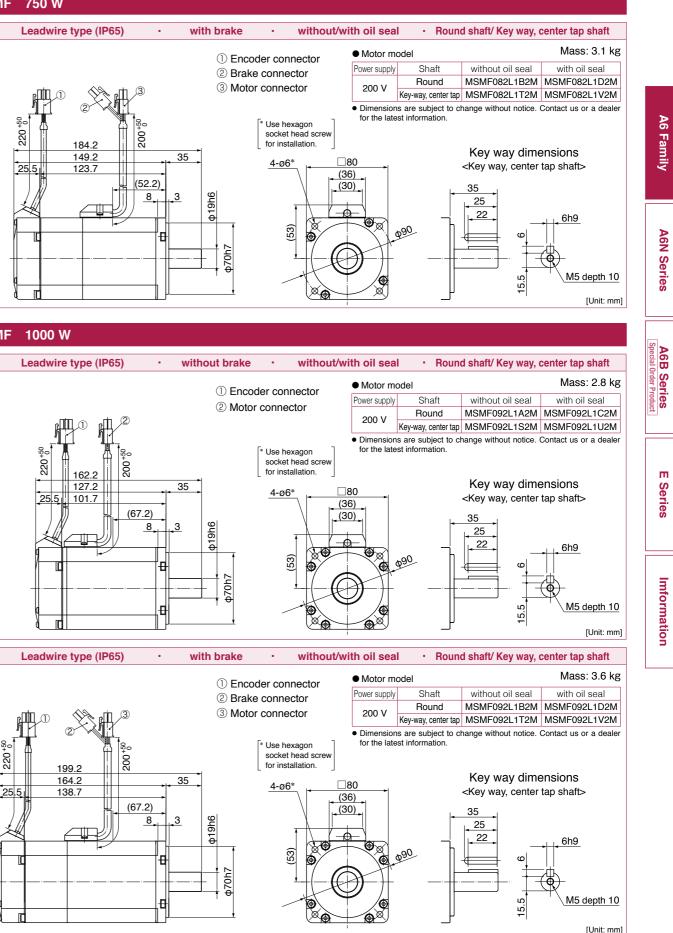


\* For motors specifications, refer to P.214, P.215.

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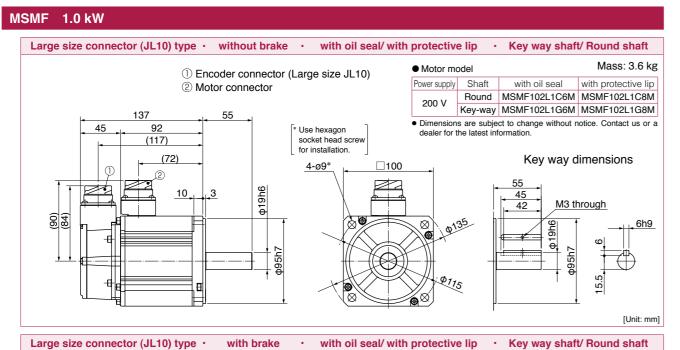


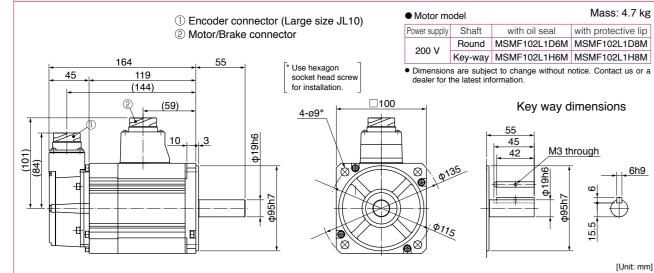
\* For motors specifications, refer to P.215, P.216

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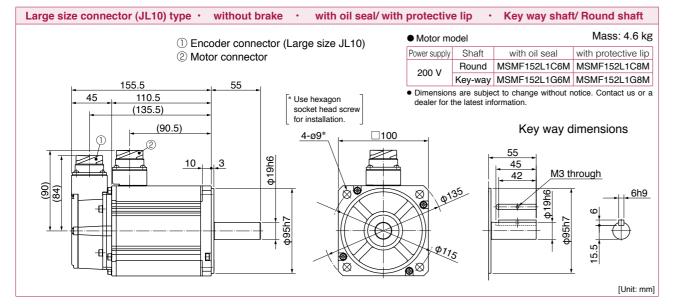
# Dimensions

### Special Order MSMF 1.0 kW to 1.5 kW Product



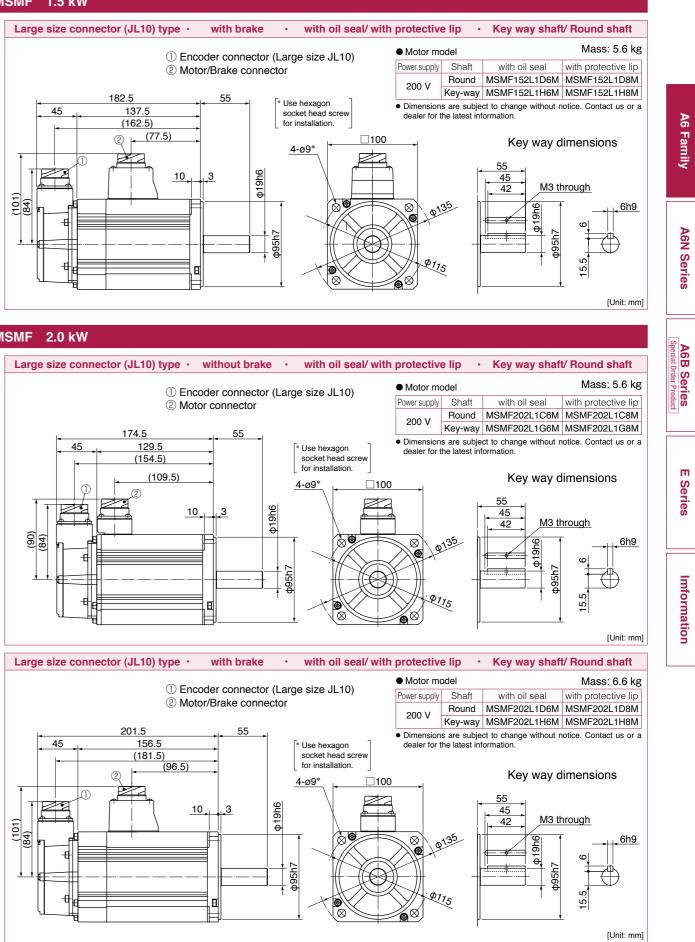


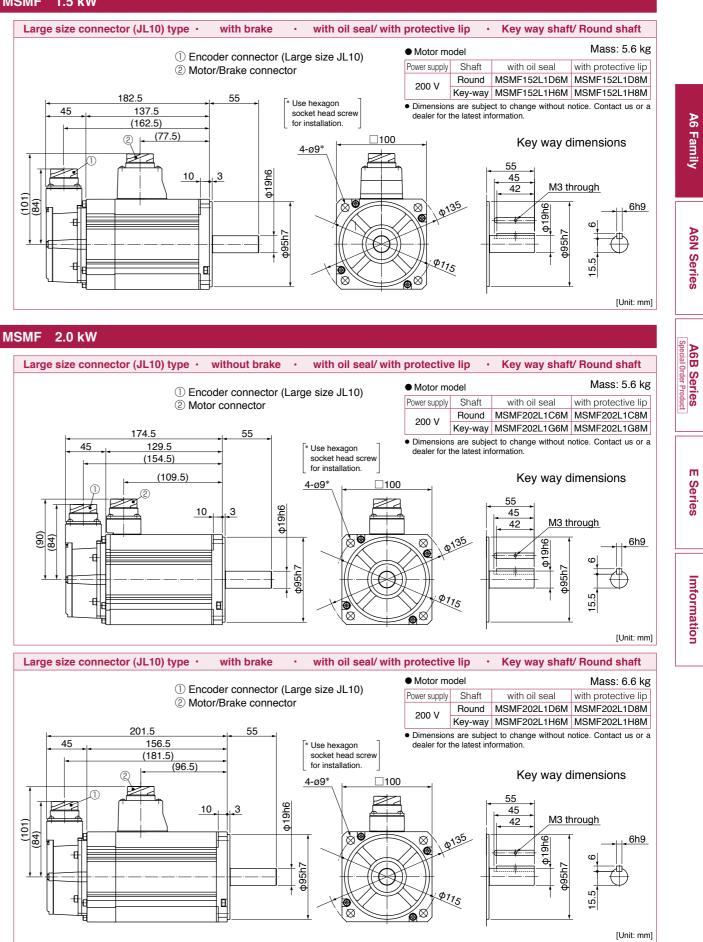
# MSMF 1.5 kW

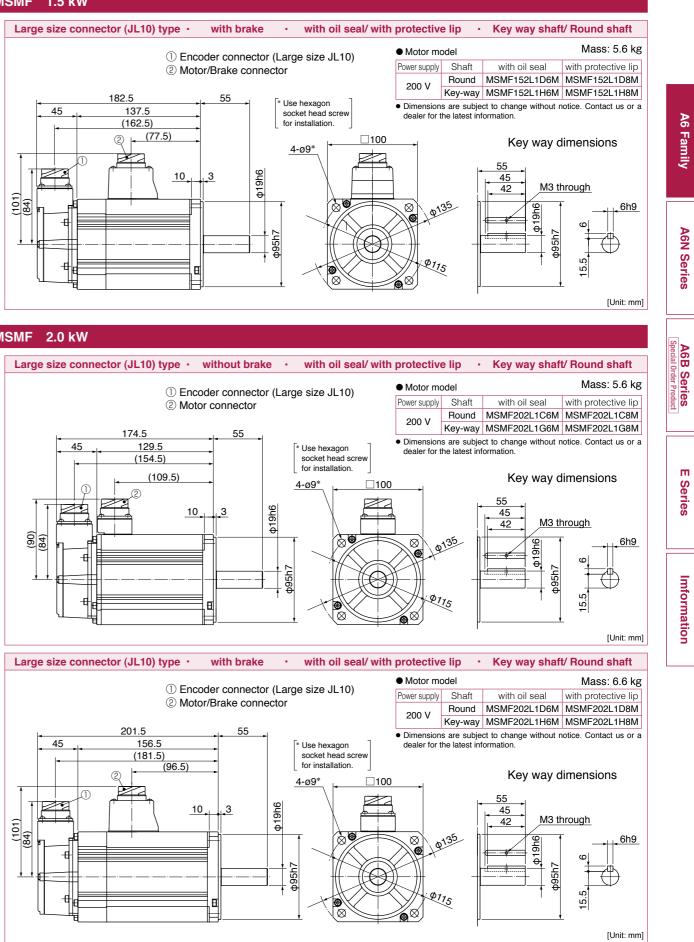


\* For motors specifications, refer to P.217, P.218.

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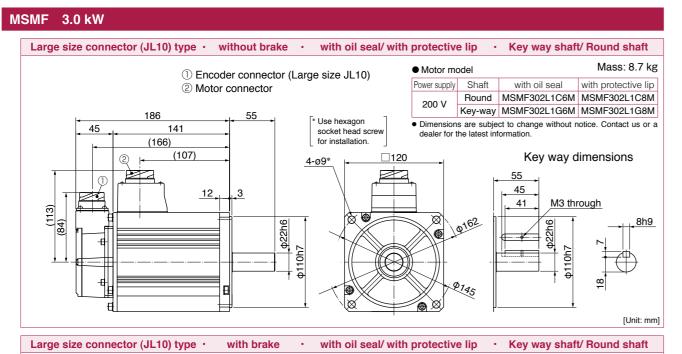


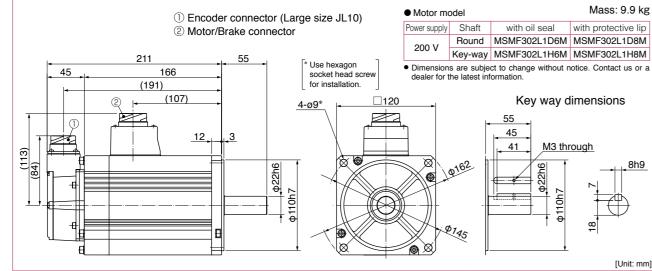
\* For motors specifications, refer to P.218, P.219

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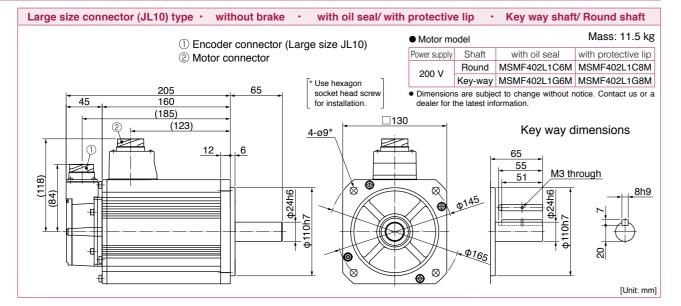
# Dimensions

### Special Order MSMF 3.0 kW to 4.0 kW Product





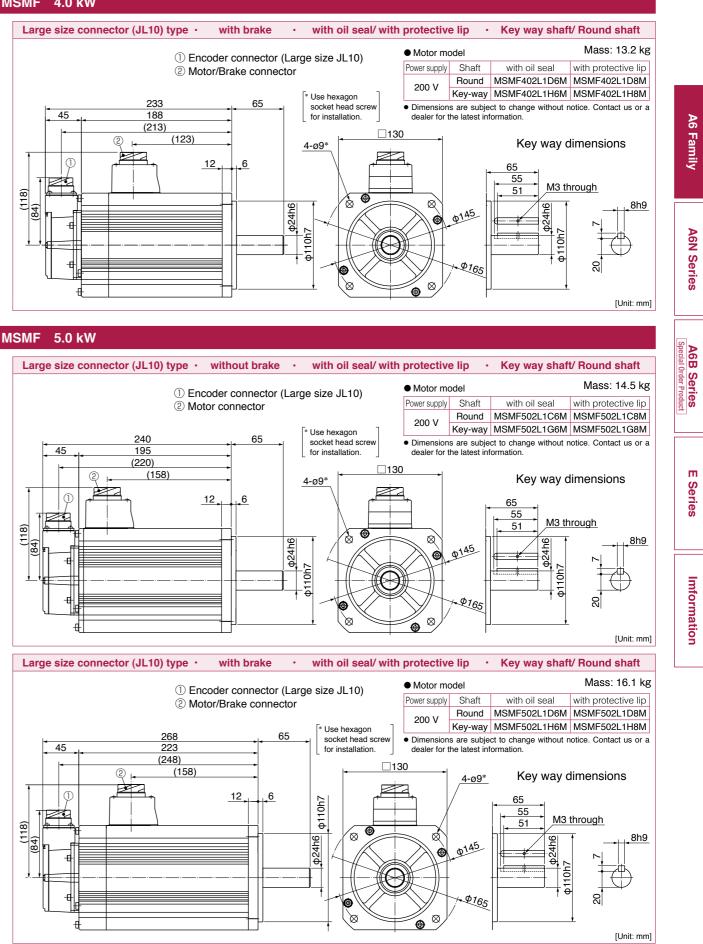
# MSMF 4.0 kW

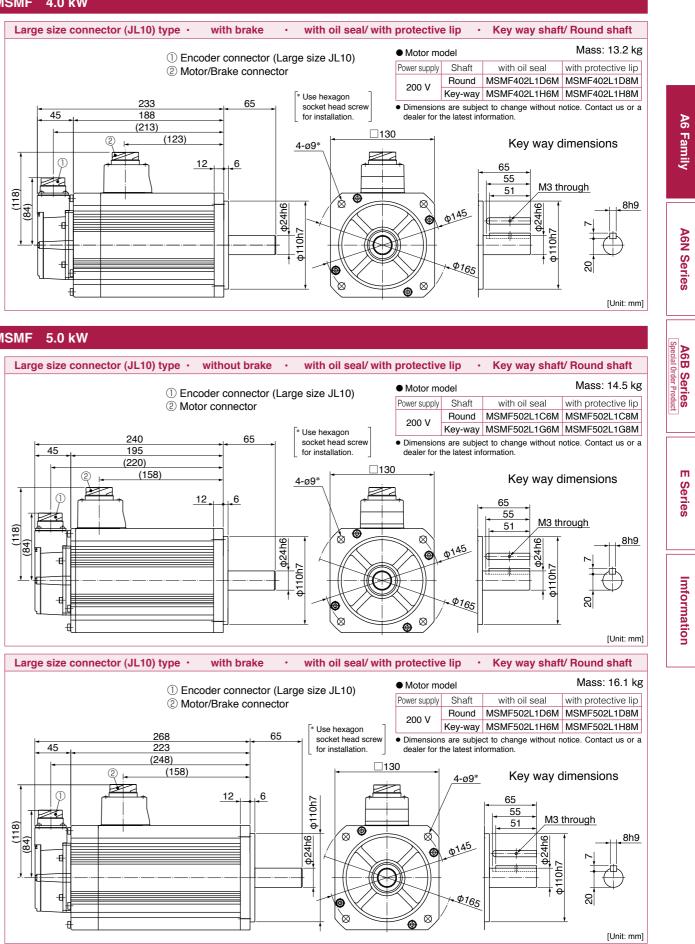


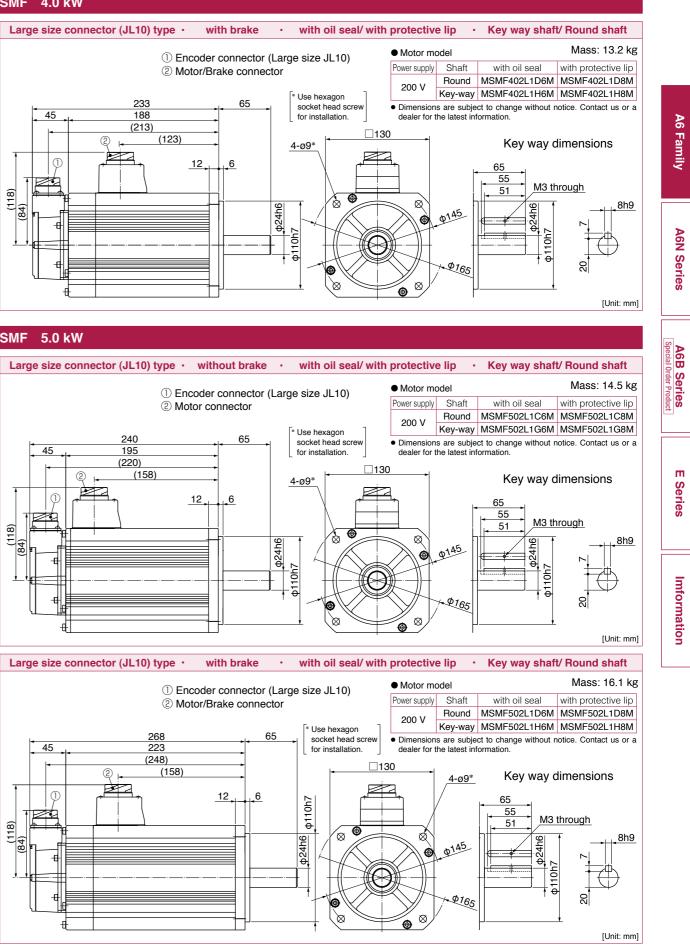
\* For motors specifications, refer to P.220, P.221

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### MSMF 4.0 kW







\* For motors specifications, refer to P.221, P.222

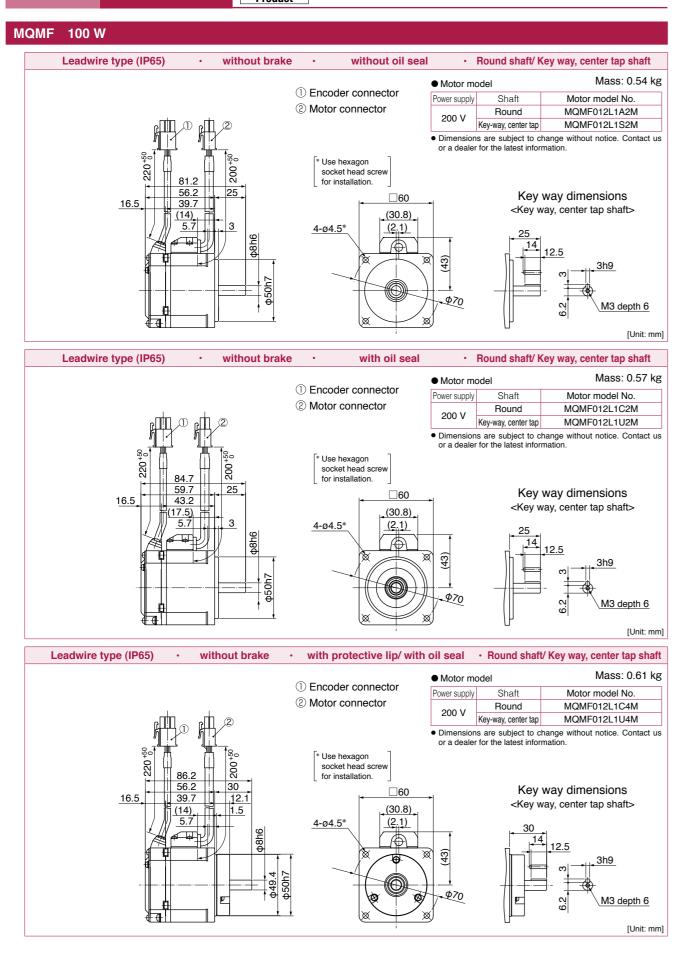
Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

# Dimensions

## A6 Series

Dimensions

### Special Order **MQMF 100 W** Product

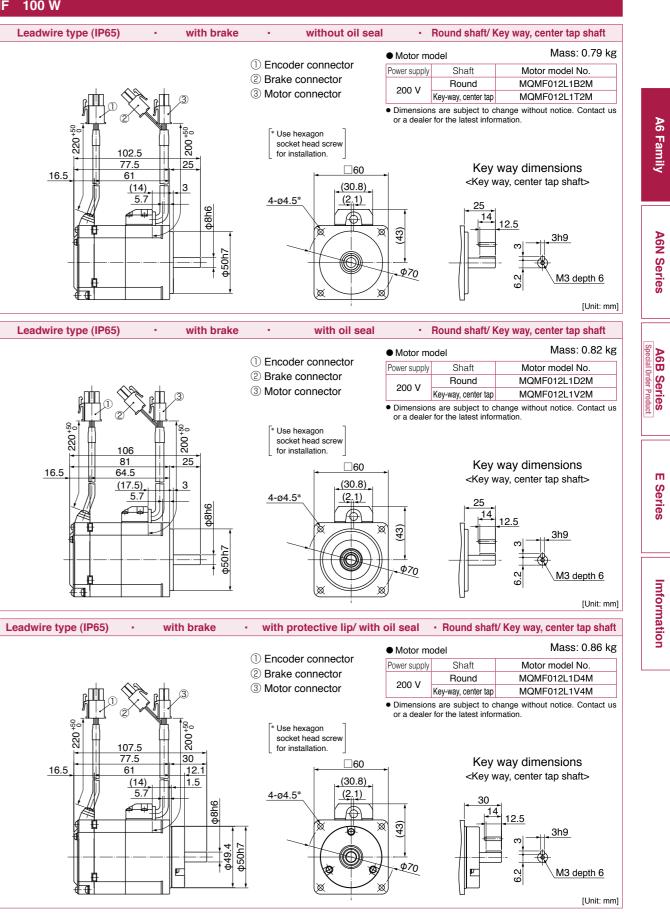


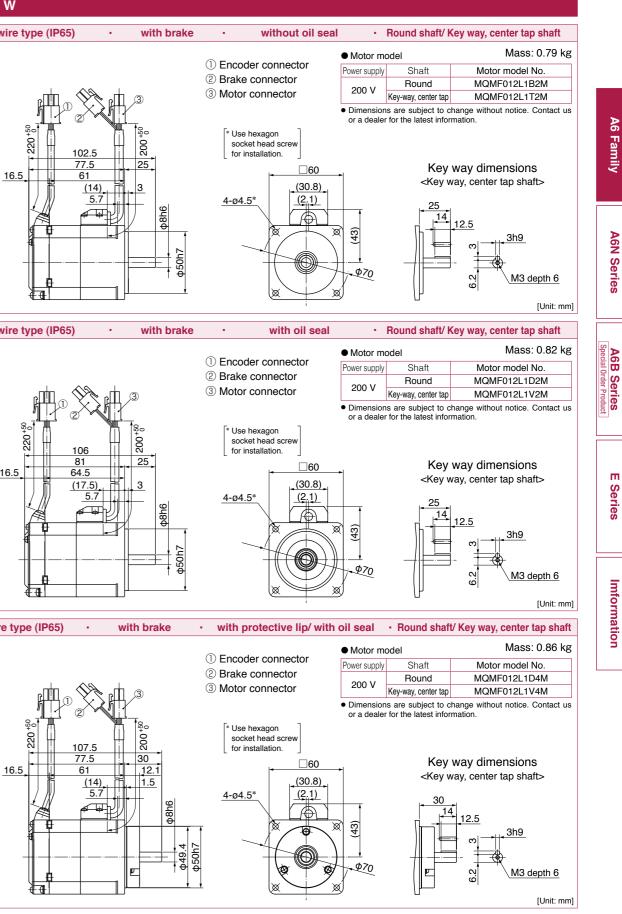
\* For motors specifications, refer to P.223.

107 77.5 16.5 61 (14)

\* For motors specifications, refer to P.223.

. with brake . 106 25 81 64.5 (17.5)





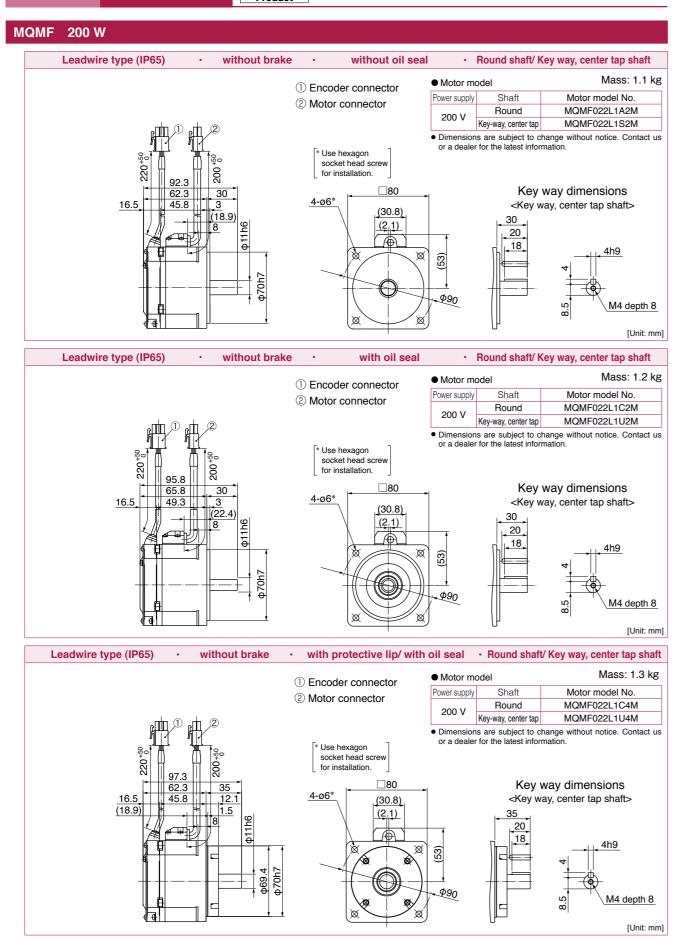
Product **MQMF 100 W** 

**MQMF 100 W** 

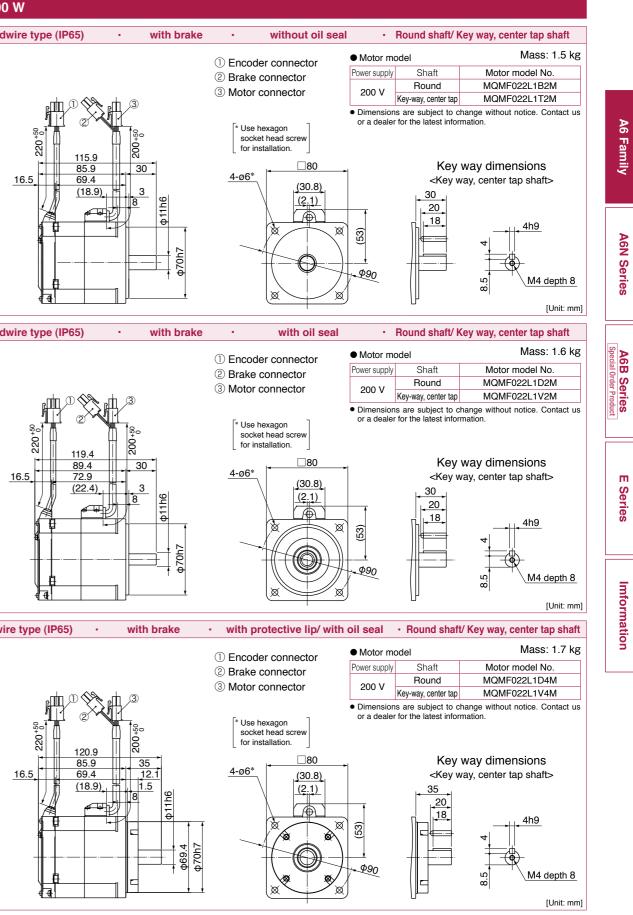
Special Order

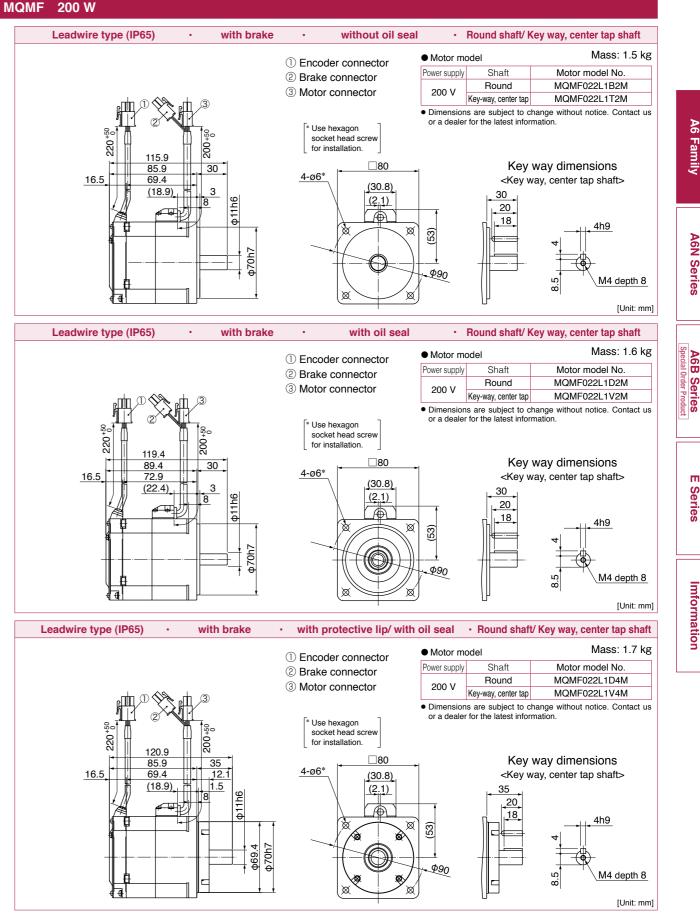
# Dimensions

### Special Order **MQMF 200 W** Product



\* For motors specifications, refer to P.224.





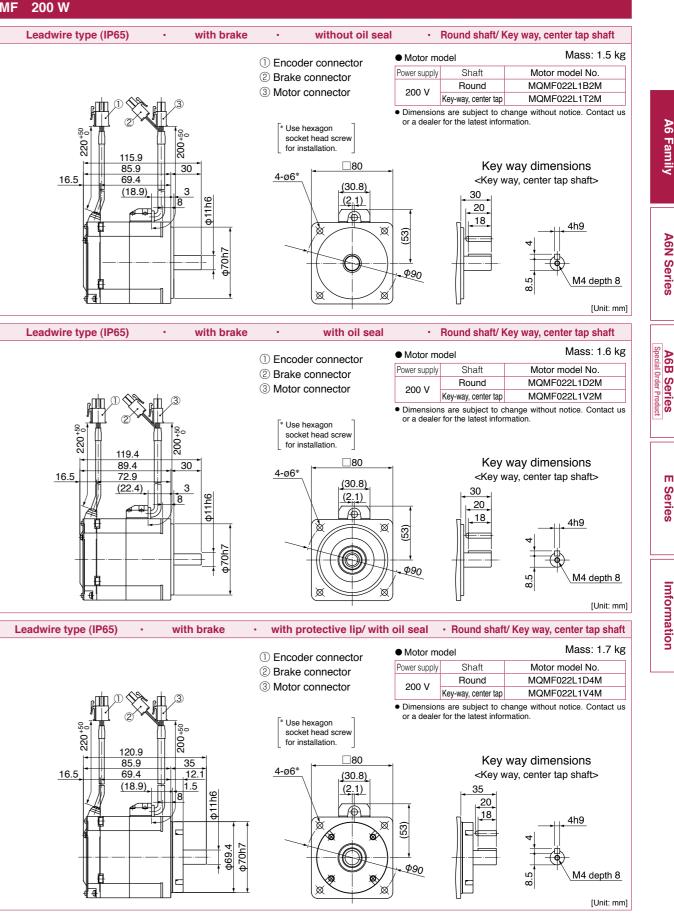
\* For motors specifications, refer to P.224.



**MQMF 200 W** 

Special Order

Product

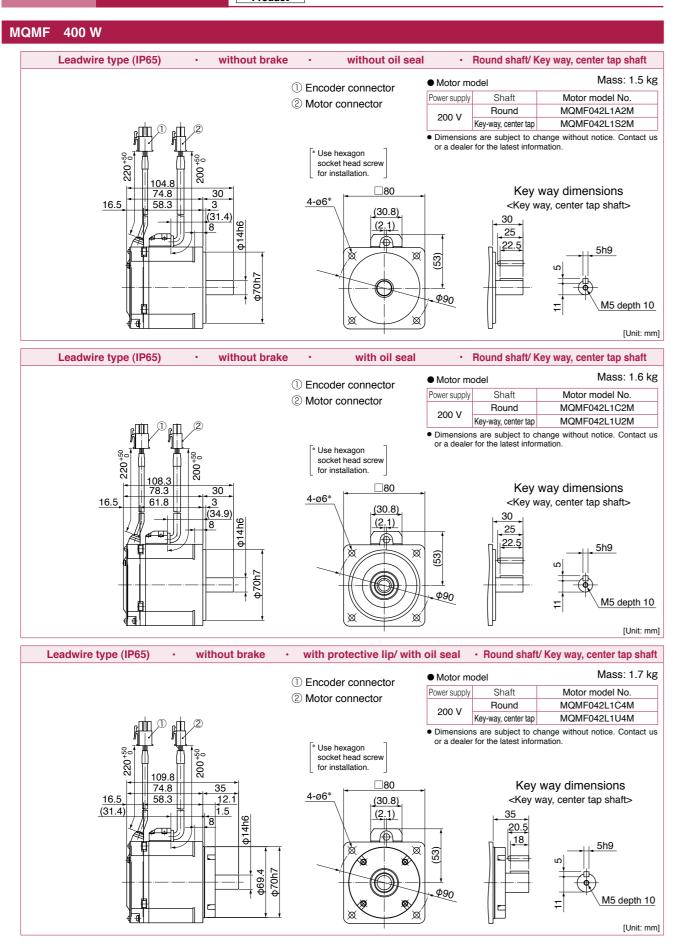


# Dimensions

## A6 Series

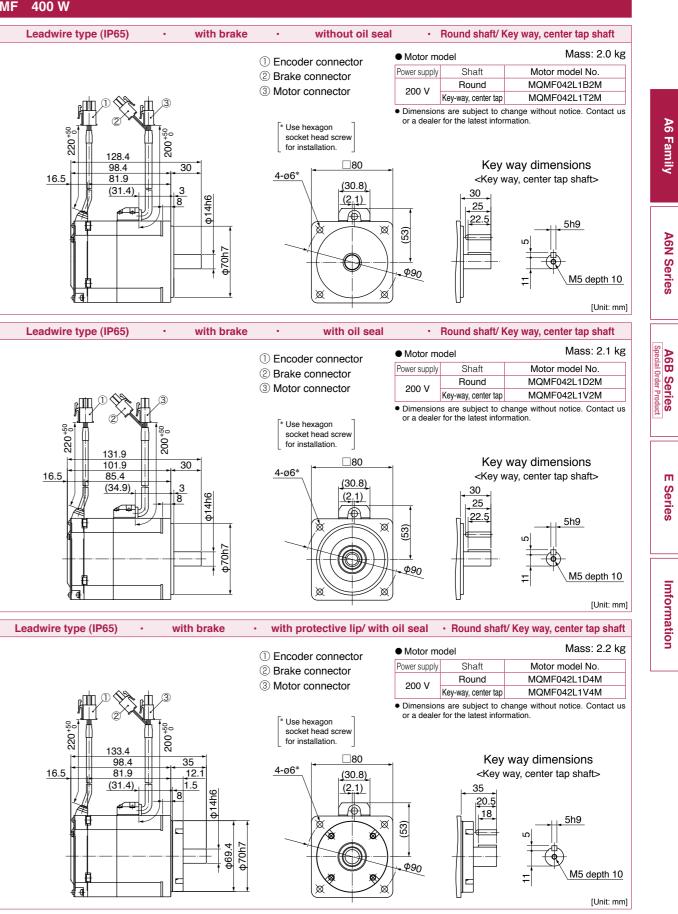
Dimensions

### Special Order **MQMF 400 W** Product



\* For motors specifications, refer to P.225.

Special Order **MQMF 400 W** Product **MQMF 400 W** Leadwire type (IP65) . with brake . 128 4 98.4 16.5 81.9 (31.4)ф70h Leadwire type (IP65) . with brake .



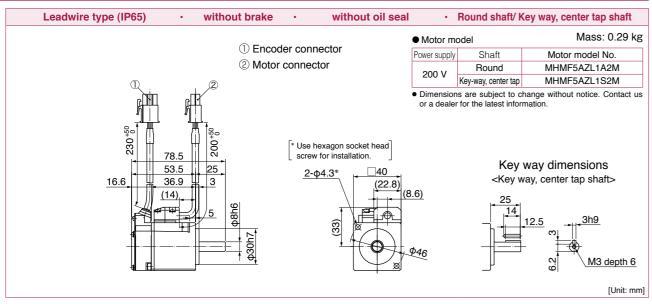
\* For motors specifications, refer to P.225.

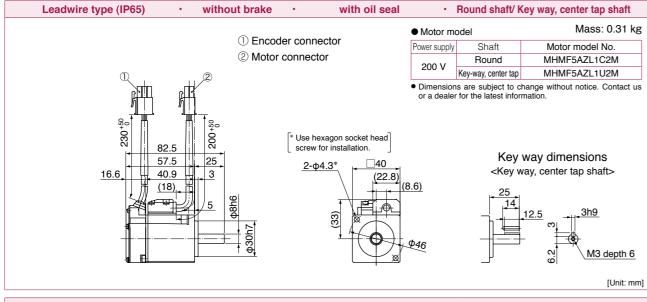


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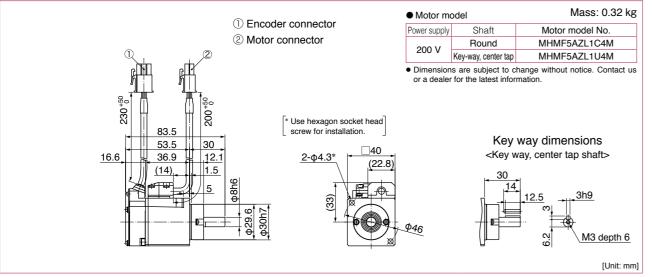
### Special Order **MHMF 50 W** Product



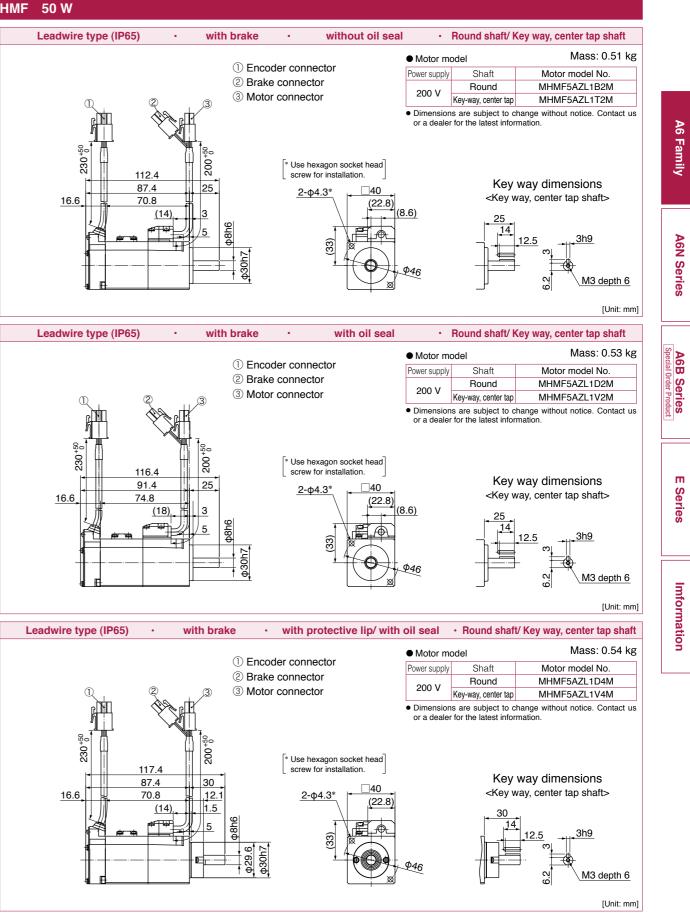


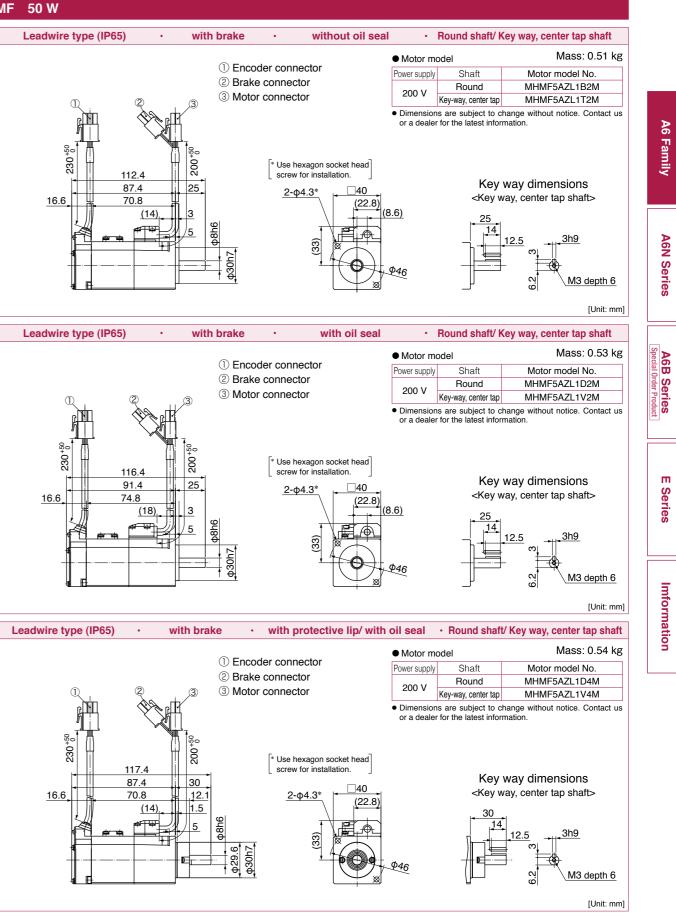


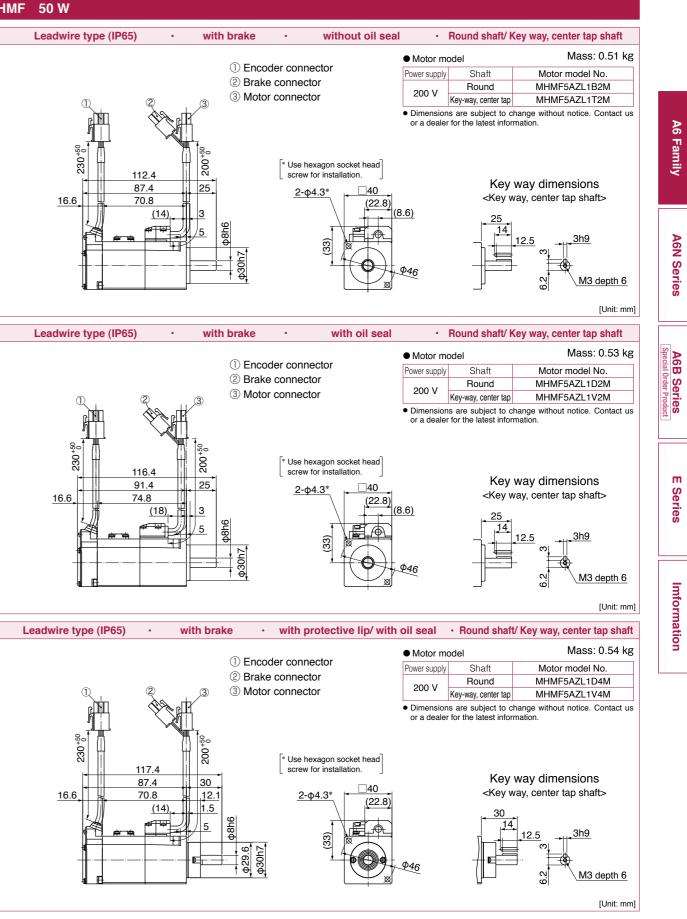
Leadwire type (IP65) · without brake · with protective lip/ with oil seal · Round shaft/ Key way, center tap shaft



Special Order **MHMF 50 W** Product MHMF 50 W Leadwire type (IP65) . with brake







\* For motors specifications, refer to P.226.

\* For motors specifications, refer to P.226.

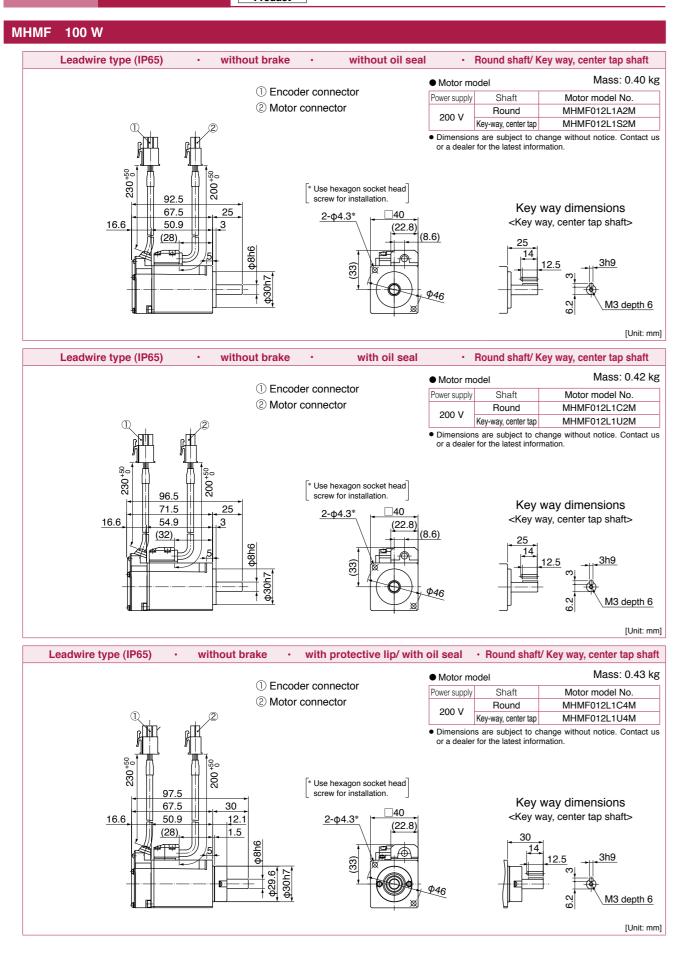
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# Dimensions

## A6 Series

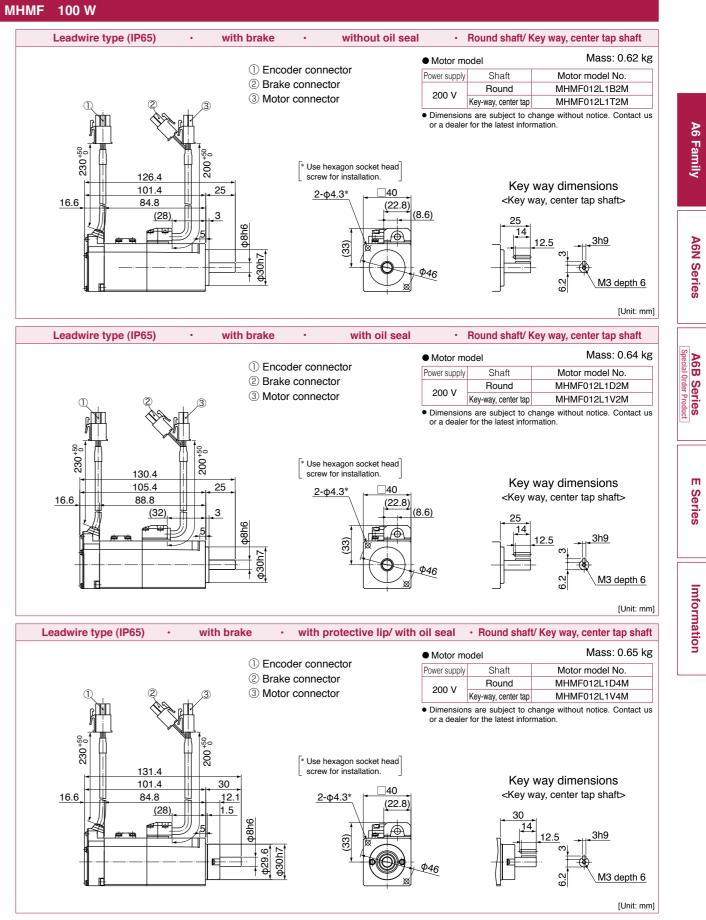
Dimensions

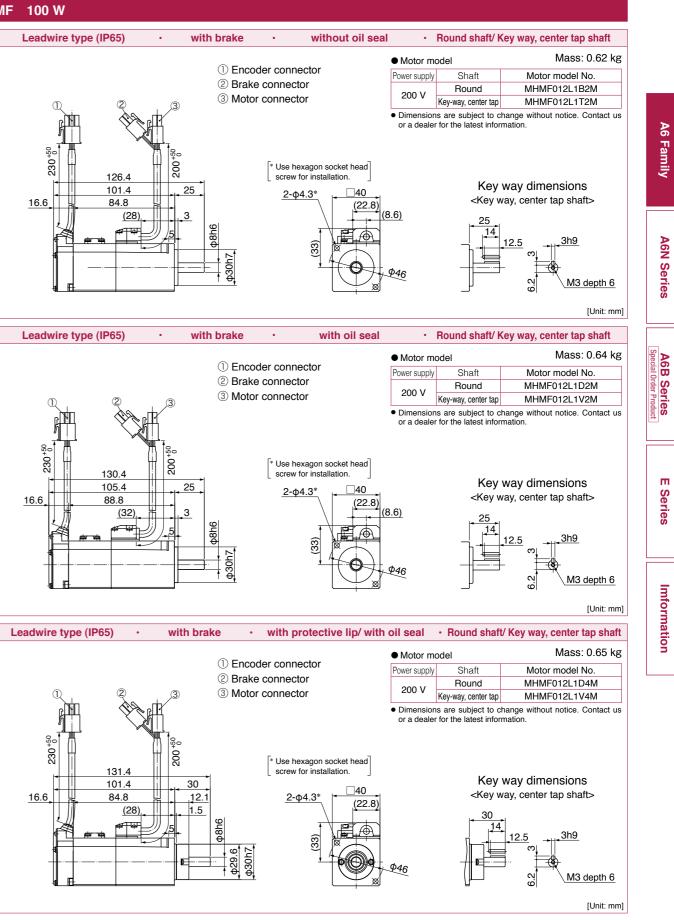
### Special Order **MHMF 100 W** Product



\* For motors specifications, refer to P.227.

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\* For motors specifications, refer to P.227.

Special Order

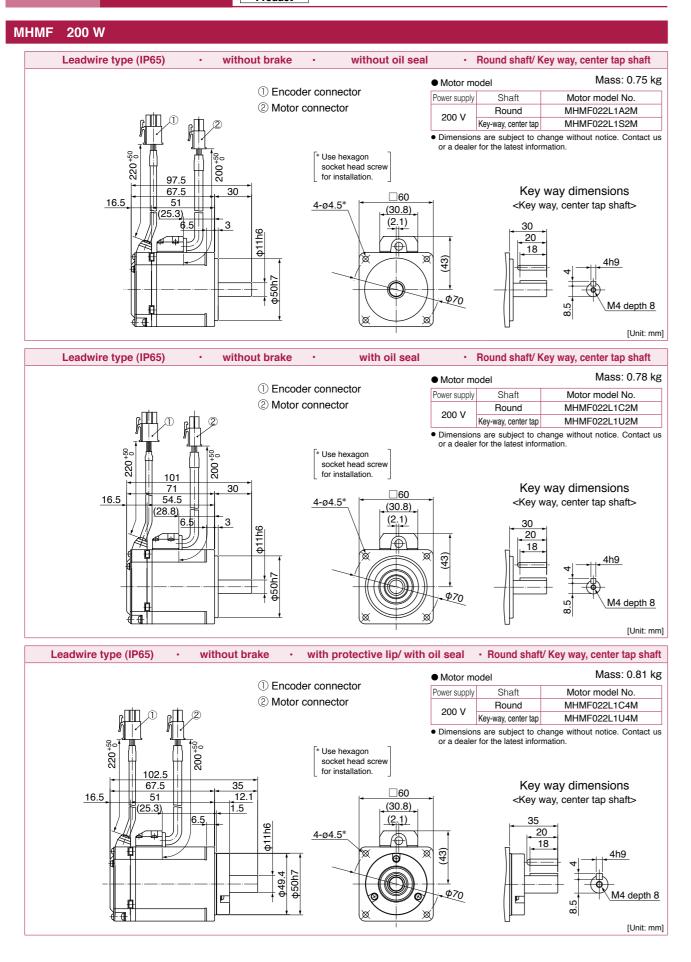
Product

MHMF 100 W

-270-

# Dimensions

### Special Order **MHMF 200 W** Product

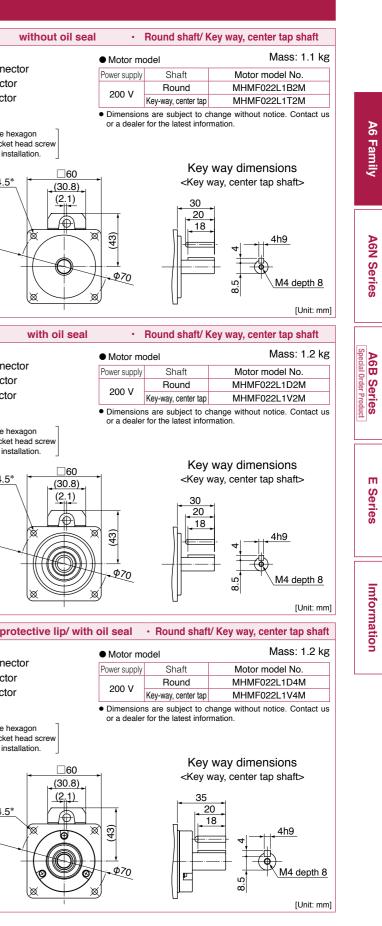


\* For motors specifications, refer to P.228.

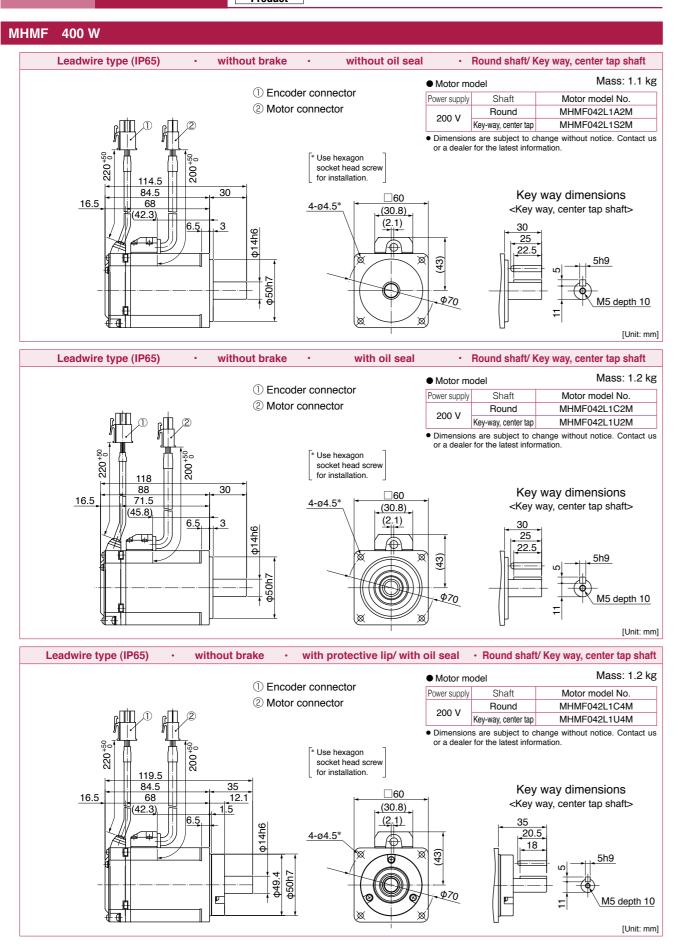
-271-

\* For motors specifications, refer to P.228.

# Dimensions



Special Order Product MHMF 400 W



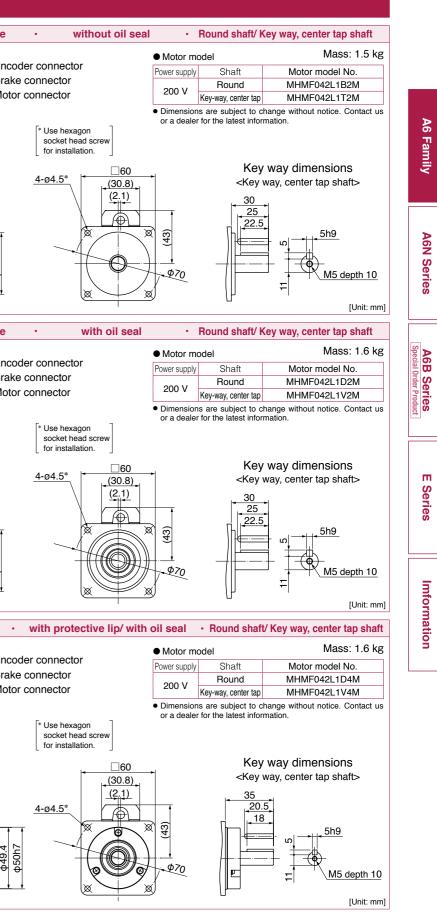
\* For motors specifications, refer to P.229.

Special Order MHMF 400 W Product MHMF 400 W Leadwire type (IP65) . with brake . ① Encoder connector 2 Brake connector ③ Motor connector 220 143.8 113.8 30 16.5 97.3 4-ø4.5\* (42.3) Leadwire type (IP65) . with brake . ① Encoder connector 2 Brake connector ③ Motor connector 520 8 1473 117.3 100.8 30 16.5 4-ø4.5\* (45.8)₫₫ Leadwire type (IP65) • with brake ① Encoder connector 2 Brake connector ③ Motor connector 220 148 8 113.8 97.3 16.5 12. (42.3) 4-ø4.5\*

\* For motors specifications, refer to P.229.

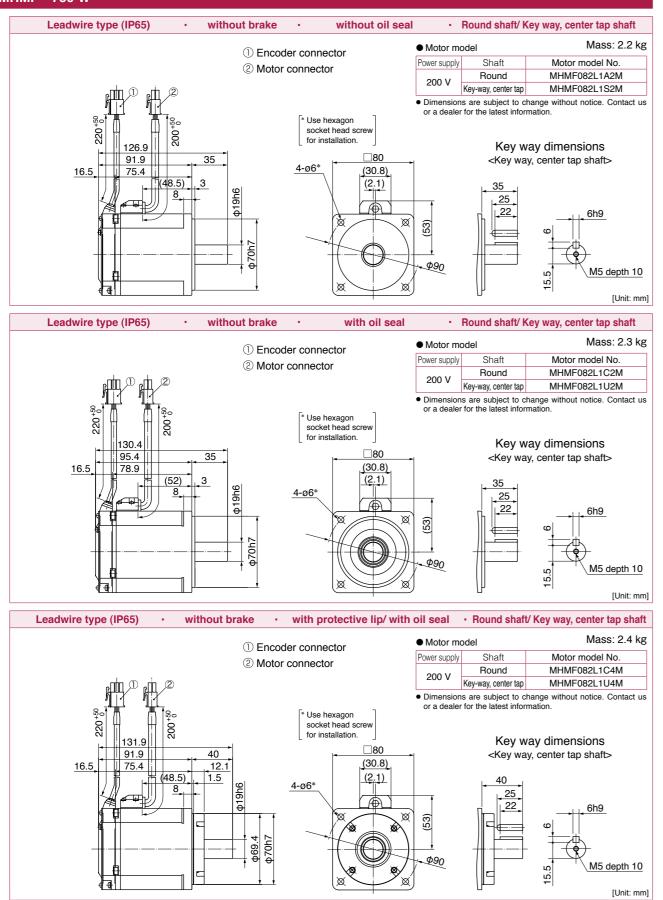
40

# Dimensions



### Special Order MHMF 750 W Product

# MHMF 750 W



\* For motors specifications, refer to P.230.

\* For motors specifications, refer to P.230.

Special Order

Product

MHMF 750 W

220

16.5

220 +5

16.5

MHMF 750 W

160 5

125.5

109

Leadwire type (IP65)

164

129

112.5

Leadwire type (IP65)

220

16.5

•

8

165.5

125.5

109

(48.5)

.

35

with brake

40

1.5

12.1

2 P

with brake

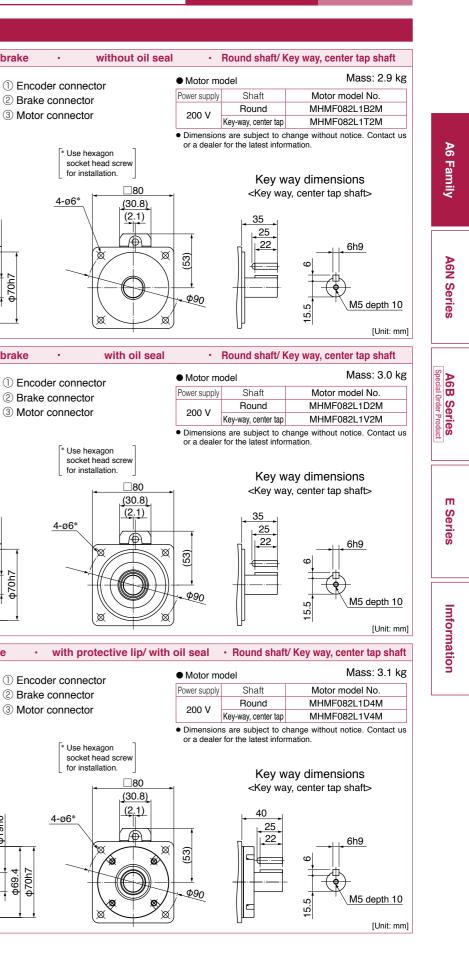
204

(48.5)

with brake

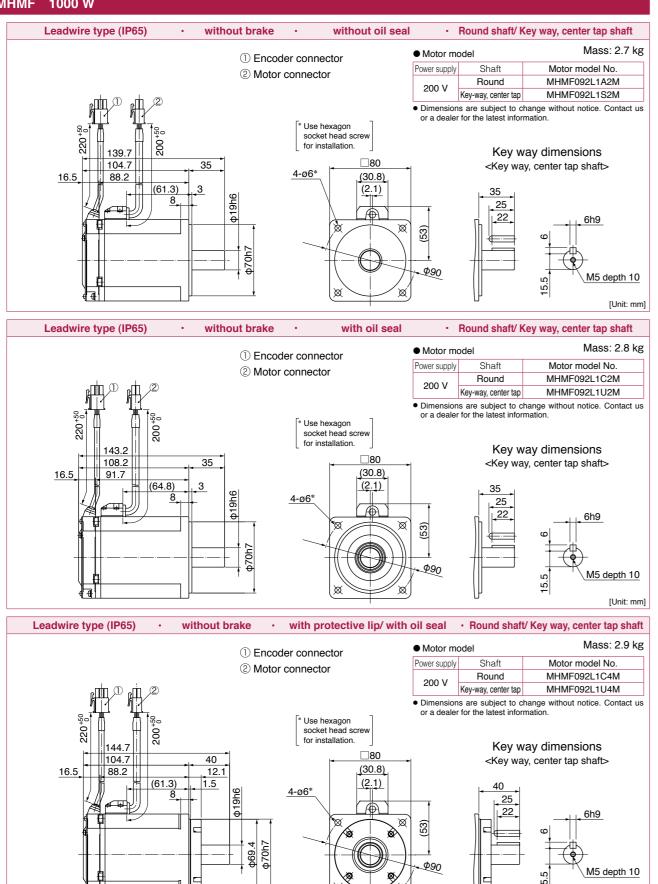
Leadwire type (IP65)

# Dimensions



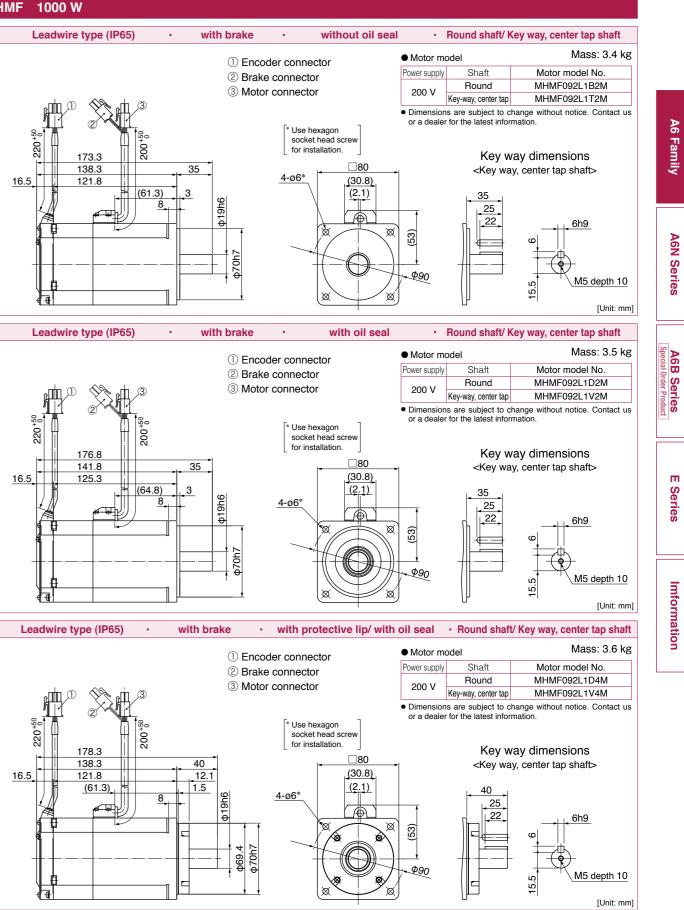
### Special Order MHMF 1000 W Product





\* For motors specifications, refer to P.231.

[Unit: mm]

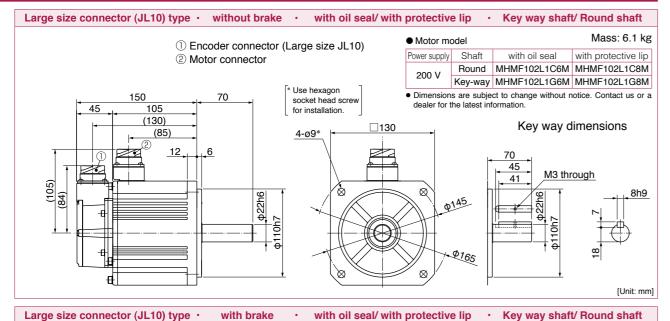


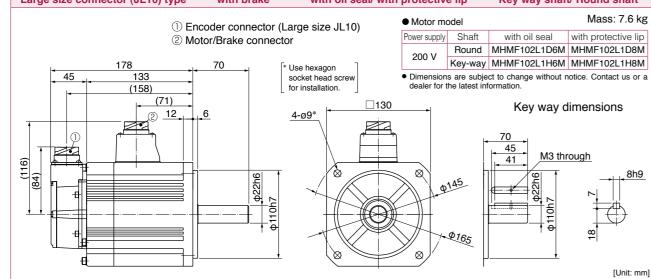
\* For motors specifications, refer to P.231.

# Dimensions

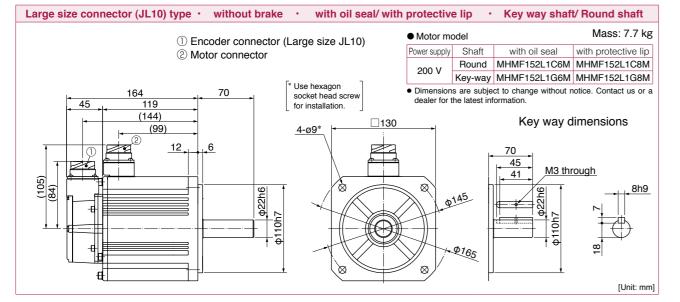
### Special Order MHMF 1.0 kW to 1.5 kW Product





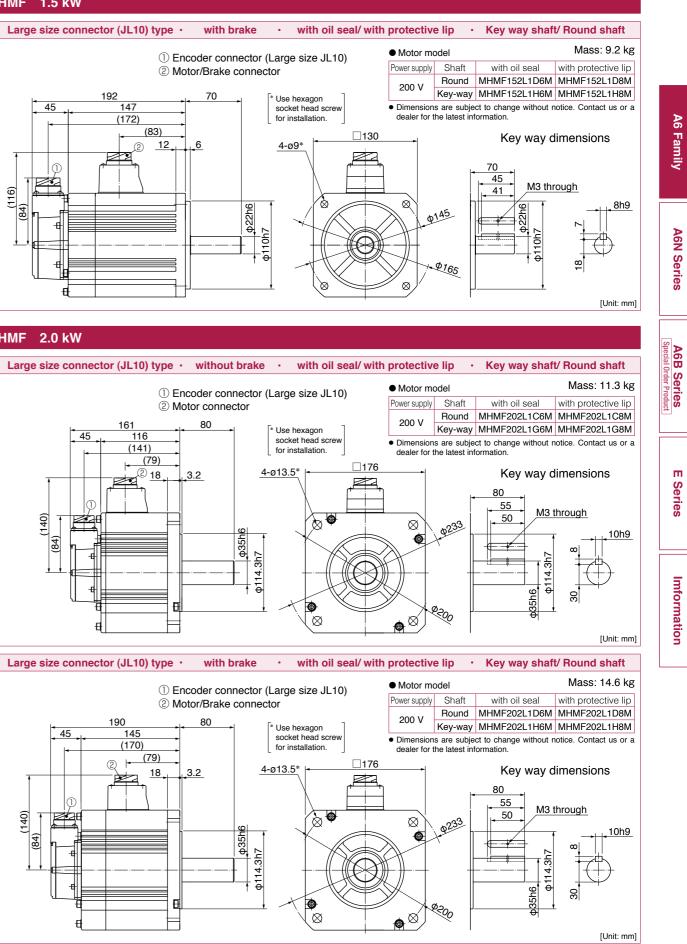


# MHMF 1.5 kW

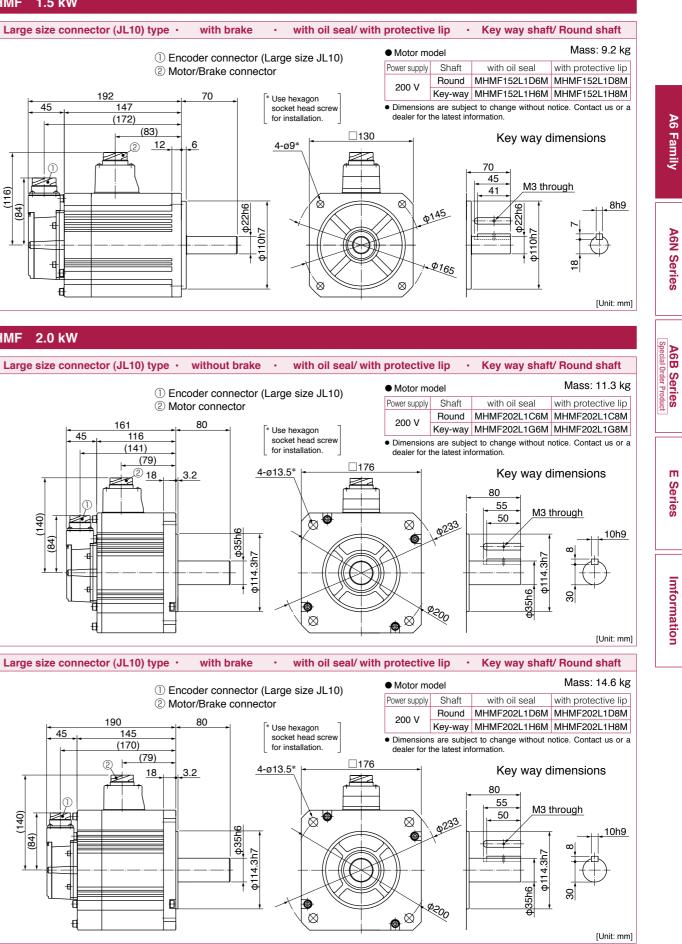


\* For motors specifications, refer to P.232, P.233.

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### MHMF 2.0 kW



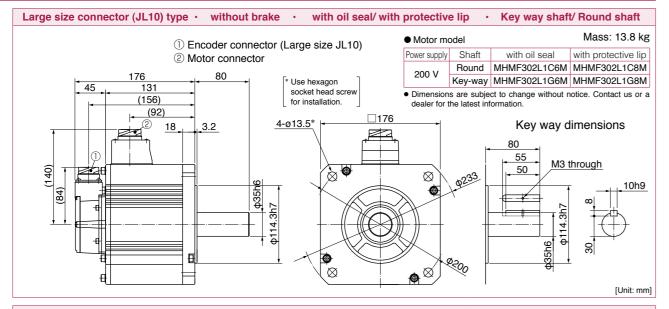
\* For motors specifications, refer to P.233, P.234

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

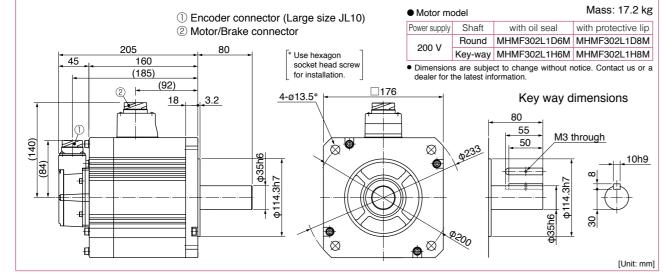
# Dimensions

### Special Order MHMF 3.0 kW to 4.0 kW Product

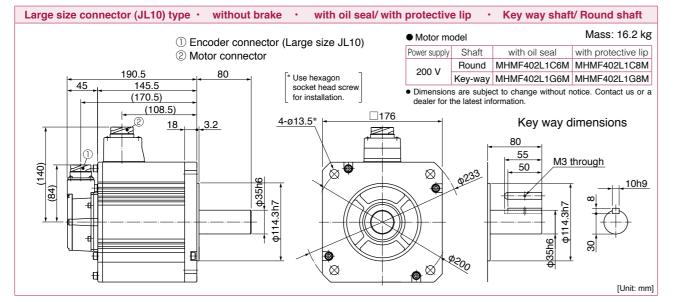








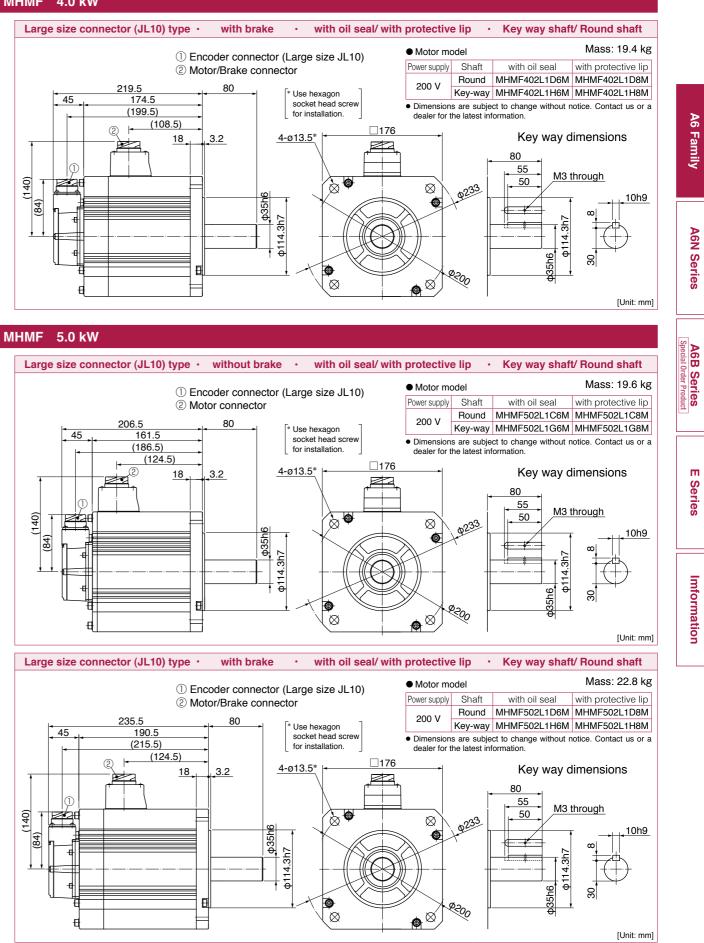
# MHMF 4.0 kW

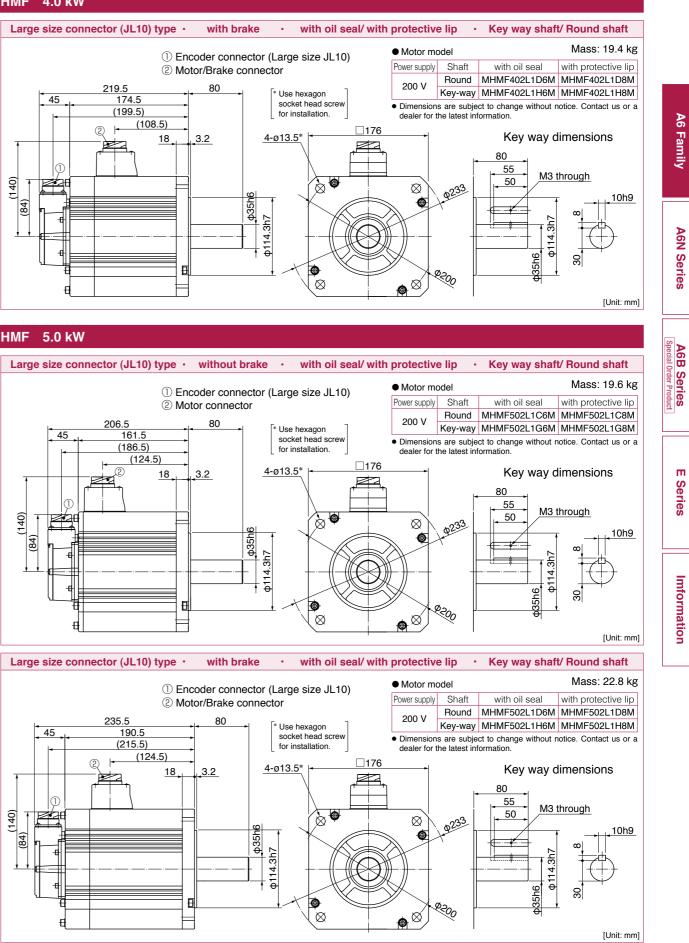


\* For motors specifications, refer to P.235, P.236.

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

### MHMF 4.0 kW



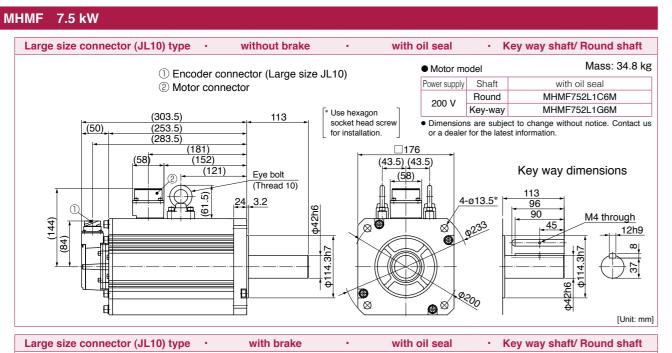


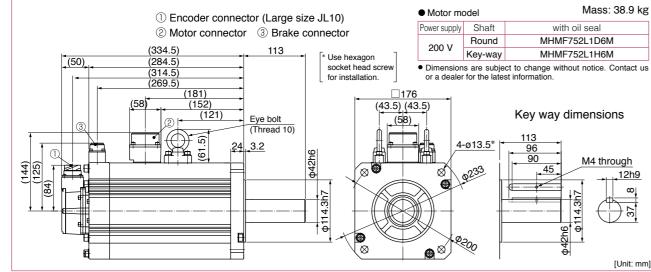
\* For motors specifications, refer to P.236, P.237

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

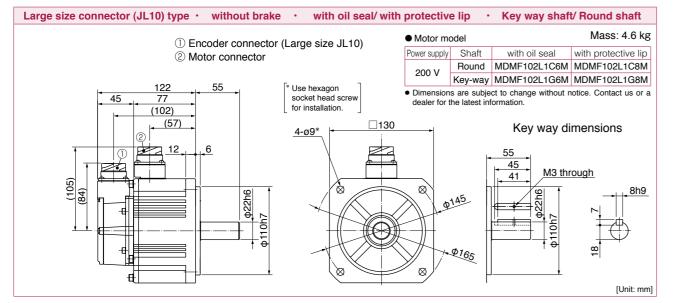
# Dimensions

### Special Order MHMF 7.5 kW / MDMF 1.0 kW Product





# MDMF 1.0 kW



\* For motors specifications, refer to P.238, P.239.

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

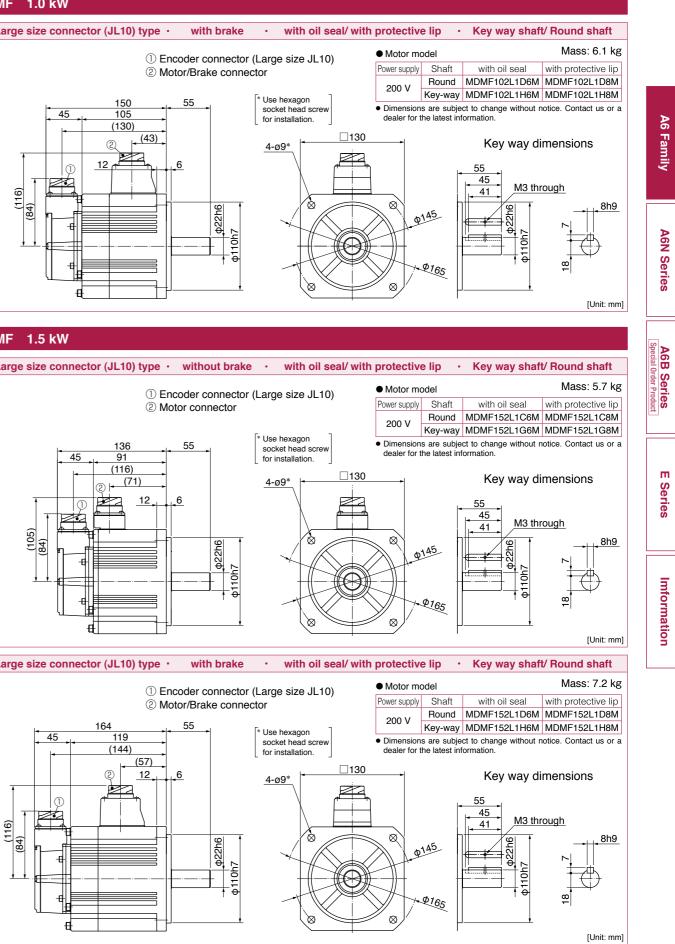
-283-

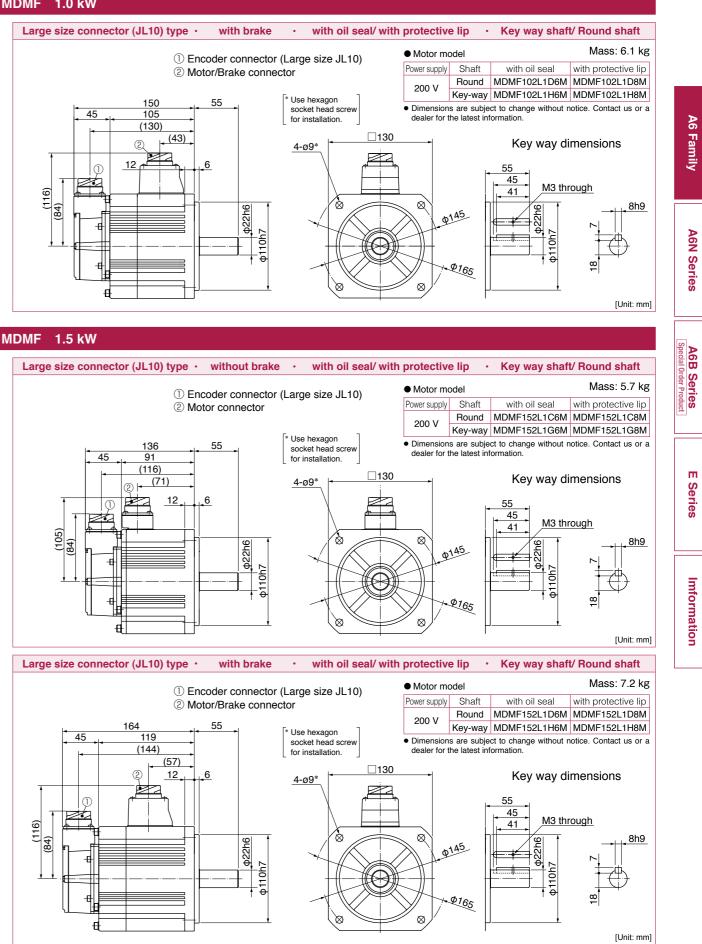
Special Order  
Product
 MDMF 1.0 kW to 1.5 kW

 MDMF 1.0 kW
 Large size connector (JL10) type · with brake

 ① Encoder connector (La  
② Motor/Brake connector

 
$$45 + 105$$



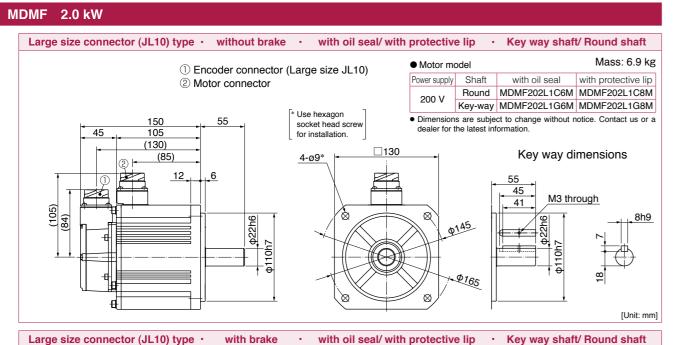


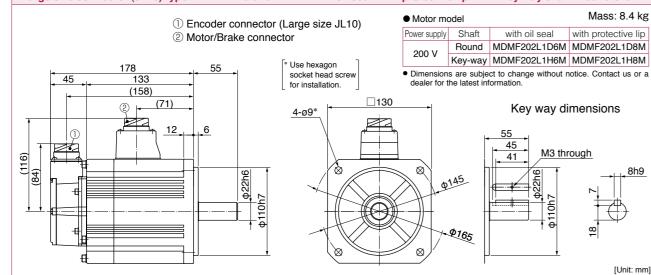
\* For motors specifications, refer to P.239, P.240.

Panasonic Corporation Electromechanical Control Business Division -284industrial.panasonic.com/ac/e/

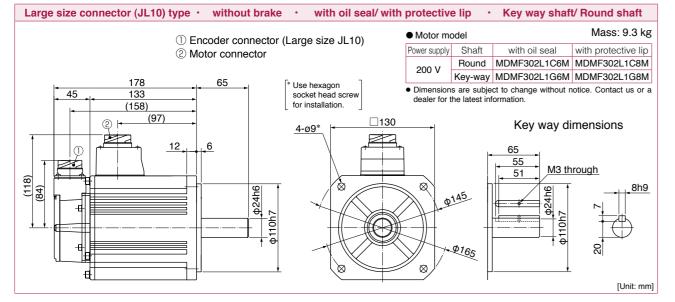
# Dimensions

### Special Order MDMF 2.0 kW to 3.0 kW Product





# MDMF 3.0 kW



\* For motors specifications, refer to P.241, P.242.

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

Special Order  
Product
 MDMF 3.0 kW to 4.0 kW

 MDMF 3.0 kW
 MDMF 3.0 kW

 Large size connector (JL10) type · with brake ·
 .

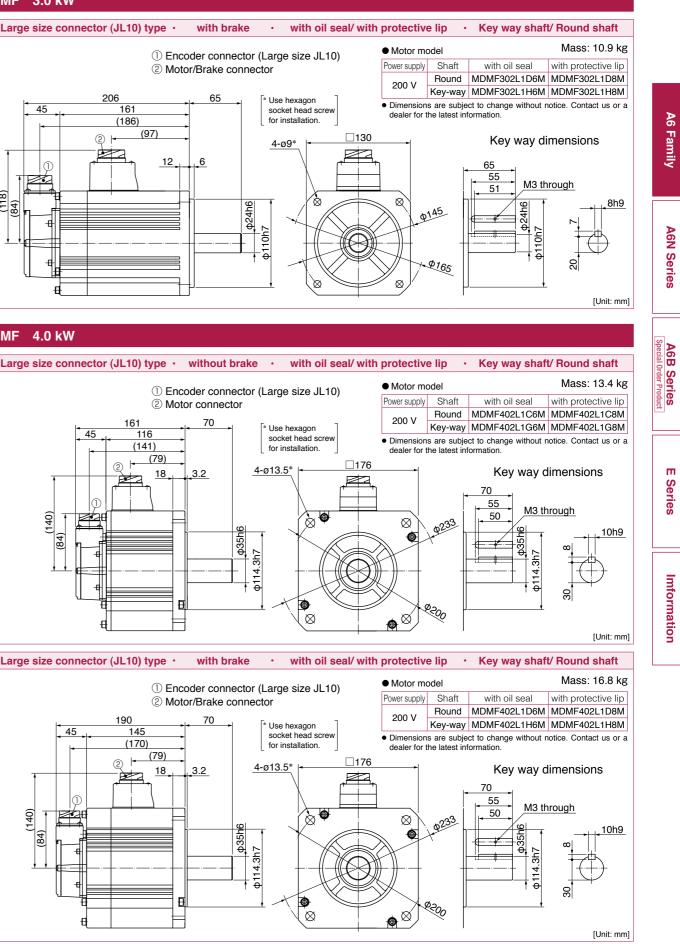
 ① Encoder connector (Large  
② Motor/Brake connector
 .

 ① Encoder connector (Large  
③ Motor/Brake connector
 .

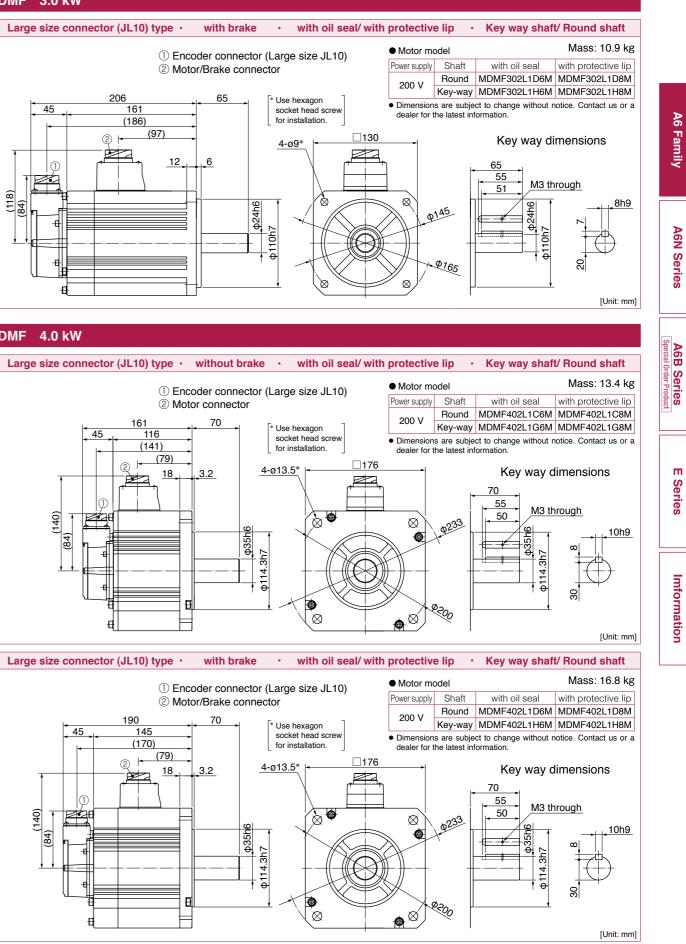
 ① 
$$\frac{206}{(186)}$$
 .

 ①  $\frac{45}{(186)}$ 
 .

 ①  $\frac{12}{(12)}$ 
 .



### MDMF 4.0 kW



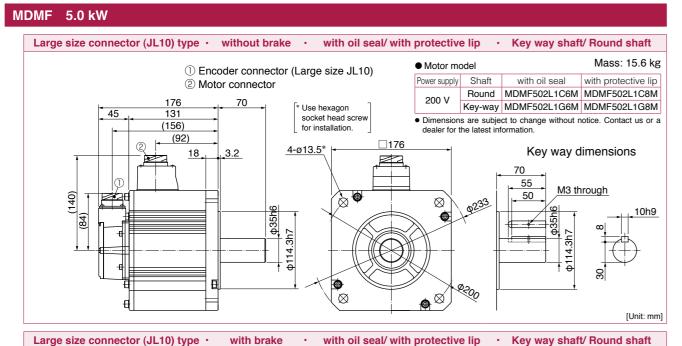
\* For motors specifications, refer to P.242, P.243

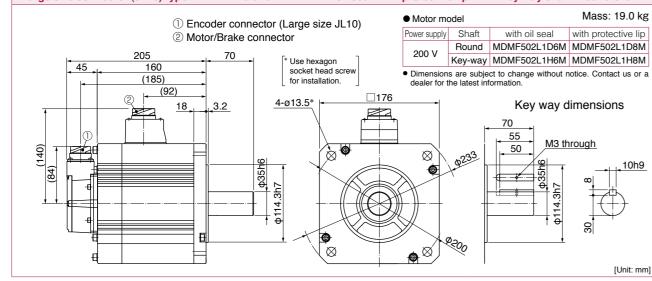
Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

# Dimensions

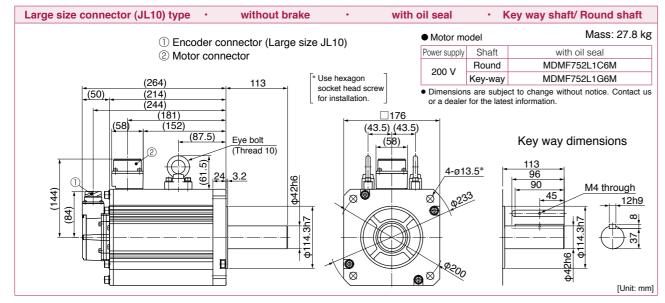
Dimensions

#### Special Order MDMF 5.0 kW to 7.5 kW Product





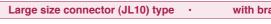
#### MDMF 7.5 kW

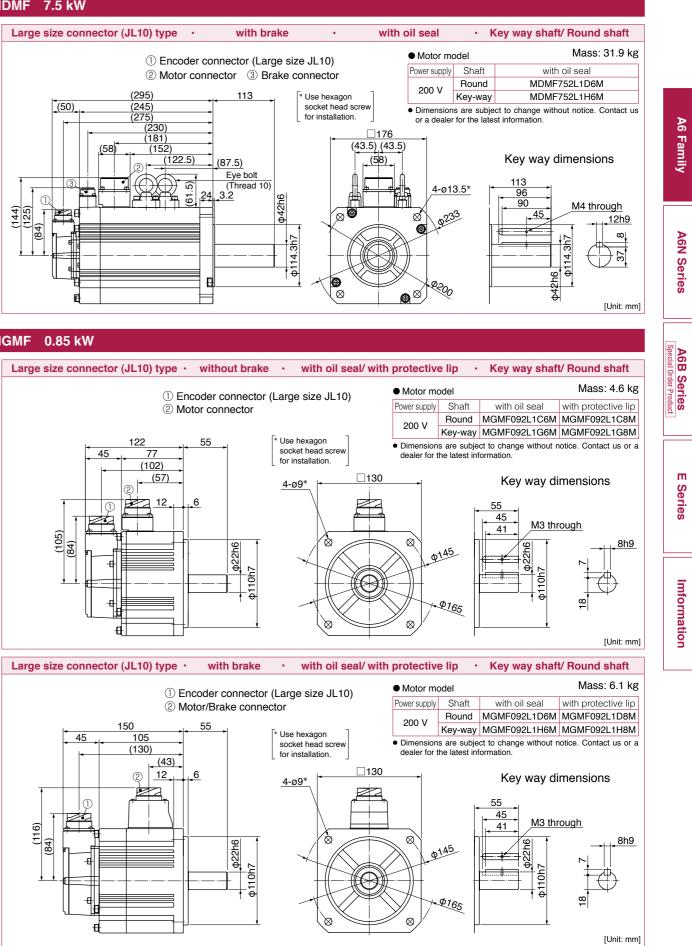


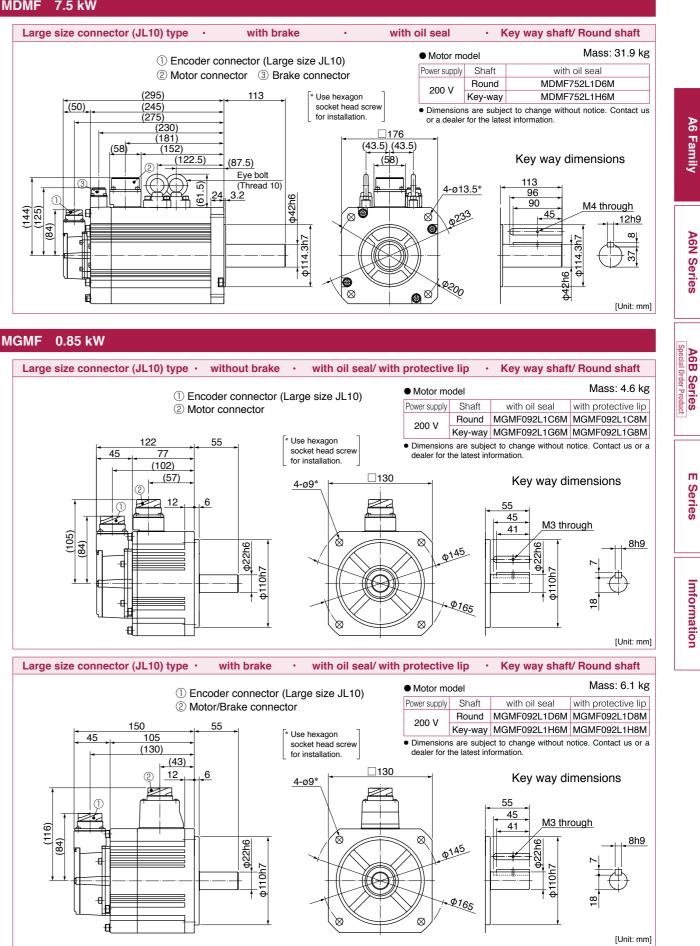
\* For motors specifications, refer to P.244, P.245.

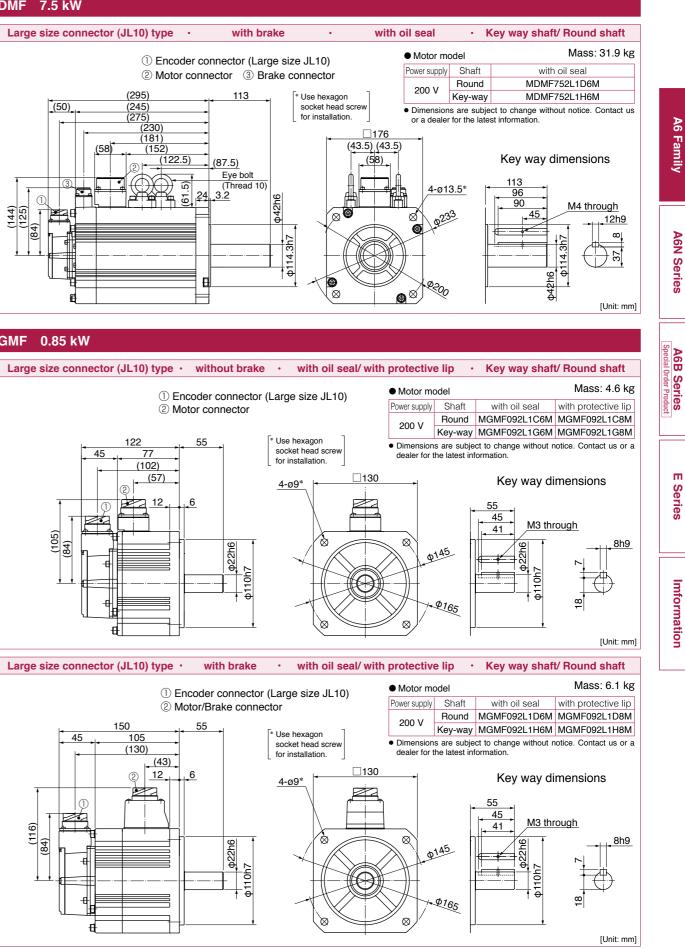
Panasonic Corporation Electromechanical Control Business Division -287industrial.panasonic.com/ac/e/

#### MDMF 7.5 kW









\* For motors specifications, refer to P.245, P.246.

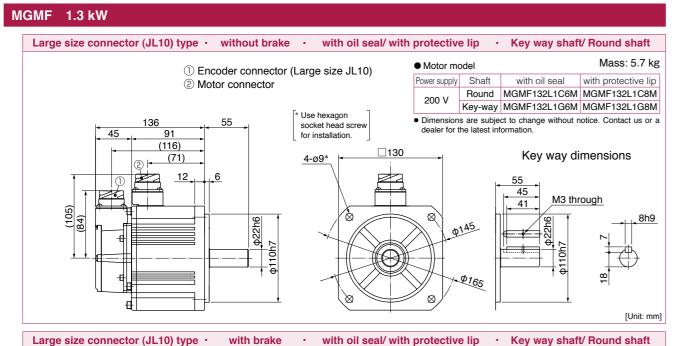
Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

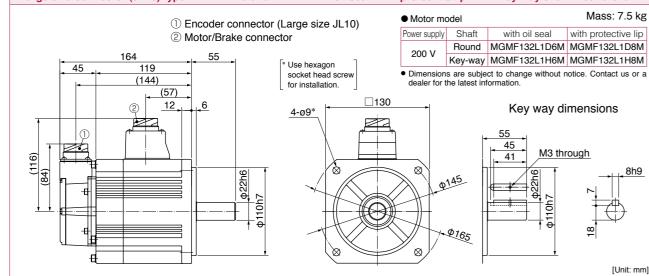
#### Dimensions

A6 Series

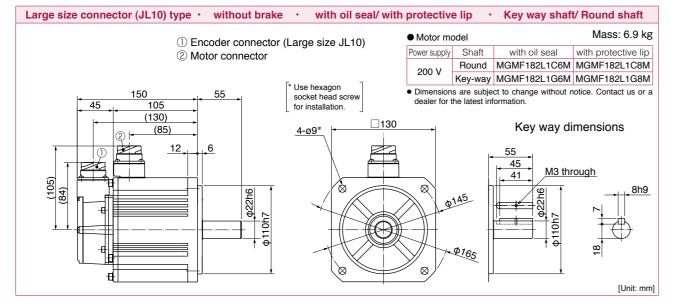
Dimensions

#### Special Order MGMF 1.3 kW to 1.8 kW Product



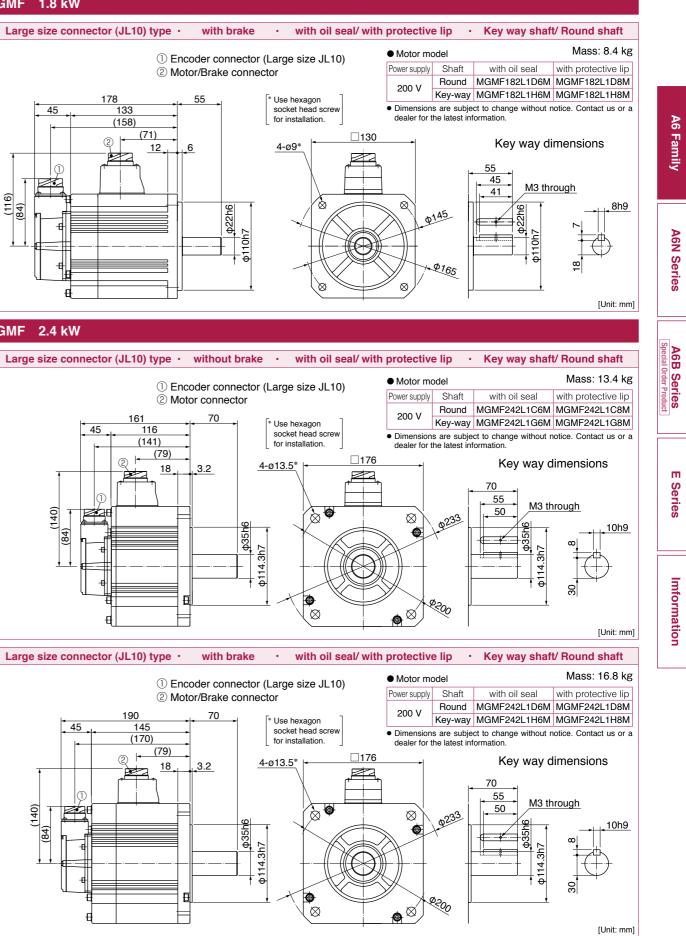


#### MGMF 1.8 kW

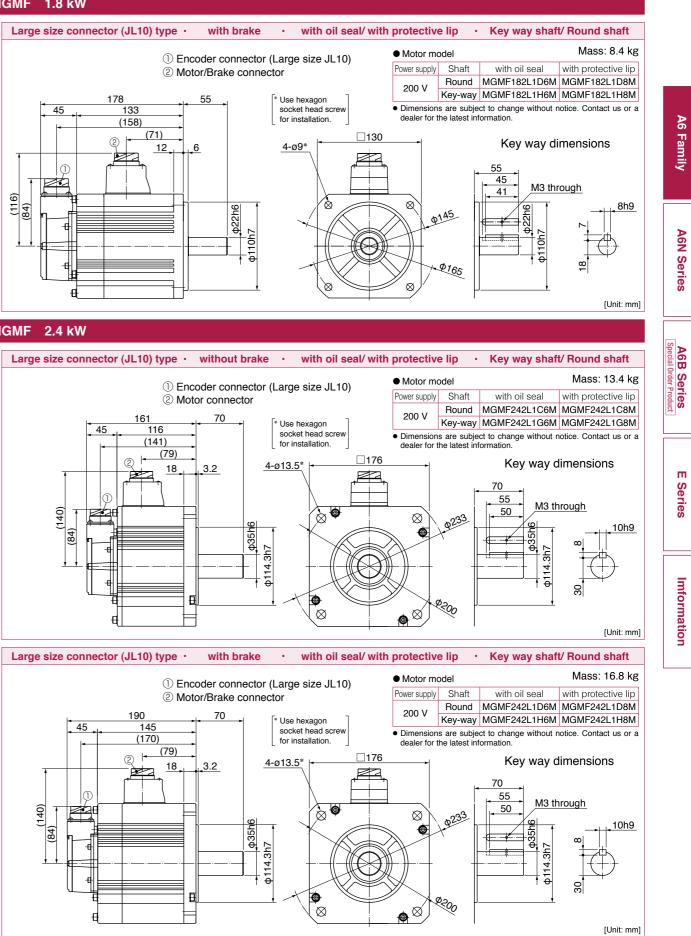


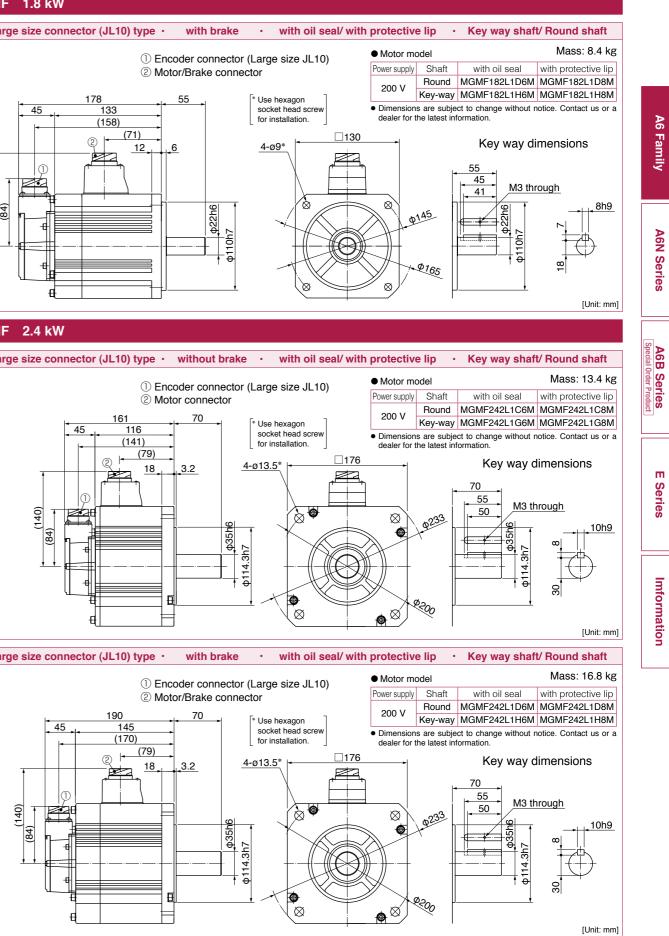
\* For motors specifications, refer to P.247, P.248.

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#### MGMF 2.4 kW





\* For motors specifications, refer to P.248, P.249

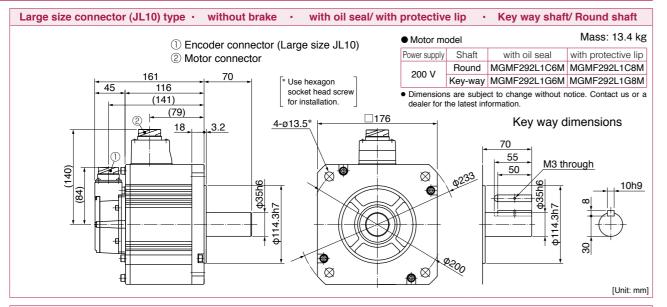
#### Dimensions

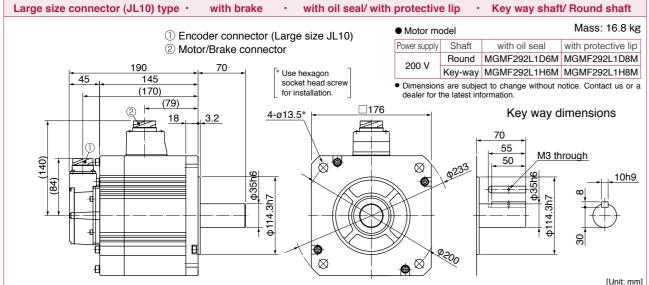
A6 Series

Dimensions

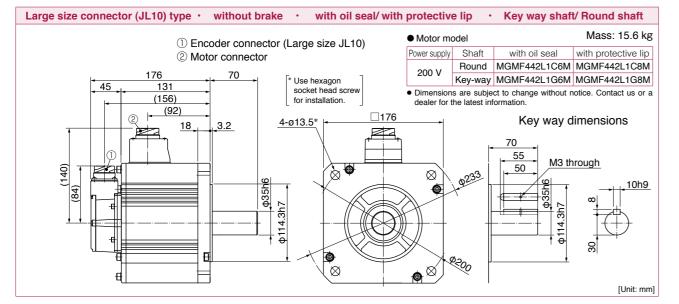
#### Special Order MGMF 2.9 kW to 4.4 kW Product





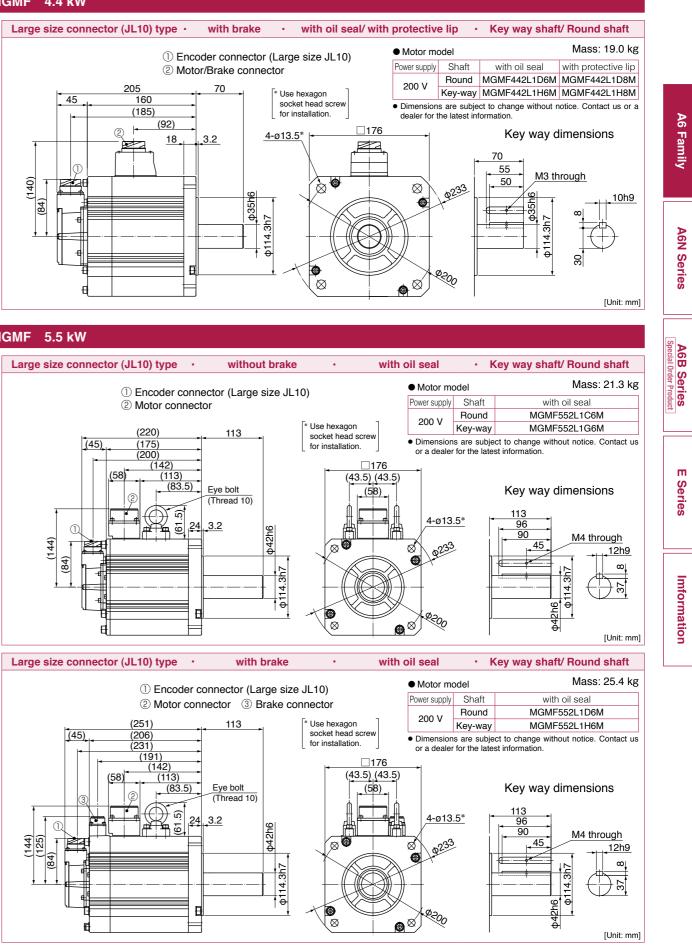


#### MGMF 4.4 kW

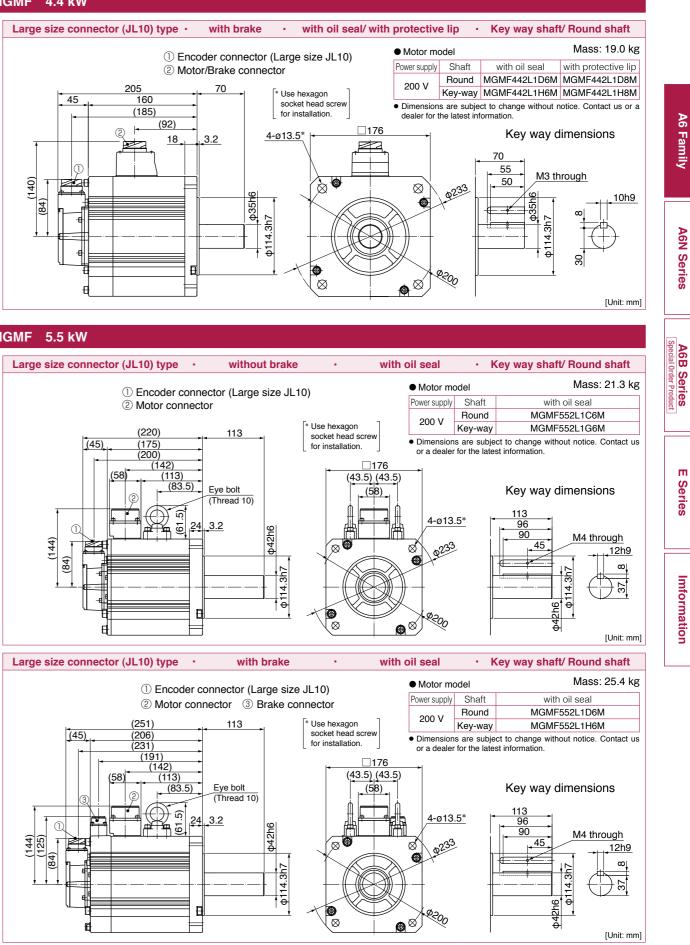


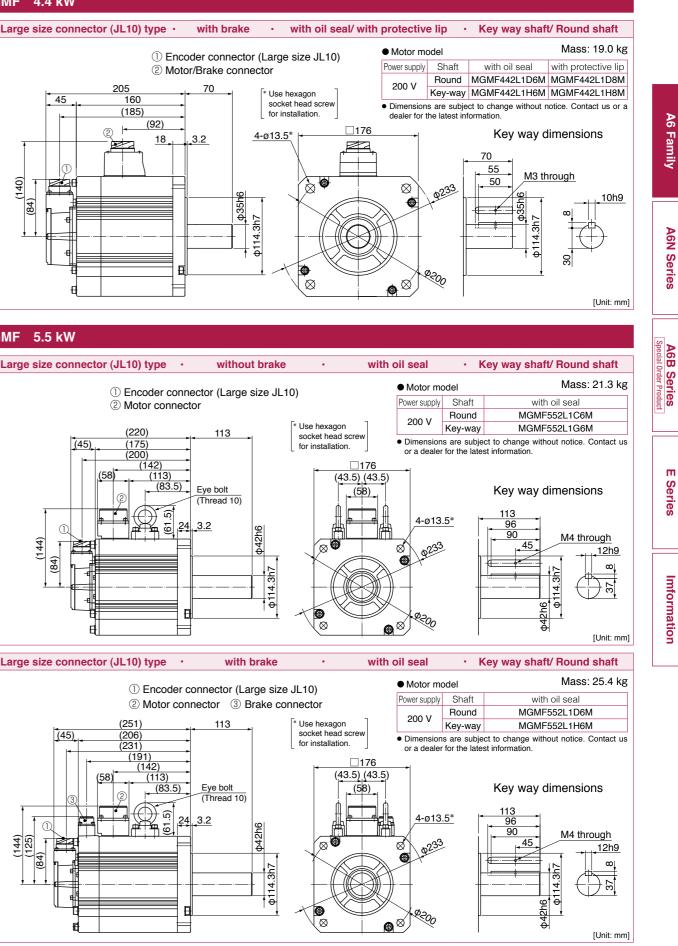
\* For motors specifications, refer to P.250, P.251.

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#### MGMF 5.5 kW





\* For motors specifications, refer to P.251, P.252

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

#### Dimensions

A6 Series

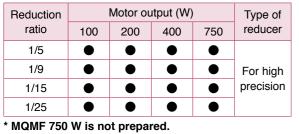
-292-

Motors with Gear Reducer Types and Specifications Coming soon

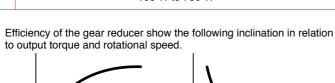
#### Motor Types with Gear Reducer







\* MHMF 100 W 1/25, 400 W 1/25 are not prepared.



output torque ----

efficiency

rotational speed ----

# **Specifications of Motor with Gear Reducer**

	Items	Specifications						
	Backlash	3 minutes or smaller (initial value) at output shaft of the reducer						
	Composition of gear	Planetary gear						
	Gear efficiency	76 % to 87 %						
	Lubrication	Grease lubrication						
Gear reducer	Rotational direction at output shaft	Same direction as the motor output shaft						
	Mounting method	Flange mounting						
	Permissible moment of inertia of the load (conversion to the motor shaft)	10 times or smaller than rotor moment of inertia of the motor						
	Enclosure rating	IP44 (at gear reducer)						
	Ambient temperature	0 °C to 40 °C (free from freezing)						
	Storage temperature	-20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation)						
Environment	Ambient humidity, Storage humidity	20 %RH to 85 %RH (free from condensation)						
	Vibration	Lower than 49 m/s <sup>2</sup> (5G) at runninng, 24.5 m/s <sup>2</sup> (2.5G) at stall						
	Impact	Lower than 98 m/s <sup>2</sup> (10G)						
	Altitude	Lower than 1000 m						

Model Designation/ The Combination of the Driver and the Motor

Model Designation

	MQ	Μ	F	0	1		1	L	3	<b>;</b>	1	Ν	I						
Symbol	Туре		I r	Motor r	ated ou Specifica	· ·	1						— N	: Sta	ndard				
-,	Middle iner	tia		01	100					Мо	otor t	vpes	with d	aear	reduc	er			
MQMF	Flat type 100 W to 40			02	200	W						Rodu		-	otor ou	_	(W)	Type of	
	High inert	-		04	400	W				Sy	Symbol		ratio 100		200	400	750	reducer	
MHMF	100 W to 75	0 W		08	750	W					1N	1/	5	٠					
Symbol	Serie			Vali	200 60	ocifi	ation	_			2N	1/	9	●	•	•		For high	
F		A6 family			Voltage specifications           Symbol         Rated output						3N	1/1	15	•	•			precision	
	Auta	illiy		-	1	100	· ·				4N	1/2	25	•					
					2	200	-								epare W 1/2		e not pr	epared.	
Rotary er	ncoder specif	ication	s ——								Mot	or str	uctur	e					L
Symbol	Fo	rmat		Pulse	counts	Res	olution		Wire		Sum	nbol	Motor		Sha	ft	Holding	g brake	
L	Abs	solute		23-	-bit	83	88608		7		Syn		wotor		Key w	/ay v	without	with	ande
<note></note>											3	3	Conne	ctor	•		•		
	ing it as an in			`	using r	nultit	urn da	ita), c	lo not		4	4	551110	0.01	•			•	opecial of del Flouder
connect th	he battery for a	absolute	e encode	r.							7	7	Leadv	vire	•		•		Junct
									8										

	MQM		0	•	1			IN	NI: Ota	a da ud		
Symbol	Туре		otor rated						N: Sta	indard		
,	Middle inertia			100 W			Motor t	pes witl	n gear	reducer		
MQMF	Flat type 100 W to 400 W		02 2	200 W				Reduction	M	lotor outp	ut (W)	Type of
	High inertia		04 4	400 W			Symbol	ratio	100	200 4	00 750	reducer
MHMF	100 W to 750 W		08	750 W			1N	1/5			• •	
Oursels al	Carias		Voltog	onooifi	ootiono		2N	1/9			• •	For high
Symbol	Series	-	_	e specifi			ЗN	1/15			• •	precisio
F	A6 family		Symbo	I Rated	<u> </u>		4N	1/25		•	• •	
			1	200				750 W is 100 W 1/			are not p	repared.
	naadar anaaifiaatiana						— Mot	or struct	ure			
lotary e	ncoder specifications									Shaft	Holdin	
	Format	F	Pulse cou	nts Res	olution	Wire	Sun		or I/E	onan		g brake
	•	F	Pulse cou 23-bit		solution 388608	Wire 7	Syn	nbol Mot	or I/F	Key way		g brake with
Symbol L	Format	F					Syn	3	-			1
Symbol L Note>	Format		23-bit	83	388608	7		3 Con	or I/F	Key way	without	1
Symbol L <b>Note&gt;</b> When us	Format Absolute	al system	23-bit	83	388608	7	3	3 Con	-	Key way	without	with

# The Combination of the Driver and the Motor

			Dri	ver	
	IVIC	otor		A6SF series	A6SE series
	Power	Output		Multi fanction type	Basic type
Motor series	supply	(W)	Part No.*	Pulse, analog, full-closed	Pulse signal input (Incremental only)
	Single	100	MQMF011L	MADLT11SF	MADLN11SE
	phase	200	MQMF021L	MBDLT21SF	MBDLN21SE
MQMF Middle inertia	100 V	400	MQMF041L	MCDLT31SF	MCDLN31SE
Flat type	Single phase/ 3-phase	100	MQMF012L	MADLT05SF	MADLN05SE
		200	MQMF022L	MADLT15SF	MADLN15SE
	200 V	400	MQMF042L	MBDLT25SF	MBDLN25SE
	Single	100	MHMF011L	MADLT11SF	MADLN11SE
	phase	200	MHMF021L	MBDLT21SF	MBDLN21SE
	100 V	400	MHMF041L	MCDLT31SF	MCDLN31SE
MHMF High inertia	Single	100	MHMF012L	MADLT05SF	MADLN05SE
<b>J</b>	phase/	200	MHMF022L	MADLT15SF	MADLN15SE
	3-phase 200 V	400	MHMF042L	MBDLT25SF	MBDLN25SE
	200 V	750	MHMF082L	MCDLT35SF	MCDLN35SE

\* The symbols of the motor structure and the gear reduction ratio are entered in  $\Box\Box$  of the motor part number. Please refer to the above "Model Designation".

Coming soon
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Motors with Gear Reducer

A6 Series

\* For combination of elements of model number, refer to Index P.448.

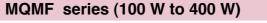
ш Series

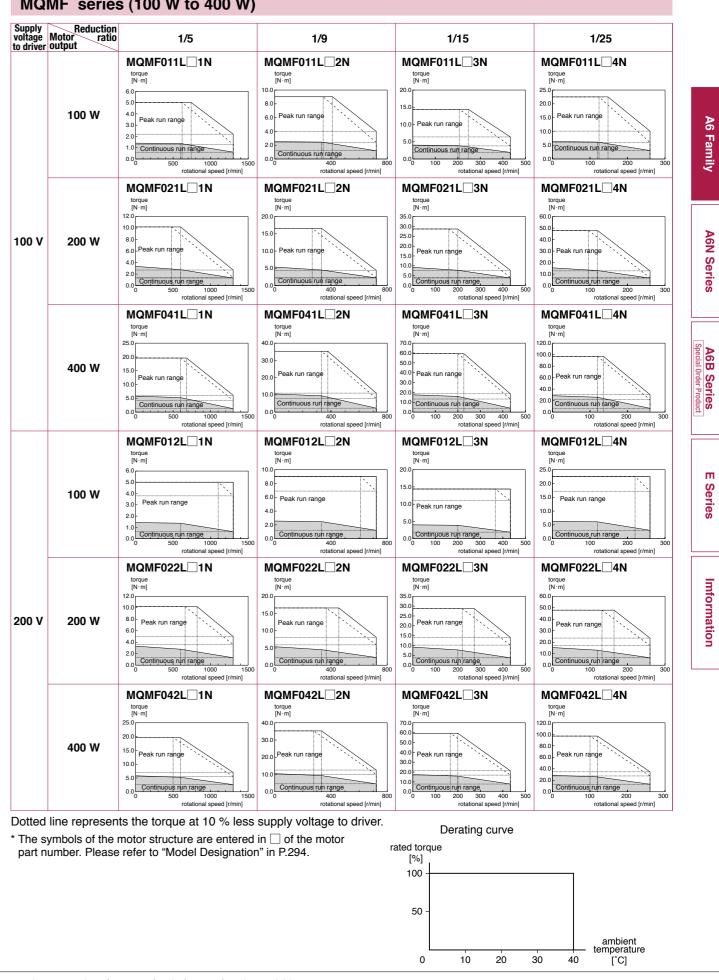
#### **Table of Motor Specifications**

	Part No.*	Motor Output	Reduction ratio	Output	Rated speed	Max. speed	Rated torque	Peak max. torque	(motor + conv to moto	of inertia reducer/ erted or shaft) w/ brake		ISS w/brake	Permissible radial load	Permissible thrust load
		(W)	-	(W)	(r/min)	(r/min)	(N∙m)	(N∙m)	J(×10 <sup>-4</sup>			g)	(N)	(N)
	MQMF01□L□1N		1/5	85	600	1300	1.36	5.01	0.210	0.240	1.2	1.4	490	245
	MQMF01□L□2N	100	1/9	85	333	722	2.45	9.02	0.200	0.230	1.2	1.4	588	294
-	MQMF01□L□3N	100	1/15	81	200	433	3.89	14.4	0.207	0.237	1.4	1.7	784	392
MQMF	MQMF01□L□4N		1/25	76	120	260	6.08	22.5	0.287	0.317	2.6	2.9	1670	833
	MQMF02 L 1N		1/5	175	600	1300	2.78	10.2	0.650	0.740	1.9	2.3	490	245
Middle inertiaa Flat type	MQMF02_L_2N	200	1/9	157	333	722	4.49	16.6	0.770	0.860	3.0	3.4	1180	588
hertia	MQMF02□L□3N	200	1/15	163	200	433	7.78	28.7	0.800	0.890	3.4	3.8	1470	735
a Fla	MQMF02□L□4N		1/25	163	120	260	13.0	47.9	0.790	0.880	3.4	3.8	1670	833
t type	MQMF04□L□1N		1/5	331	600	1300	5.27	19.6	1.35	1.43	3.4	3.9	980	490
	MQMF04□L□2N	400	1/9	331	333	722	9.49	35.3	1.25	1.33	3.4	3.9	1180	588
	MQMF04□L□3N	100	1/15	335	200	433	16.0	59.4	1.28	1.36	3.8	4.3	1470	735
	MQMF04□L□4N		1/25	327	120	260	26.0	96.9	1.31	1.39	5.4	5.9	2060	1030
	MHMF01□L□1N	_	1/5	85	600	1300	1.36	5.01	0.131	0.134	1.0	1.2	490	245
	MHMF01□L□2N	100	1/9	85	333	722	2.45	9.02	0.121	0.124	1.0	1.2	588	294
	MHMF01□L□3N		1/15	81	200	433	3.89	14.4	0.124	0.127	1.1	1.3	784	392
	MHMF02□L□1N	_	1/5	175	600	1300	2.78	10.2	0.437	0.457	1.5	1.8	490	245
	MHMF02□L□2N	200	1/9	157	333	722	4.49	16.6	0.563	0.583	2.5	2.8	1180	588
MHMF	MHMF02□L□3N		1/15	163	200	433	7.78	28.7	0.592	0.612	2.9	3.2	1470	735
T	MHMF02□L□4N		1/25	163	120	260	13.0	47.9	0.583	0.603	2.9	3.2	1670	833
ligh inertia	MHMF04□L□1N	-	1/5	339	600	1300	5.39	19.6	0.930	0.950	2.8	3.2	980	490
irtia	MHMF04□L□2N	400	1/9	332	333	722	9.51	35.3	0.833	0.853	2.8	3.2	1180	588
	MHMF04□L□3N		1/15	335	200	433	16.0	59.4	0.862	0.882	3.2	3.6	1470	735
	MHMF082L 1N	-	1/5	672	600	1200	10.7	38.4	2.38	2.48	4.3	5.0	980	490
	MHMF082L 2N	750	1/9	645	333	667	18.5	68.4	2.32	2.42	5.6	6.3	1470	735
	MHMF082L□3N	-	1/15	637	200	400	30.4	111	2.25	2.35	6.0	6.7	1760	882
	MHMF082L□4N		1/25	637	120	240	50.7	186	2.22	2.32	6.0	6.7	2060	1030

\* The symbols of the voltage specifications and the motor structure are entered in 
of the motor part number. Please refer to "Model Designation" in P.294.

#### Torque Characteristics of Motor Coming soon



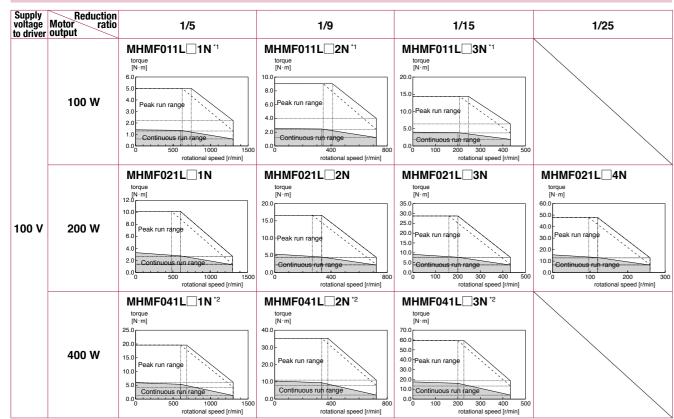


# Motors with Gear Reducer

A6 Series

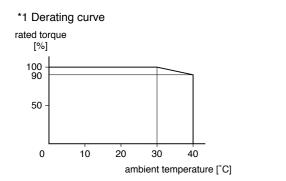
Motors with Gear Reducer

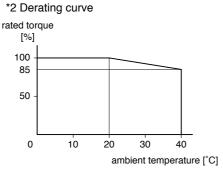
#### MHMF series (100 W to 750 W)

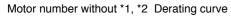


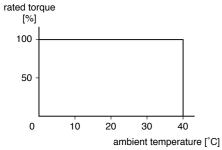
Dotted line represents the torque at 10 % less supply voltage to driver.

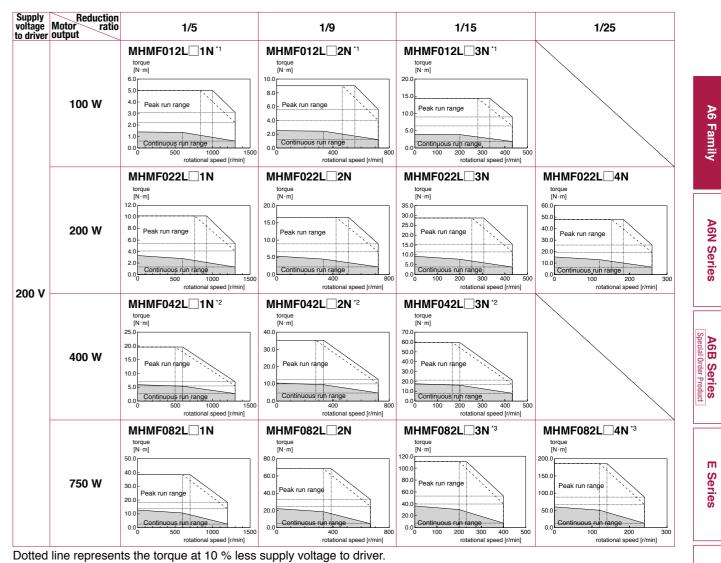
\* The symbols of the motor structure are entered in 🗌 of the motor part number. Please refer to "Model Designation" in P.294.

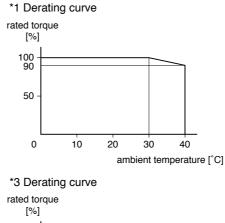


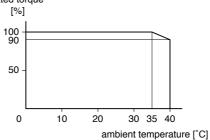










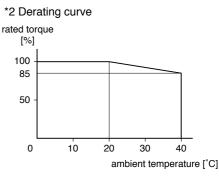


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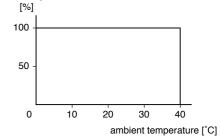
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\* The symbols of the motor structure are entered in 
o of the motor part number. Please refer to "Model Designation" in P.294.

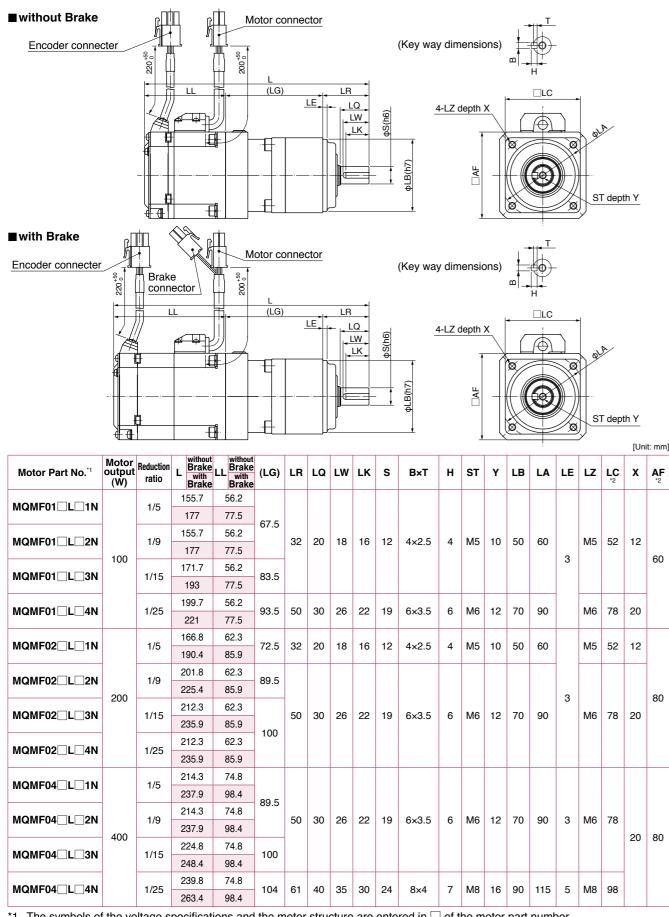


Motor number without \*1, \*2, \*3 Derating curve rated torque



#### MQMF series (Leadwire type)

Motors with Gear Reducer

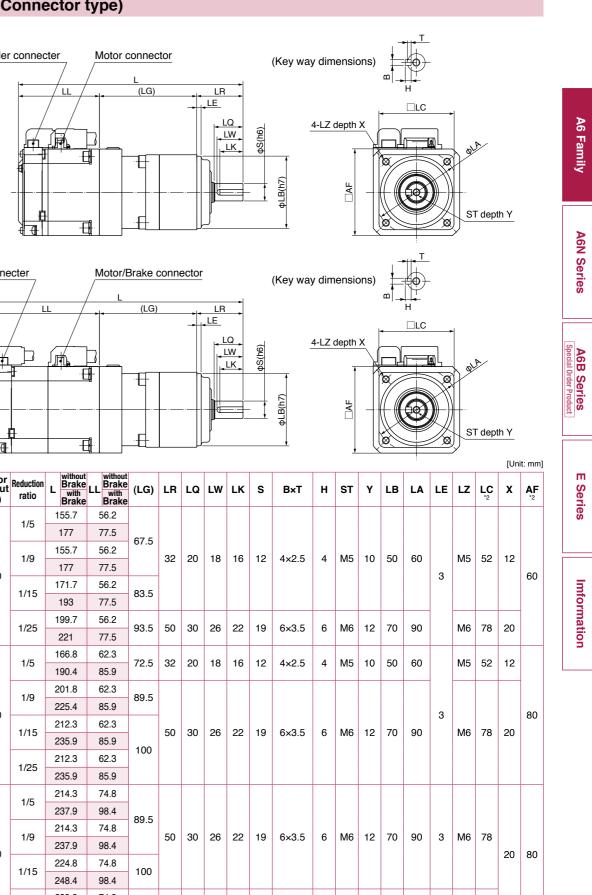


\*1 The symbols of the voltage specifications and the motor structure are entered in 
of the motor part number. Please refer to "Model Designation" in P.294.

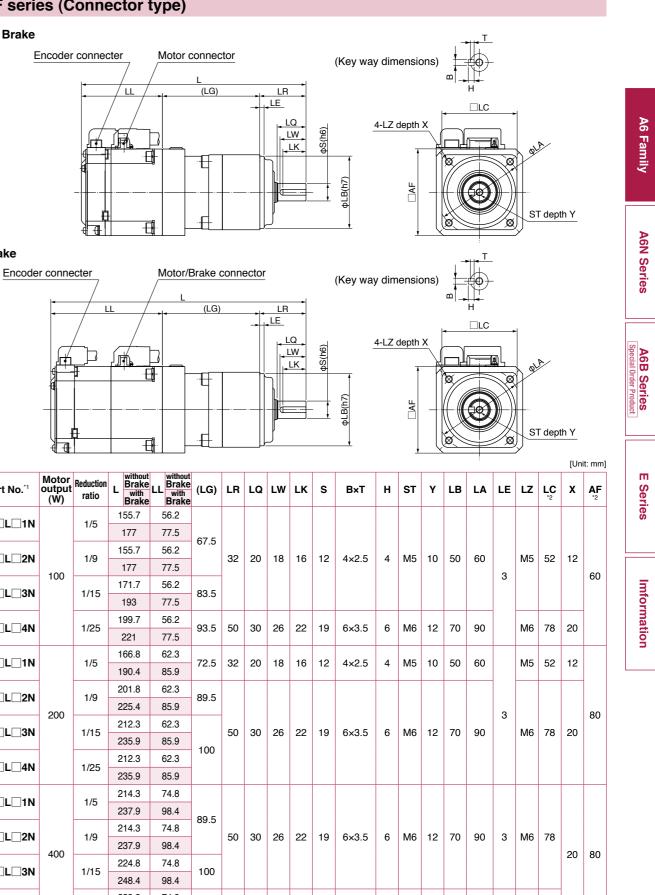
\*2 LC: flange size of the reduction gear , AF: flange size of the motor

#### MQMF series (Connector type)

without Brake



with Brake



Motor Part No.*1	Motor output (W)	Reduction ratio	L Without Brake with Brake	LL Brake	(LG)	LR	LQ	LW	LK	s		
MQMF01 L 1N		1/5	155.7	56.2								
		1/5	177	77.5	67.5							
MQMF01 L 2N		1/9	155.7	56.2	07.5	32	20	18	16	12		
	100	1/3	177	77.5		52	20	10	10	12		
MQMF01 L 3N	100	1/15	171.7	56.2	83.5							
		1/13	193	77.5	00.0							
MQMF01 L 4N		1/25	199.7	56.2	93.5	50	30	26	22	19		
		1/25	221	77.5	30.5	50	00	20	~~~	13		
MQMF02 L 1N		1/5	166.8	62.3	72.5	32	20	18	16	12		
		1/5	190.4	85.9	72.5	52	20	10	10	12		
MQMF02 L 2N		1/9 201.8 62.3 89.5										
	200	1/3	225.4	85.9	03.5							
MQMF02 L 3N	200	200	1/15	212.3	62.3		50	30	26	22	19	
		1/13	235.9	85.9	100		30	20	22	19		
MQMF02 L 4N		1/25	212.3	62.3	100							
		1/25	235.9	85.9								
MQMF04 L 1N		1/5	214.3	74.8								
		1/5	237.9	98.4	89.5							
MQMF04 L 2N		1/9	214.3	74.8	09.0	50	30	26	22	19		
	400	1/9	237.9	98.4		50	30	20	22	19		
MQMF04 L 3N	400	1/15	224.8	74.8	100							
		1/15	248.4	98.4	100							
MQMF04 L 4N		1/05	239.8	74.8	104	61	40	35	30	24	Γ	
		1/25	263.4	98.4	104	01	40	35	30	24		

\*1 The symbols of the voltage specifications and the motor structure are entered in  $\Box$  of the motor part number. Please refer to "Model Designation" in P.294.

\*2 LC: flange size of the reduction gear , AF: flange size of the motor

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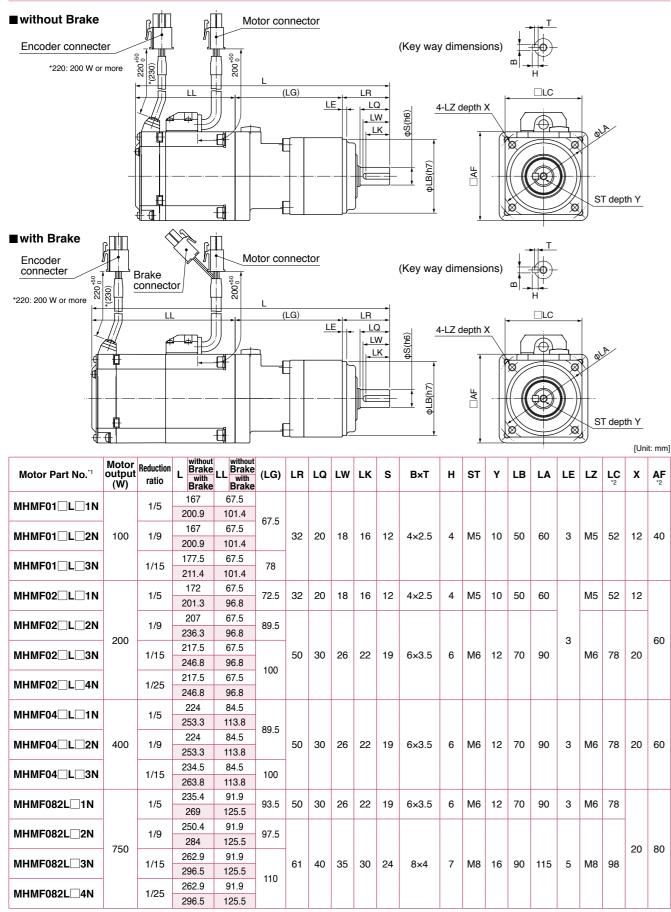
8×4

-300-

7 M8 16 90 115 5 M8 98

#### MHMF series (Leadwire type)

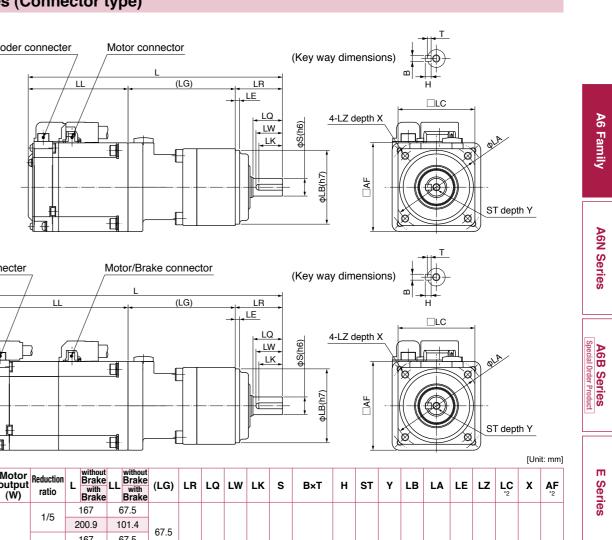
Motors with Gear Reducer



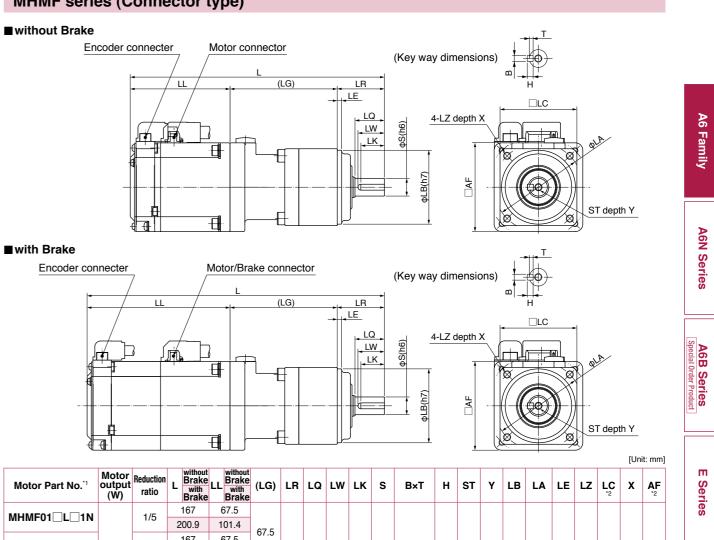
\*1 The symbols of the voltage specifications and the motor structure are entered in 
of the motor part number. Please refer to "Model Designation" in P.294.

\*2 LC: flange size of the reduction gear \_, AF: \_ flange size of the motor

#### MHMF series (Connector type)



with Brake



Motor Part No.'1	Motor output (W)	Reduction ratio	L Without Brake with Brake	LL Brake with	(LG)	LR	LQ	LW	LK	s	В×Т	н	ST	Y	LB	LA	LE	LZ	LC *2	x	<b>AF</b>				
MHMF01		1/5	167	67.5																					
		1/5	200.9	101.4	67.5																				
MHMF01 L 2N	100	1/9	167	67.5	07.5	32	20	18	16	12	4×2.5	4	M5	10	50	60	3	M5	52	12	40				
	100	1/9	200.9	101.4		32	20	10	10	12	4x2.5	4	IVIS	10	50	00	3	1015	52	12	40				
MHMF01 L 3N		1/15	177.5	67.5	78																				
		1/13	211.4	101.4	70																				
MHMF02		1/5	172	67.5	72.5	32	20	18	16	12	4×2.5	4	M5	10	50	60		M5	52	12					
		1/5	201.3	96.8	12.5	02	20	10	10	12	472.5	-	1015	10	50	00		1015	52	12					
MHMF02		1/9	207	67.5	89.5																				
	200		236.3	96.8	00.0												3				60				
MHMF02	200	1/15	217.5	67.5		50	30	26	22	19	6×3.5	6	М6	12	70	90	Ŭ	M6	78	20	00				
			246.8	96.8	100		00	20		10	0//0.0				10	00			10	20					
MHMF02 L 4N		1/25	217.5	67.5	100																				
		1720	246.8	96.8																					
MHMF04 L 1N		1/5	224	84.5																					
			253.3	113.8	89.5																				
MHMF04 L 2N	400	1/9	224	84.5		50	30	26	22	19	6×3.5	6	M6	12	70	90	3	M6	78	20	60				
			253.3	113.8													-								
MHMF04 C 3N		1/15	234.5	84.5	100																				
			263.8	113.8																	<u> </u>				
MHMF082L 1N		1/5	235.4	91.9	93.5	50	30	26	22	19	6×3.5	6	M6	12	70	90	3	M6	78						
			269	125.5																					
MHMF082L 2N		1/9	250.4	91.9	97.5																				
	750		284	125.5		51.5														20	80				
MHMF082L 3N		1/15	262.9	91.9	61	40	35	30	24	8×4	7	M8	16	90	115	5	M8	98							
			296.5	125.5	61 110	40	40	40																	
MHMF082L 4N		1/25	262.9	91.9																					
			296.5	125.5																					

\*1 The symbols of the voltage specifications and the motor structure are entered in i of the motor part number. Please refer to "Model Designation" in P.294

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#### **Environmental Conditions**

Ite	m	Conditions							
Ambient ten	nperature *1	0 °C to 40 °C (free from freezing)							
Ambient hui	nidity	20 %RH to 85 %RH (free from condensation <sup>*5*6</sup> )							
Storage terr	perature *2	-20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation 5)							
Storage humidity		20 %RH to 85 %RH (free from condensation <sup>*5*6</sup> )							
Vibration	Motor only	Lower than 49 m/s <sup>2</sup> (5 G) at running, 24.5 m/s <sup>2</sup> (2.5 G) at stall <sup>*7</sup>							
Impact	Motor only	Lower than 98 m/s <sup>2</sup> (10 G)							
	IP65 *3	MSMF, MQMF, MHMF (except rotating portion of output shaft and leadwire end.) (MSMF, MQMF, MHMF In case of leadwire type.)							
Enclosure rating (Motor only)	IP67 *3*4	IP67 motor (except rotating portion of output shaft and connecting pin part of the motor connector and the encoder connector)							
	IP44 <sup>*3</sup>	Excludes output shaft rotating part, connector connection pin part, and motor lead hole part of terminal box.							
Altit	ude	Lower than 1000 m							

\*1 Ambient temperature to be measured at 5 cm away from the motor.

\*2 Permissible temperature for short duration such as transportation.

- \*3 These motors conform to the test conditions specified in EN standards (EN60529, EN60034-5). Do not use these motors in application where water proof performance is required such as continuous wash-down operation.
- \*4 This condition is applied when the connector mounting screw are tightened to the recommended tightening torque.

\*5 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

- \*6 The terminal block of MDMFD22L1 is between 45%RH to 85%RH.
- \*7 For motors with rated output capacity of 5.5 kW or more, both motor rotation and stop will be 24.5 m/s<sup>2</sup> (2.5 G) or less.



#### Notes on [Motor specification] page

Note) 1. Regenerative resistors are not built in drivers of A and B frames. When regeneration occurs, prepare an optional external regenerative resistor.

#### [At AC100 V of power voltage]

Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defines as 1/(m+1), where m=load moment of inertia/ rotor moment of inertia.
- When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is AC115 V (at 100 V of the main voltage). If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.
- When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

#### [At AC200 V of power voltage]

Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defines as 1/(m+1), where m=load moment of inertia/ rotor moment of inertia.
- When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is AC230 V (at 200 V of the main voltage). If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.

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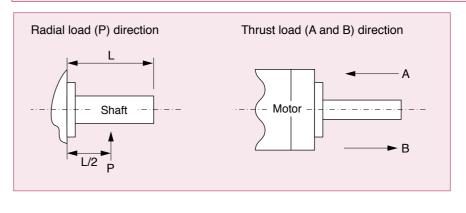
vertical feeding, consult us or a dealer.

Note) 2. If the effective torque is within the rated torque, there is no limit in generative brake. Note) 3. Consult us or a dealer if the load moment of inertia exceeds the specified value. Note) 4. Releasing time values represent the ones with DC-cutoff using a varistor.

# Permissible Load at Output Shaft

The radial load is defined as a load applied to the output shaft in the right-angle direction. This load is generated when the gear head is coupled to the machine using a chain, belt, etc., but not when the gear head is directly connected to the coupling. As shown in the right figure, the permissible value is determined based on the load applied to the L/2 position of the output shaft. The thrust load is defined as a load applied to the output shaft in the axial direction.

table below.



# **Built-in Holding Brake**

In the applications where the motor drives the vertical axis, this brake would be used to hold and prevent the work (moving load) from falling by gravity while the power to the servo is shut off.

Never use this for "Brake" purpose to stop the load in motion.

#### Output Timing of BRK-OFF Signal

- in motion, refer to the Operating Instructions (Overall).
- details, download a copy of the instruction manual from our website. <Note>
- built-in brake, however this does not affect any functionality.
- open). Pay an extra attention when magnetic sensors are used nearby the motor.

When regeneration occurs continuously such cases as running speed frequently changes or

#### Because the radial load and thrust load significantly affect the life of the bearing, take care not to allow the load during operation to exceed the permissible radial load and thrust load shown in the

A6 Family

A6N Series

A6B Series

ш

Series

Imformation

# Use this built-in brake for "Holding" purpose only, that is to hold the stalling status.

• For the brake release timing at power-on, or braking timing at Servo-OFF/Servo-Alarm while the motor is

• With the parameter, Pr4.38 (Setup of mechanical brake action while the motor is in motion), you can set up a time between when the motor enters to a free-run from energized status and when BRK-OFF signal turns off (brake will be engaged), when the Servo-OFF or alarm occurs while the motor is in motion. For

1. The lining sound of the brake (chattering and etc.) might be generated while running the motor with

2. Magnetic flux might be generated through the motor shaft while the brake coil is energized (brake is

#### • Specifications of Built-in Holding Brake

Motor series	Motor output	Static friction torque N⋅m	Rotor inertia × 10 <sup>-4</sup> kg·m²	time	Releasing time ms	Exciting current DC A (at cool-off)	Releasing voltage DC V Exciting voltage DC V	Permissible work (J) per one braking	total work	Permissible angular acceleration rad/s <sup>2</sup>	
	50 W,100 W	0.294 or more	0.002	35 or less	20 or less	0.30	1 or more	39.2	4.9		
MSMF	200 W,400 W	1.27 or more	0.018	50 or less	15 or less	0.36		137	44.1		
(80 mm sq.)	750 W	2.45 or more					24±1.2	196	147	30000	
( or less )	1000 W	3.80 or more	0.075	70 or less	20 or less	0.42	1 or more 24±2.4	185	80.0		
	1.0 kW, 1.5 kW, 2.0 kW	8.0 or more	0.175	50 or less	15 or less	0.81		600	50		
MSMF	3.0 kW	12.0 or more		80 or less			2 or more		900	10000	
(100 mm sq.) or more	4.0 kW	16.2 or more			50. 1		24±2.4	1470	2160	10000	
	5.0 kW	22.0 or more	1.12	110 or less	50 or less	0.90		1545	2000		
MQMF	100 W	0.39 or more	0.018	15 or less		0.30	1 or more	105	44.1		
$\binom{80\text{mm}\text{sq.}}{\text{or less}}$	200 W, 400 W	1.6 or more	0.075	70 or less	20 or less	0.36	24±2.4	185	80	30000	
	50 W, 100 W	0.38 or more	0.002	35 or less		0.30	1 or more	39.2	4.9		
MHMF (80 mm sq.)	200 W, 400 W	1.6 or more	0.018	50 or less	20 or less	0.36	1 or more	105	44.1	30000	
( or less )	750 W, 1000 W	3.8 or more	0.075	70 or less		0.42	24±2.4	185	80		
	1.0 kW, 1.5 kW	13.7 or more	1.12	100 or less	50 or less	0.79		1470	2160	10000	
MHMF	2.0 kW, 3.0 kW, 4.0 kW	25.0 or more	4.7	80 or less	25 or less		2 or more 24±2.4		3000	5440	
(100 mm sq.) or more	5.0 kW 7.5 kW	44.1 or more 63.0 or more	4.1 3.9	150 or less 200 or less		1.29	2 or more 15 or less	1800	3100	5108	
	1.0 kW, 1.5 kW, 2.0 kW	13.7 or more		100 or less		0.79		1470	2160		
	3.0 kW	22.0 or more	1.12	110 or less	50 or less	0.90	2 or more	1545	2000	10000	
	4.0 kW	25.0 or more	4.7	80 or less	25 or less		24±2.4		3000	5440	
MDMF	5.0 kW	44.1 or more	4.1	150 or less	30 or less	1.29		1800			
(100 mm sq.) or more	7.5 kW	63.0 or more	3.9	200以下	80 or less				3100		
	11.0 kW						2 or more			5108	
	15.0 kW	100 or more	7.1	300 or less	140 or less	1.08	15 or less	2000	4000		
	22.0 kW	200 or more	28		150 or less	1.72		3000		3000	
	0.85 kW, 1.3 kW, 1.8 kW	13.7 or more	1.12	100 or less	50 or less	0.79	2 or more	1470	2160	10000	
MGMF	2.9 kW	25.0 or more	4.7	80 or less	25 or less				3000	5440	
(100 mm sq.) or more	4.4 kW	44.1 or more	3.93	150 or less	30 or less	1.29	24±2.4	1800			
\ 01 HIUTE / _	5.5 kW	63.0 or more	3.9	200 or less	ess 80 or less	1.29	2 or more 15 or less		3100	5108	

Specifications of Motor
Encoder Cable
Motor Cable
Brake Cable
Interface Cable
Connector Kit
Battery for Absolute En
Surge Absorber for Mot
Wireless LAN Dongle
Mounting Bracket
Reactor
External Regenerative
Daisy Chain
Cable part No. Designa
List of Peripheral Equip

• The engaging time and releasing time represent the delay time of the brake operation.

• Releasing time values represent the ones with DC-cutoff using a varistor.

· Above values (except static friction torque, releasing voltage and exciting voltage) represent typical values.

• Backlash of the built-in holding brake is kept 2° or smaller at ex-factory point.

• Service life of the number of acceleration/deceleration with the above permissible angular acceleration is more than 10 million times. (Life end is defined as when the brake backlash drastically changes.)

• The motor brake power supply must be different from the power supply for the driver's connectors X1, X2, X3, X4, X5, X6.

# Options

#### Contents

connector	
	313
coder	
or Brake	
	341
Resistor	
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ments Manufacturers	347

A6 Family A6N Series

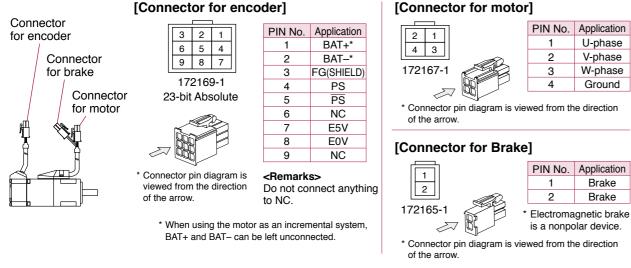
A6B Series Special Order Product

E Series

#### 50 W to 1000 W 80 mm sq. or less

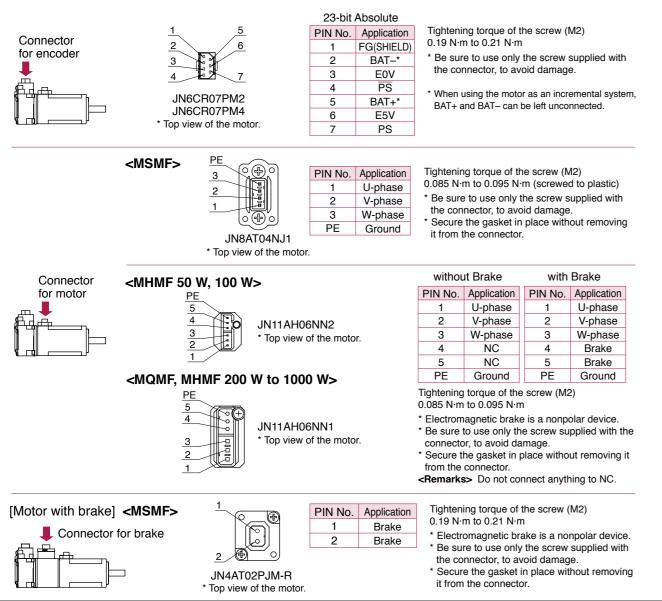
**Options** 

• When the motors of <MSMF, MQMF, MHMF (Leadwire type)> are used, they are connected as shown below. Connector: Tyco Electronics Japan G.K. (The figures below show connectors for the motor.)



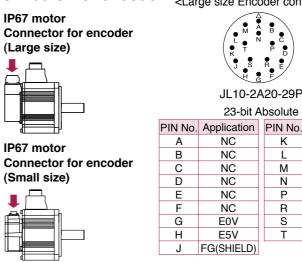
# • When the motors of <MSMF, MQMF, MHMF (Connector type)> are used, they are connected as shown below.

Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)



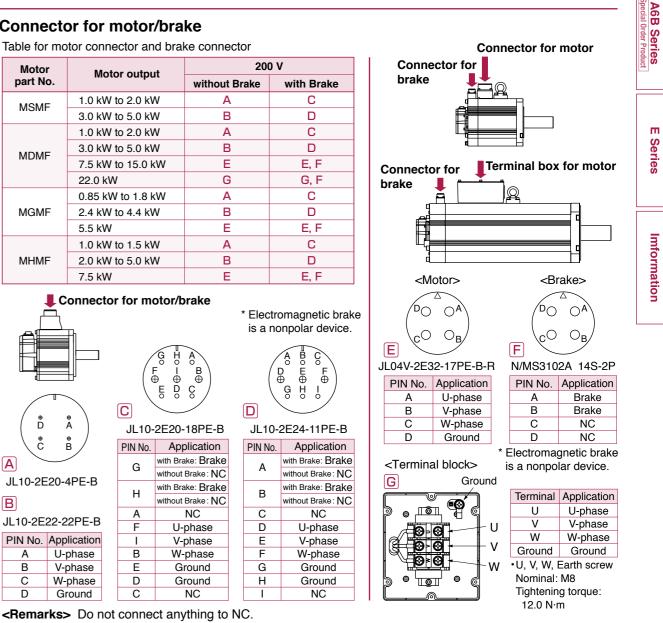
#### 0.85 kW to 5.0 kW 100 mm sq. or more

- Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)
- Connector for encoder



#### Connector for motor/brake

Motor	Motor output	200	0 V
part No.	Motor output	without Brake	,
MSMF	1.0 kW to 2.0 kW	A	
IVISIVII	3.0 kW to 5.0 kW	В	
	1.0 kW to 2.0 kW	A	
MDMF	3.0 kW to 5.0 kW	В	
IVIDIVIE	7.5 kW to 15.0 kW	E	
	22.0 kW	G	
	0.85 kW to 1.8 kW	A	
MGMF	2.4 kW to 4.4 kW	В	
	5.5 kW	E	
	1.0 kW to 1.5 kW	Α	
MHMF	2.0 kW to 5.0 kW	В	
	7.5 kW	E	



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# • When the motors of <MSMF, MDMF, MGMF, MHMF> are used, they are connected as shown below.

<Large size Encoder connector> <Small size Encoder connector>



olute	

N No.	Application
Κ	PS
L	PS
М	NC
Ν	NC
Ρ	NC
R	NC
S	BAT- *
Т	BAT+ *



JN2AS10ML3-R 23-bit Absolute

IN No.	Application
1	E0V
2	NC
3	PS
4	E5V
5	BAT- *
6	BAT+ *
7	PS
8	NC
9	FG(SHIELD)
10	NC

#### <Remarks> Do not connect anything to NC.

\* When using the motor as an incremental system, BAT+ and BATcan be left unconnected

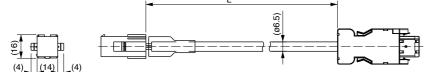
A6 Family

A6N Series

**Options** 

Encoder Cable \* It doesn't correspond to IP65 and IP67.

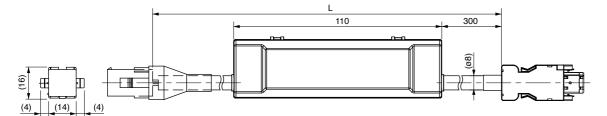
Part No.	MFECA0 * * 0EAD	80 mm sq. or less Applicable model	MSMF         50 W to 1000 W,         MQMF         100 W to 400 W           MHMF         50 W to 1000 W         (Leadwire type)
Specifications	23-bit absolute encoder V	/hen used in ind	cremental system (without battery box)
			. [Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EAD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EAD
Connector (Motor side)	172161-1	Tyco Electronics Japan	10	MFECA0100EAD
Connector pin	170365-1	G.K.	20	MFECA0200EAD
Cable	0.20 mm <sup>2</sup> ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0EAE	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W, MC MHMF 50 W to 1000 W (Leadwire type)	2MF 100 W to 400 W
Specifications	23-bit absolute encoder When used in absolute system (with battery box) *			

\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

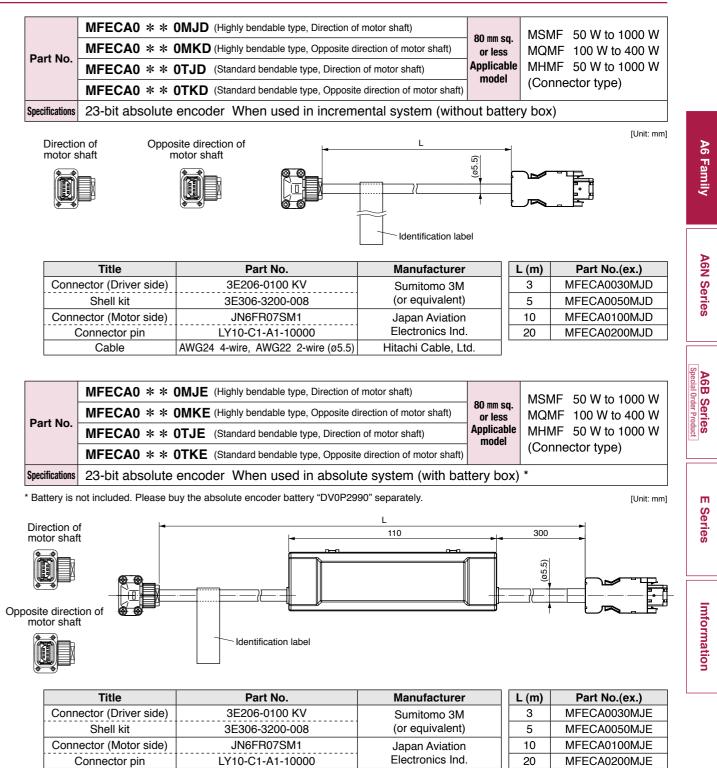


Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EAE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EAE
Connector (Motor side)	172161-1	Tyco Electronics Japan	10	MFECA0100EAE
Connector pin	170365-1	G.K.	20	MFECA0200EAE
Cable	0.20 mm <sup>2</sup> ×4P (8-wire)	Oki Electric Cable Co., Ltd.		

	MFECA0 * * 0MJD (Highly bendable type, Direction
	MFECA0 * * 0MKD (Highly bendable type, Opposit
Part No.	MFECA0 * * 0TJD (Standard bendable type, Direct
	MFECA0 * * 0TKD (Standard bendable type, Opport
Specifications	23-bit absolute encoder When used in incre
Directic motor s	

Title	Part No.
Connector (Driver side)	3E206-0100 KV
Shell kit	3E306-3200-008
Connector (Motor side)	JN6FR07SM1
Connector pin	LY10-C1-A1-10000
Cable	AWG24 4-wire, AWG22 2-wire (ø

	MFECA0 * * 0MJE (Highly bendable type, Direct
Dort No.	MFECA0 * * 0MKE (Highly bendable type, Oppo
Part No.	MFECA0 * * 0TJE (Standard bendable type, Dir
	MFECA0 * * 0TKE (Standard bendable type, Op
Specifications	23-bit absolute encoder When used in abs



Title	Part No.
Connector (Driver side)	3E206-0100 KV
Shell kit	3E306-3200-008
Connector (Motor side)	JN6FR07SM1
Connector pin	LY10-C1-A1-10000
Cable	AWG24 4-wire、AWG22 2-wire (ф5

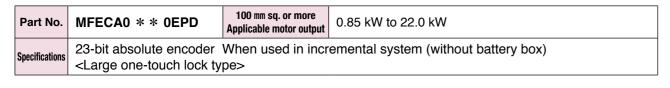
[Unit: mm]

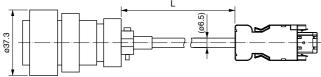
¢5.5) Hitachi Cable, Ltd.

3	MFECA0030MJE
5	MFECA0050MJE
10	MFECA0100MJE
20	MFECA0200MJE

**Options** 

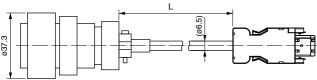
Encoder Cable \* It doesn't correspond to IP65 and IP67.





Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EPD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EPD
Connector (Motor side)	JL10-6A20-29S-EB	Japan Aviation	10	MFECA0100EPD
Cable clamp	JL04-2022CK(09)-R	Electronics Ind.	20	MFECA0200EPD
Cable	0.2 mm <sup>2</sup> ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0ESD	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW	
Specifications	ifications 23-bit absolute encoder When used in incremental system (without battery box) <large screwed="" type=""></large>			



[	Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
[	Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ESD
	Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ESD
	Connector (Motor side)	N/MS3106B20-29S	Japan Aviation	10	MFECA0100ESD
[	Cable clamp	N/MS3057-12A	Electronics Ind.	20	MFECA0200ESD
ſ	Cable	0.2 mm <sup>2</sup> ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

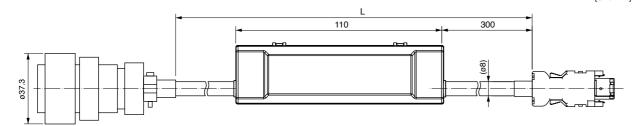
Part No.	MFECA0 * * 0EPE	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW (IP67 motor)			
Specifications	23-bit absolute encoder <large lock="" one-touch="" th="" ty<=""><th colspan="5">When used in absolute system (with battery box) * /pe&gt;</th></large>	When used in absolute system (with battery box) * /pe>				

\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

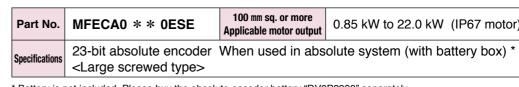
[Unit: mm]

[Unit: mm]

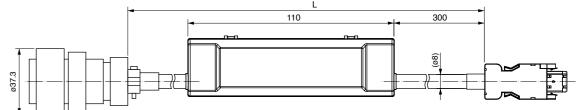
[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EPE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EPE
Connector (Motor side)	JL10-6A20-29S-EB	Japan Aviation	10	MFECA0100EPE
Cable clamp	JL04-2022CK(09)-R	Electronics Ind.	20	MFECA0200EPE
Cable	0.2 mm <sup>2</sup> ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

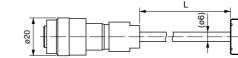


\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ESE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ESE
Connector (Motor side)	N/MS3106B20-29S	Japan Aviation	10	MFECA0100ESE
Cable clamp	N/MS3057-12A	Electronics Ind.	20	MFECA0200ESE
Cable	0.2 mm <sup>2</sup> ×4P (8-wire)	Oki Electric Cable Co., Ltd.		

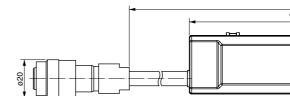
Part No.	MFECA0 * * 0ETD	100 mm sq. or more Applicable motor output
Specifications	23-bit absolute encoder <small lock="" one-touch="" td="" ty<=""><td>When used in inc pe&gt;</td></small>	When used in inc pe>



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ETD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETD
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation	10	MFECA0100ETD
Connector pin	JN1-22-22S-PKG100	Electronics Ind.	20	MFECA0200ETD
Cable	0.2 mm <sup>2</sup> ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0ETE	100 mm sq. or more Applicable motor output	
Specifications	23-bit absolute encoder When used in abs		
opeomeanons	<small lock="" one-touch="" td="" ty<=""><td>pe&gt;</td></small>	pe>	

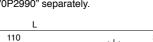
\* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ETE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETE
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation	10	MFECA0100ETE
Connector pin	JN1-22-22S-PKG100	Electronics Ind.	20	MFECA0200ETE
Cable	0.2 mm <sup>2</sup> ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

#### 0.85 kW to 22.0 kW (IP67 motor)





A6 Family

A6N Series

A6B Series Special Order Produc

ш Series

Imformation

0.85 kW to 22.0 kW (IP67 motor)

cremental system (without battery box)

[Unit: mm]



0.85 kW to 22.0 kW (IP67 motor)

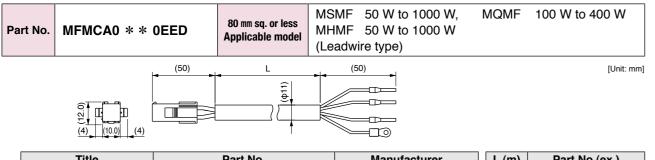
#### solute system (with battery box) \*

110 300

[Unit: mm]

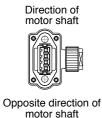
**Options** 

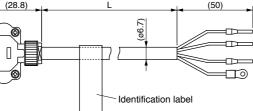
Motor Cable (without Brake) \* It doesn't correspond to IP65 and IP67.



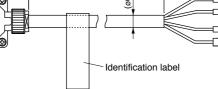
Inte	Part No.	Manufacturer	L (M)	Part No.(ex.)
Connector	172159-1	Tyco Electronics Japan	3	MFMCA0030EED
Cable clamp	170366-1	G.K.	5	MFMCA0050EED
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100EED
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200EED
Cable	ROBO-TOP 600V 0.75 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

Devit No.	MFMCA0 * * 0NJD (Highly bendable type, Direction of motor shaft)         MFMCA0 * * 0RJD (Standard bendable type, Direction of motor shaft)	80 mm sq. or less	MSMF 50 W to 1000 W (Connector type)
Part No.	MFMCA0 * * 0NKD (Highly bendable type, Opposite direction of motor shaft)	Applicable model	MSMF 200 W to 1000 W
	MFMCA0 * * 0RKD (Standard bendable type, Opposite direction of motor shaft)		(Connector type)





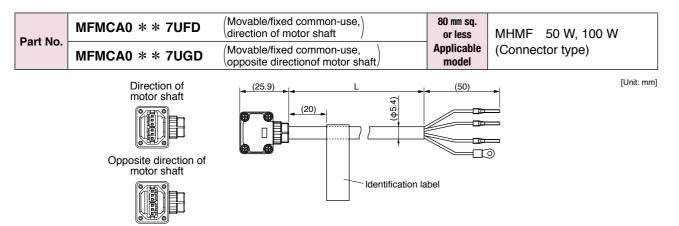




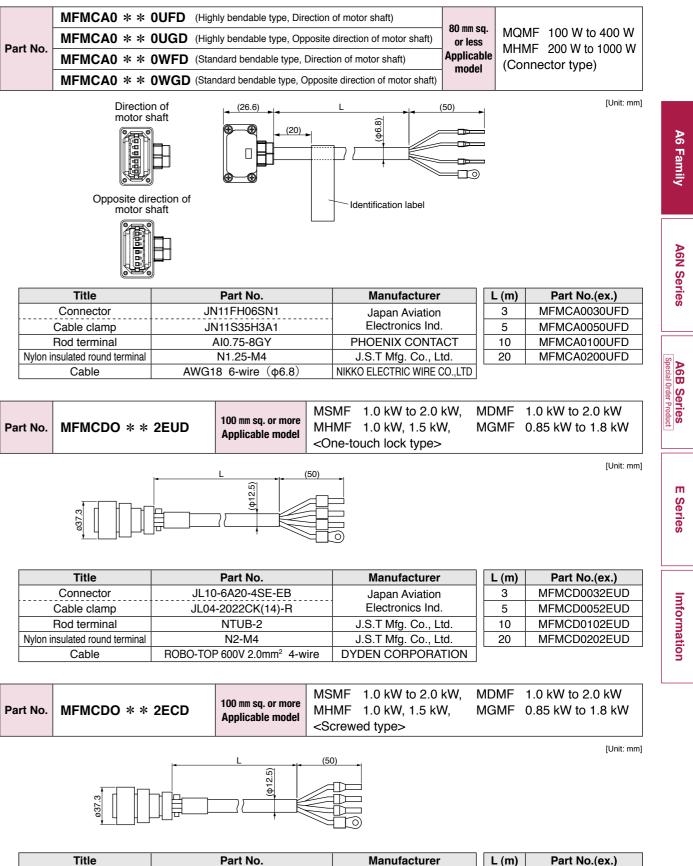
Motor cable for opposite direction of motor shaft cannot be used with a motor 50 W and 100 W.

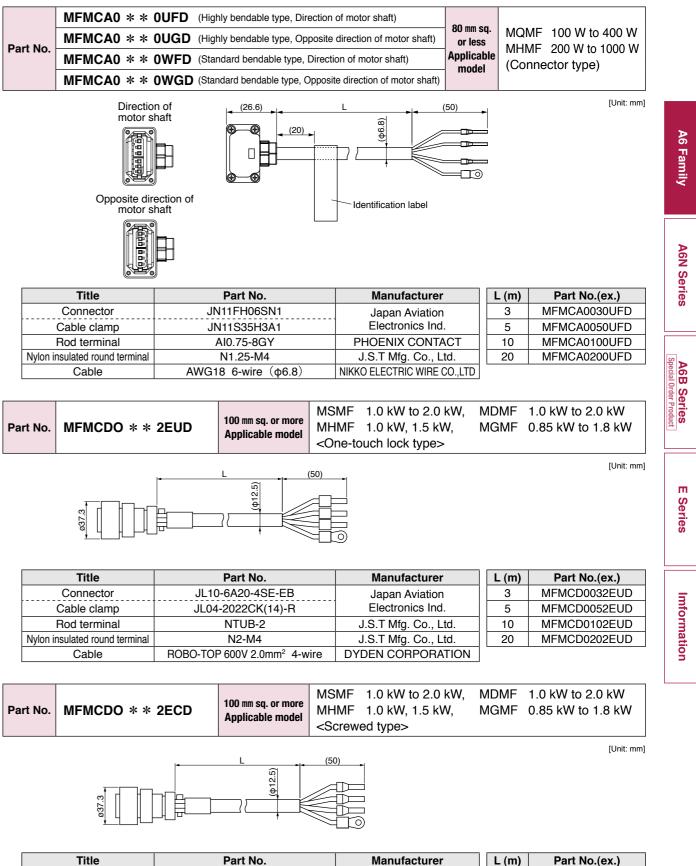
<Remarks>

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN8FT04SJ1	Japan Aviation	3	MFMCA0030NJD
Cable clamp	ST-TMH-S-C1B-3500	Electronics Ind.	5	MFMCA0050NJD
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100NJD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200NJD
Cable	AWG18 4-wire (	Hitachi Cable, Ltd.		

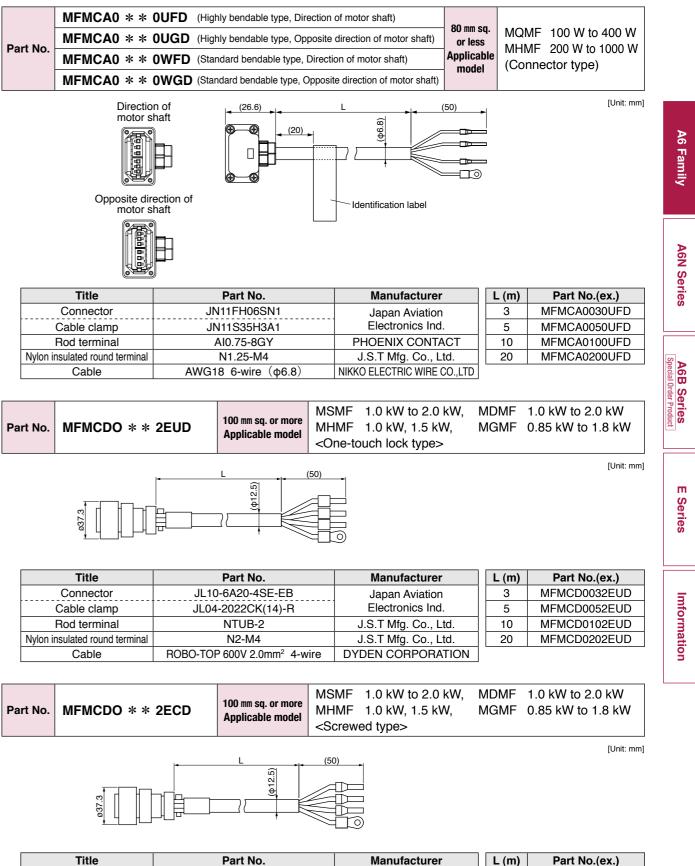


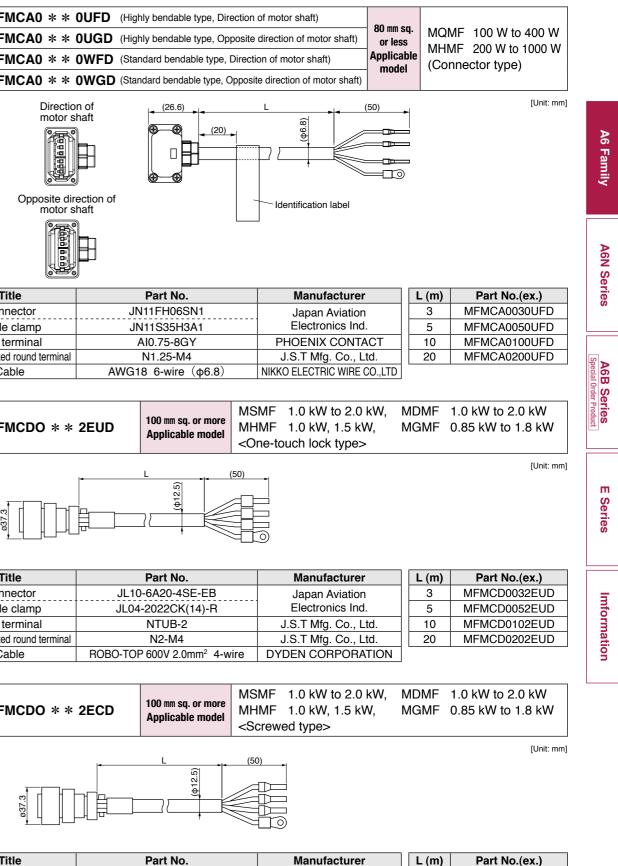
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN2	Japan Aviation	3	MFMCA0037UFD
Cable clamp	JN11S10K4A1	Electronics Ind.	5	MFMCA0057UFD
Rod terminal	AI0.34-8TQ	PHOENIX CONTACT	10	MFMCA0107UFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0207UFD
Cable	AWG22 6-wire (φ5.4 mm)	NIKKO ELECTRIC WIRE CO., LTD		





Title	Part No.
Connector	JL10-6A20-4SE-EB
Cable clamp	JL04-2022CK(14)-R
Rod terminal	NTUB-2
Nylon insulated round terminal	N2-M4
Cable	ROBO-TOP 600V 2.0mm <sup>2</sup> 4-wir





Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A20-4SE-EB-RK	Japan Aviation	3	MFMCD0032ECD
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCD0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCD0102ECD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCD0202ECD
Cable	ROBO-TOP 600V 2.0mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

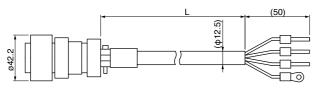
[Unit: mm]

-314-

[Unit: mm]



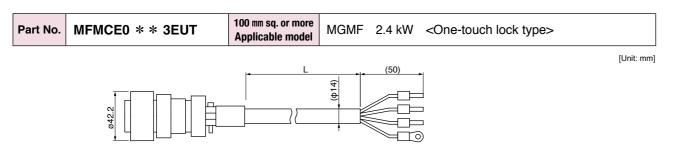
100 mm sq. or more MHMF 2.0 kW <One-touch lock type> Applicable model



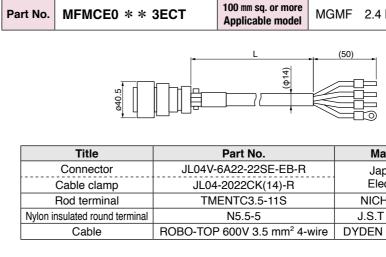
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-22SE-EB	Japan Aviation	3	MFMCE0032EUD
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCE0052EUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102EUD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202EUD
Cable	ROBO-TOP DP6/2501 2.0 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

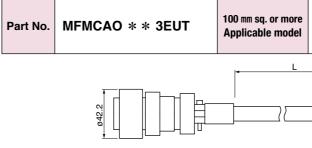
Part No.	MFMCEO * * 2ECD	100 mm sq. or more Applicable model	MHMF	2.0 kW	<screwed type=""></screwed>	
	·	φ12.5)	(50)	*		[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation	3	MFMCE0032ECD
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCE0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102ECD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202ECD
Cable	ROBO-TOP 600V 2.0 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

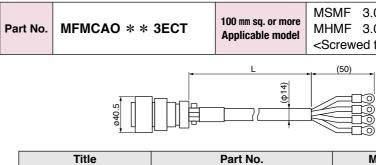


Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-22SE-EB	Japan Aviation	3	MFMCE0033EUT
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCE0053EUT
Rod terminal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCE0103EUT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	20	MFMCE0203EUT
Cable	ROBO-TOP DP6/2501 3.5 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		





Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-22SE-EB	Japan Aviation	3	MFMCA0033EUT
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCA0053EUT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCA0103EUT
Cable	ROBO-TOP DP6/2501 3.5 mm <sup>2</sup> 4-wire	DYDEN CORPORATION	20	MFMCA0203EUT



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation	3	MFMCA0033ECT
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCA0053ECT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCA0103ECT
Cable	ROBO-TOP 600V 3.5 mm <sup>2</sup> 4-wire	DYDEN CORPORATION	20	MFMCA0203ECT

#### MGMF 2.4 kW <Screwed type>

	Manufacturer
	Japan Aviation Electronics Ind.
	NICHIFU Co., Ltd.
	J.S.T Mfg. Co., Ltd.
vire	DYDEN CORPORATION

L (m)	Part No.(ex.)
3	MFMCE0033ECT
5	MFMCE0053ECT
10	MFMCE0103ECT
20	MFMCE0203ECT

MSMF	3.0 kW to 5.0 kW,
MHMF	3.0 kW to 5.0 kW,
<one-to< td=""><td>ouch lock type&gt;</td></one-to<>	ouch lock type>

MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW to 4.4 kW

[Unit: mm]

[Unit: mm]

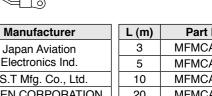
	(50)
(φ14)	
ł	

MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <Screwed type>

MGMF 2.9 kW to 4.4 kW

MDMF 3.0 kW to 5.0 kW

[Unit: mm]



Manufacturer	L (m)	Part No.(ex.)

A6 Family

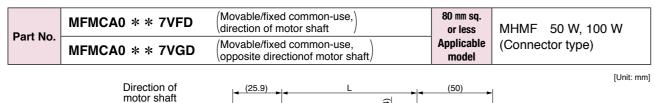
A6N Series

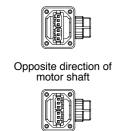
A6B Series Special Order Product

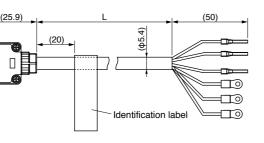
E Series

Options

Motor Cable (with Brake) \* It doesn't correspond to IP65 and IP67.



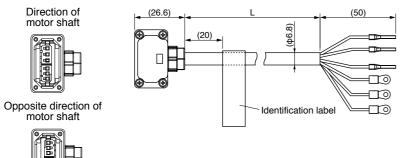




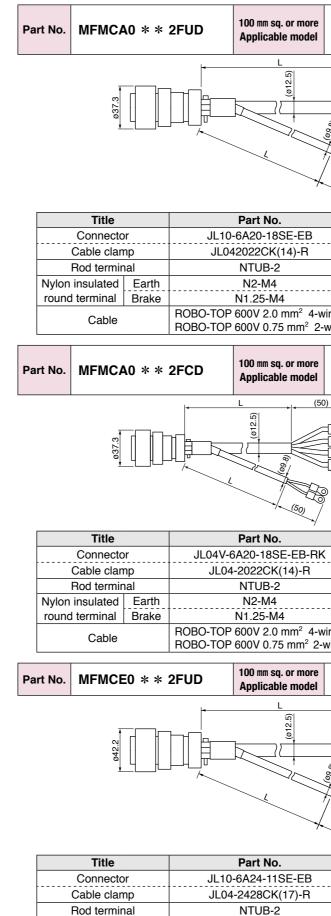
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN2	Japan Aviation	3	MFMCA0037VFD
Cable clamp	JN11S10K4A1	Electronics Ind.	5	MFMCA0057VFD
Rod terminal	AI0.34-8TQ	PHOENIX CONTACT	10	MFMCA0107VFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0207VFD
Cable	AWG22 6-wire ( \$ .4 mm)	NIKKO ELECTRIC WIRE CO., LTD		

	MFMCA0 * * 0VFD (Highly bendable type, Direction of motor shaft)		
Part No.	MFMCA0 * * 0VGD (Highly bendable type, Opposite direction of motor shaft)	80 mm sq. or less	MQMF 100 W to 400 W MHMF 200 W to 1000 W
Part NO.	MFMCA0 * * 0XFD (Standard bendable type, Direction of motor shaft)	Applicable model	(Connector type)
	MFMCA0 * * 0XGD (Standard bendable type, Opposite direction of motor shaft)		

[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN1	Japan Aviation	3	MFMCA0030VFD
Cable clamp	JN11S35H3A1	Electronics Ind.	5	MFMCA0050VFD
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100VFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200VFD
Cable	AWG18 6-wire (q6.8 mm)	NIKKO ELECTRIC WIRE CO., LTD		



Earth

Brake

Nylon insulated

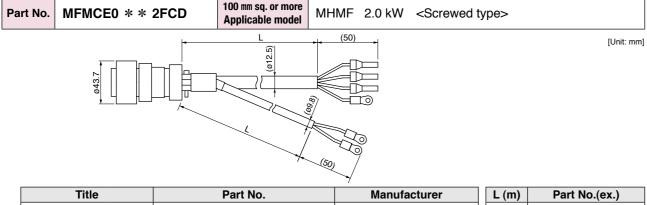
round terminal

Cable

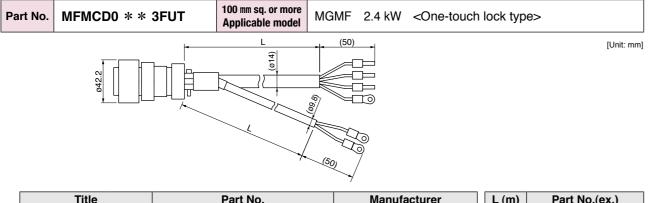
2FUD	100 mm sq. or more Applicable model		1.0 kW to 2.0 kW, 1.0 kW to 1.5 kW, buch lock type>	MDMF MGMF		
	L	(50)	) 		[Unit: mm]	
_	<u>(ø12.5)</u>					
┢╹┓						
- /						A6
	_L	A	$\succ$			A6 Family
						nij
	7	(50)	7			
10	Part No. -6A20-18SE-EB		Manufacturer		h) Part No.(ex.) MFMCA0032FUD	
- +	42022CK(14)-R		Japan Aviation Electronics Ind.	3	MFMCA0032F0D MFMCA0052FUD	A
	NTUB-2		J.S.T Mfg. Co., Ltd.	10	MFMCA0102FUD	A6N Series
	N2-M4			20	MFMCA0202FUD	Ser
	N1.25-M4		J.S.T Mfg. Co., Ltd.			ies
	600V 2.0 mm <sup>2</sup> 4-w		DEN CORPORATION			
ROBO-TOP	600V 0.75 mm <sup>2</sup> 2-	wire				
		MSMF	1.0 kW to 2.0 kW,	MDMF	1.0 kW to 2.0 kW	S
2FCD	100 mm sq. or more Applicable model	MHMF	1.0 kW to 1.5 kW,	MGMF	0.85 kW to 1.8 kW	A6B special 0
	Applicable model	<screw< td=""><td>ved type&gt;</td><td></td><td></td><th></th></screw<>	ved type>			
	L (50	)			[Unit: mm]	A6B Series Special Order Product
	(012.5)					luct S
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/~/						
						П
	(50)					Series
			Manufacturer		n) Part No.(ex.)	ß
	Part No.		Manufacturer		1) Pari No.(ex.)	
	6420-18SE-EB-BK			L (n	, , ,	
- +	6A20-18SE-EB-RK I-2022CK(14)-B		Japan Aviation Electronics Ind.	3	MFMCA0032FCD	
- +	I-2022CK(14)-R		Japan Aviation Electronics Ind.	`	MFMCA0032FCD MFMCA0052FCD	
- +			Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd.	3	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD	Imf
JL04	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4		Japan Aviation Electronics Ind.	3 5 10	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD	Imforn
JL04 ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w		Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd.	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD	Imformati
JL04 ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4		Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd.	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD	Imformation
JL04 ROBO-TOP ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w	ire DY	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	Imformation
JL04 ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1	ire DY	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd.	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	Imformation
JL04 ROBO-TOP ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more Applicable model L	ire DY	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. 'DEN CORPORATION 2.0 kW <one-tou< td=""><td>3 5 10 20</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD</td><th></th></one-tou<>	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	
JL04 ROBO-TOP ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more Applicable model L	ire DY MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. 'DEN CORPORATION 2.0 kW <one-tou< td=""><td>3 5 10 20</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD</td><th></th></one-tou<>	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	
JL04 ROBO-TOP ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more	ire DY MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. 'DEN CORPORATION 2.0 kW <one-tou< td=""><td>3 5 10 20</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD</td><th></th></one-tou<>	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	
JL04 ROBO-TOP ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more Applicable model	ire DY MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. 'DEN CORPORATION 2.0 kW <one-tou< td=""><td>3 5 10 20</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD</td><th></th></one-tou<>	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	
JL04 ROBO-TOP ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more Applicable model	ire DY MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. 'DEN CORPORATION 2.0 kW <one-tou< td=""><td>3 5 10 20</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD</td><th></th></one-tou<>	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	
JL04 ROBO-TOP ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more Applicable model	ire DY MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. 'DEN CORPORATION 2.0 kW <one-tou< td=""><td>3 5 10 20</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD</td><th></th></one-tou<>	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	
JL04 ROBO-TOP ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more Applicable model	ire DY MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. 'DEN CORPORATION 2.0 kW <one-tou< td=""><td>3 5 10 20</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD</td><th></th></one-tou<>	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	
JL04 ROBO-TOP ROBO-TOP	I-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more Applicable model	ire DY MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. 'DEN CORPORATION 2.0 kW <one-tou< td=""><td>3 5 10 20</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD</td><th></th></one-tou<>	3 5 10 20	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	
JL04 ROBO-TOP ROBO-TOP	L	MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION 2.0 kW <one-tou< td=""><td>ch lock</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD</td><th></th></one-tou<>	ch lock	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD	
JL04 ROBO-TOP ROBO-TOP	-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more Applicable model	MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION 2.0 kW <one-tou< td=""><td>ch lock</td><td>MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD type&gt; [Unit: mm]</td><th></th></one-tou<>	ch lock	MFMCA0032FCD MFMCA0052FCD MFMCA0102FCD MFMCA0202FCD type> [Unit: mm]	
JL04 ROBO-TOP ROBO-TOP 2FUD	-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2-1 100 mm sq. or more Applicable model L L Part No. -6A24-11SE-EB	MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION 2.0 kW <one-tou< td=""><td>ch lock</td><td>MFMCA0032FCD           MFMCA0052FCD           MFMCA0102FCD           MFMCA0202FCD           MFMCA0202FCD           Important (Unit: mm)           Important (Unit: mm)</td><th></th></one-tou<>	ch lock	MFMCA0032FCD           MFMCA0052FCD           MFMCA0102FCD           MFMCA0202FCD           MFMCA0202FCD           Important (Unit: mm)           Important (Unit: mm)	
JL04 ROBO-TOP ROBO-TOP 2FUD	I-2022CK(14)-R NTUB-2 N2-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2- 100 mm sq. or more Applicable model L Part No. -6A24-11SE-EB I-2428CK(17)-R	MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION 2.0 kW <one-tou< td=""><td>ch lock</td><td>MFMCA0032FCD           MFMCA0052FCD           MFMCA0102FCD           MFMCA0202FCD           MFMCA0202FCD           Important State           Important State           Important State           Important No.(ex.)           MFMCE0032FUD           MFMCE0052FUD</td><th></th></one-tou<>	ch lock	MFMCA0032FCD           MFMCA0052FCD           MFMCA0102FCD           MFMCA0202FCD           MFMCA0202FCD           Important State           Important State           Important State           Important No.(ex.)           MFMCE0032FUD           MFMCE0052FUD	
JL04 ROBO-TOP ROBO-TOP 2FUD	-2022CK(14)-R NTUB-2 N2-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2- 100 mm sq. or more Applicable model L D Part No. -6A24-11SE-EB -2428CK(17)-R NTUB-2	MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION 2.0 kW <one-tou< td=""><td>ch lock</td><td>MFMCA0032FCD           MFMCA0032FCD           MFMCA0102FCD           MFMCA0102FCD           MFMCA0202FCD           Important State           type&gt;           [Unit: mm]           MFMCE0032FUD           MFMCE0032FUD           MFMCE0032FUD           MFMCE0102FUD</td><th></th></one-tou<>	ch lock	MFMCA0032FCD           MFMCA0032FCD           MFMCA0102FCD           MFMCA0102FCD           MFMCA0202FCD           Important State           type>           [Unit: mm]           MFMCE0032FUD           MFMCE0032FUD           MFMCE0032FUD           MFMCE0102FUD	
JL04 ROBO-TOP ROBO-TOP 2FUD	-2022CK(14)-R NTUB-2 N2-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2- 100 mm sq. or more Applicable model L D D D D D D D D D D D D D D D D D D	MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION 2.0 kW <one-tou< td=""><td>ch lock</td><td>MFMCA0032FCD           MFMCA0032FCD           MFMCA0102FCD           MFMCA0102FCD           MFMCA0202FCD           Important State           type&gt;           [Unit: mm]           MFMCE0032FUD           MFMCE0032FUD           MFMCE0032FUD           MFMCE0102FUD</td><th></th></one-tou<>	ch lock	MFMCA0032FCD           MFMCA0032FCD           MFMCA0102FCD           MFMCA0102FCD           MFMCA0202FCD           Important State           type>           [Unit: mm]           MFMCE0032FUD           MFMCE0032FUD           MFMCE0032FUD           MFMCE0102FUD	
JL04 ROBO-TOP ROBO-TOP 2FUD	-2022CK(14)-R NTUB-2 N2-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2- 100 mm sq. or more Applicable model L D Part No. -6A24-11SE-EB -2428CK(17)-R NTUB-2	MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION 2.0 kW <one-tou 2.0 kW <one-tou 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3</one-tou </one-tou 	ch lock	MFMCA0032FCD           MFMCA0032FCD           MFMCA0102FCD           MFMCA0102FCD           MFMCA0202FCD           Important State           type>           [Unit: mm]           MFMCE0032FUD           MFMCE0032FUD           MFMCE0032FUD           MFMCE0102FUD	
JL04 ROBO-TOP ROBO-TOP 2FUD 2FUD JL10 JL10 JL04 ROBO-TOP D	-2022CK(14)-R NTUB-2 N2-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2- 100 mm sq. or more Applicable model L D D D D D D D D D D D D D D D D D D	MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION 2.0 kW <one-tou< td=""><td>ch lock</td><td>MFMCA0032FCD           MFMCA0032FCD           MFMCA0102FCD           MFMCA0102FCD           MFMCA0202FCD           Important State           type&gt;           [Unit: mm]           MFMCE0032FUD           MFMCE0032FUD           MFMCE0032FUD           MFMCE0102FUD</td><th></th></one-tou<>	ch lock	MFMCA0032FCD           MFMCA0032FCD           MFMCA0102FCD           MFMCA0102FCD           MFMCA0202FCD           Important State           type>           [Unit: mm]           MFMCE0032FUD           MFMCE0032FUD           MFMCE0032FUD           MFMCE0102FUD	
JL04 ROBO-TOP ROBO-TOP 2FUD 2FUD JL10 JL10 JL04 ROBO-TOP D	-2022CK(14)-R NTUB-2 N2-M4 N1.25-M4 600V 2.0 mm <sup>2</sup> 4-w 600V 0.75 mm <sup>2</sup> 2- 100 mm sq. or more Applicable model L D D D D D D D D D D D D D D D D D D	MHMF	Japan Aviation Electronics Ind. J.S.T Mfg. Co., Ltd. J.S.T Mfg. Co., Ltd. /DEN CORPORATION 2.0 kW <one-tou 2.0 kW <one-tou 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3</one-tou </one-tou 	ch lock	MFMCA0032FCD           MFMCA0032FCD           MFMCA0102FCD           MFMCA0102FCD           MFMCA0202FCD           Important State           type>           [Unit: mm]           MFMCE0032FUD           MFMCE0032FUD           MFMCE0032FUD           MFMCE0102FUD	

**Options** 

Motor Cable (with Brake) \* It doesn't correspond to IP65 and IP67.

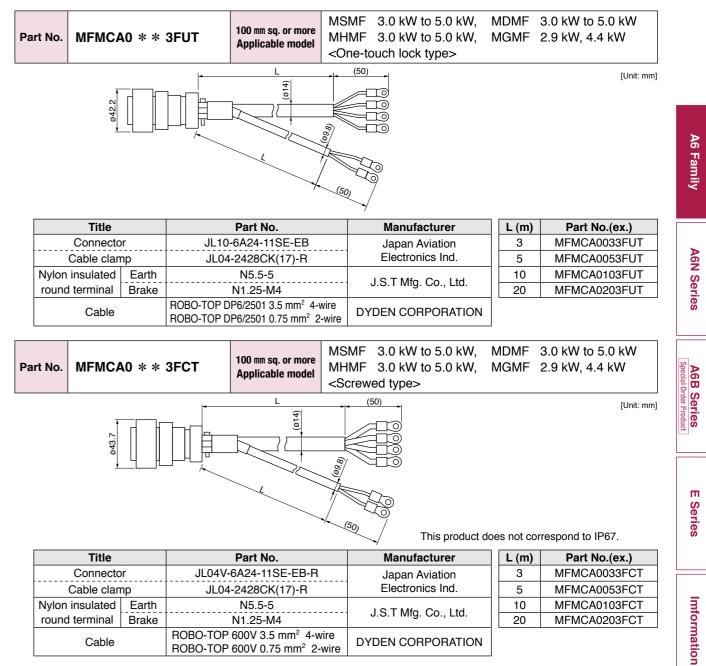


Title		Part No.	Manufacturer	L (m)	Part No.(ex.)
Connecto	or	JL04V-6A24-11SE-EB-R	Japan Aviation	3	MFMCE0032FCD
Cable clar	np	JL04-2428CK(17)-R	Electronics Ind.	5	MFMCE0052FCD
Rod termin	nal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102FCD
Nylon insulated	Earth	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202FCD
round terminal	Brake	N1.25-M4	5.5.1 Mig. Co., Ltd.		
Cable		ROBO-TOP 600V 2.0 mm <sup>2</sup> 4-wire ROBO-TOP 600V 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		



litie		Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector		JL10-6A24-11SE-EB	Japan Aviation	3	MFMCD0033FUT
Cable clamp		JL04-2428CK(17)-R	Electronics Ind.	5	MFMCD0053FUT
Rod termin	nal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCD0103FUT
Nylon insulated	Earth	N5.5-5	J.S.T Mfg. Co., Ltd.	20	MFMCD0203FUT
round terminal	Brake	N1.25-M4	J.S. I Mig. Co., Ltd.		
Cable		ROBO-TOP DP6/2501 3.5 mm <sup>2</sup> 4-wire ROBO-TOP DP6/2501 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION		

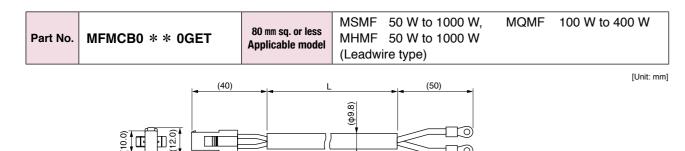
rt No. MFMC	D0 * *	3FCT	100 mm sq. or more Applicable model	MGMF	2.4 kW	<screwed< th=""><th>l type&gt;</th><th></th><th></th></screwed<>	l type>		
[Unit: mm]									
				(50)	~0)	This product	does not co	rrespond to IP67.	
Title			Part No.	- (50)	Manufa	•	does not co	rrespond to IP67. Part No.(ex.)	
Title Connec	tor	JL04V-	Part No. 6A24-11SE-EB-R		-7	acturer		•	T
-		+			Manufa	acturer Aviation	L (m)	Part No.(ex.)	
Connec	mp	JL04	6A24-11SE-EB-R		Manufa Japan A	Aviation hics Ind.	L (m)	Part No.(ex.) MFMCD0033FC	т
Connec Cable cla	mp inal	JL04	6A24-11SE-EB-R -2428CK(17)-R		Manufa Japan A Electror NICHIFU	Aviation hics Ind. Co., Ltd.	L (m) 3 5	Part No.(ex.) MFMCD0033FC MFMCD0053FC	T T
Connec Cable cla Rod term	mp inal I Earth	JL04	6A24-11SE-EB-R -2428CK(17)-R ENTC3.5-11S		Manufa Japan A Electror	Aviation hics Ind. Co., Ltd.	L (m) 3 5 10	Part No.(ex.) MFMCD0033FC MFMCD0053FC MFMCD0103FC	T T



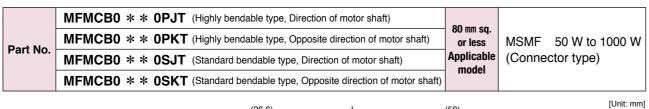
Title		Part No.
Connecto	or	JL04V-6A24-11SE-EB-R
Cable clan	np	JL04-2428CK(17)-R
Nylon insulated	Earth	N5.5-5
round terminal	Brake	N1.25-M4
Cable		ROBO-TOP 600V 3.5 mm <sup>2</sup> 4-win BOBO-TOP 600V 0.75 mm <sup>2</sup> 2-win

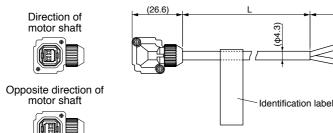
**Options** 

Brake Cable \* It doesn't correspond to IP65 and IP67.



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	172157-1	Tyco Electronics Japan	3	MFMCB0030GET
Connector pin	170366-1, 170362-1	G.K.	5	MFMCB0050GET
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100GET
Cable	ROBO-TOP 600V 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION	20	MFMCB0200GET



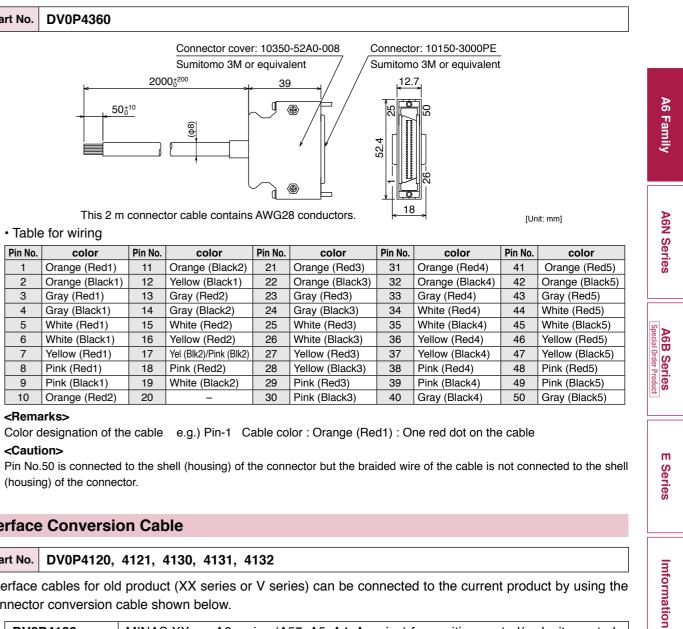


(*				
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN4FT02SJMR	Japan Aviation	3	MFMCB0030PJT
Connector pin	ST-TMH-S-C1B-3500	Electronics Ind.	5	MFMCB0050PJT
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100PJT
Cable	AWG22 2-wire (\$4.3)	Hitachi Cable, Ltd.	20	MFMCB0200PJT

#### Interface Cable



Part No. DV0P4360



-	-		-		
	<b>–</b>	 -	10.11	wiring	

	-				
Pin No	color	Pin No.	color	Pin No.	
1	Orange (Red1)	11	Orange (Black2)	21	0
2	Orange (Black1)	12	Yellow (Black1)	22	0
3	Gray (Red1)	13	Gray (Red2)	23	0
4	Gray (Black1)	14	Gray (Black2)	24	0
5	White (Red1)	15	White (Red2)	25	V
6	White (Black1)	16	Yellow (Red2)	26	V
7	Yellow (Red1)	17	Yel (Blk2)/Pink (Blk2)	27	$\left[ \right]$
8	Pink (Red1)	18	Pink (Red2)	28	$\left[ \right]$
9	Pink (Black1)	19	White (Black2)	29	F
10	Orange (Red2)	20	-	30	F

#### <Remarks>

<Caution>

(housing) of the connector.

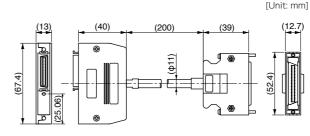
#### Interface Conversion Cable

connector conversion cable shown below.

DV0P4120	MINAS XX $\rightarrow$ A6 series (A5II, A5, A4, A series) for position control/velocity control
DV0P4121	MINAS XX $\rightarrow$ A6 series (A5I, A5, A4, A series) for torque control
DV0P4130	MINAS V $\rightarrow$ A6 series (A5I, A5, A4, A series) for position control
DV0P4131	MINAS V → A6 series (A5I, A5, A4, A series) for velocity control
DV0P4132	MINAS V → A6 series (A5I, A5, A4, A series) for torque control

\* For details of wiring, contact our sales department.

Converts 36-pin configuration to 50-pin.

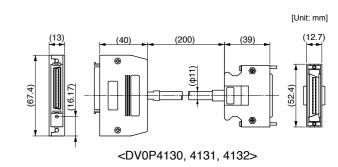


<DV0P4120, 4121>

#### **Options**

A6 Series

Interface cables for old product (XX series or V series) can be connected to the current product by using the

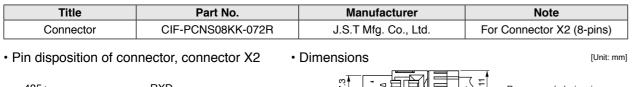


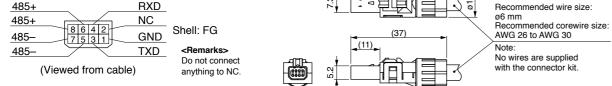
#### Connector Kit for Communication Cable (for RS485, RS232) (Excluding A6SE, A6NE, A6BE Series)

#### Part No. DV0PM20102

**Options** 

#### Components

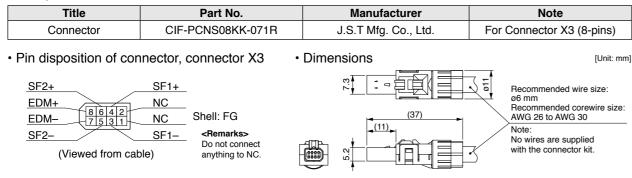




#### Connector Kit for Safety (Excluding A6SE, A6SG, A6NE, A6BE Series)

#### Part No. DV0PM20103

#### Components



#### Safety bypass plug (Excluding A6SE, A6SG, A6NE, A6BE Series)

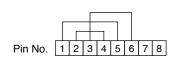
#### Part No. DV0PM20094

#### Components

Title	Part No.	Manufacturer	Note		
Connector	CIF-PB08AK-GF1R	J.S.T Mfg. Co., Ltd.	For Connector X3		

Internal wiring

(Wiring of the following has been applied inside the plug.)



	က်န
	6.6

24

· Dimensions (Resin color : black)

#### **Connector Kit for Interface**

#### Part No. DV0P4350

#### Components

Title	Part No.	Number	Manufacturer	Note	
Connector	10150-3000PE	1	Sumitomo 3M	For Connector X4 (50-	
Connector cover	10350-52A0-008	1	(or equivalent)	pins)	

#### Pin disposition (50 pins) (viewed from the soldering side)

   	26 SI3		28 SI5	-	- 30 SI7	-	32 SI9		34 SO	 2	36 SO	_ 3_	- 38 SO	_ 4–	40 SO	6	42 IM		44 PUL	_ SH1	46 SIGI	NH1
1		27 SI4		29 SI6		31 SI8		33 SI1	0	35 SO	2+	37 SO	3+	39 SO	4+	41 CO	M–	43 SP		45 PUL	SH2	47 Sigi
1	1 OP	C1	3 PU	LS1	5 SIG	iN1	7 CO	M+	9 SI2		11 SO	1+	13 GN	D	15 GN	D	17 GN	D	19 CZ		21 OA	+
1		2 OPI	C2	4 PUI	_S2	6 SIG	àN2	8 SI1		10 SO	1–	12 SO	5	14 SPF SPL	R/	16 P-A /TR		18 N-A	TL	20 NC		22 OA

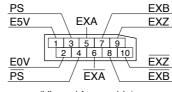
#### Connector Kit for External Scale (Excluding A6SE, A6SG, A6NE, A6BE Series)

#### Part No. DV0PM20026

#### Components

Title	Part No.
Connector	MUF-PK10K-X

#### · Pin disposition of connector, connector X5



(Viewed from cable)

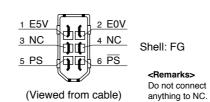
#### **Connector Kit for Encoder**

#### Part No. DV0PM20010

#### Components

Title		Part No.
Connector (Drive	er side)	3E206-0100 KV
Shell kit		3E306-3200-008

#### Pin disposition of connector, connector X6



#### <Remarks>

Connector X1: use with commercially available cable.

#### <Remarks>

· For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

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[Unit: mm]

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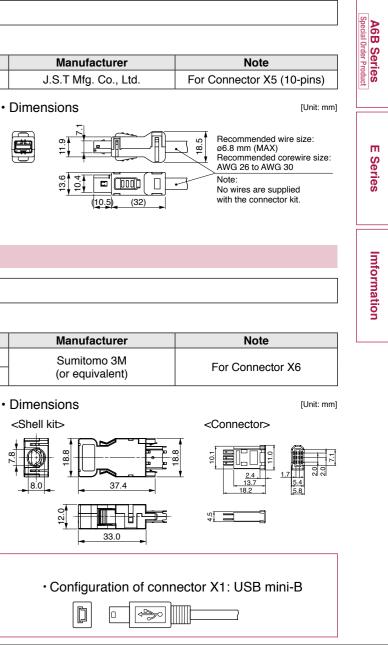


 48 OB+		50 FG	-	- 		1
	49 OB	-			۱ ۱	2
23 OZ+		25 GN	D		i 1	3
- 0	24 DZ·	-			1	
	-	-	-	-	- 1	

1) Check the stamped pin-No. on the connector body while making a wiring. 2) For the function of each signal title or its symbol, refer to the operating manual. 3) Do not connect anything to NC pins in the above table.

A6 Family

A6N Series



#### **Connector Kit**

#### **Connector Kit for Power Supply Input**

**Options** 

Part No. DV0PM20032 (For A-frame to D-frame: Single row type)

Components

• Please refer to the Dimensions of driver P.57 for connector XA.

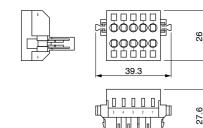
Componionito				
Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGF	1		For Connector XA
Handle lever	J-FAT-OT	2	J.S.T Mfg. Co., Ltd.	FOI CONNECTOR XA

Part No. DV0PM20033 (For A-frame to D-frame: Double row type)

#### Components

Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGSA-C	1		For Connector XA
Handle lever	J-FAT-OT	2	J.S.T Mfg. Co., Ltd.	FUI CUIIIIECIUI XA

Dimensions



Driver part No.	Power supply	Rated input current
MADL * 01 * *	Single phase 100 V	1.7 A
MADL * 11 * *	Single phase 100 V	2.0 A
MADL * 05 * *	Single phase/3-phase 200 V	1.6 A/0.9 A
MADL * 15 * *	Single phase/3-phase 200 V	2.0 A/1.1 A
MBDL * 21 * *	Single phase 100 V	4.5 A
MBDL * 25 * *	Single phase/3-phase 200 V	3.7 A/2.1 A
MCDL * 31 * *	Single phase 100 V	7.0 A
MCDL * 35 * *	Single phase/3-phase 200 V	6.4 A/3.4 A
MDDL * 45 * *	Single phase/3-phase 200 V	7.9 A/4.6 A
MDDL * 55 * *	Single phase/3-phase 200 V	13.6 A/7.2 A

Part No. DV0PM20044 (For E-frame)

supply, do not use DV0PM20033.

[Unit: mm]

\* When connection multiple axes in series, make sure the sum of the current value does not exceed the rated current (11.25

When using drivers MDDL \* 55 \* \* in single-phase power

#### Components

A) of DV0PM20033.

Remarks 🔅

Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGSA-L	1		For Connector VA
Handle lever	J-FAT-OT-L	2	J.S.T Mfg. Co., Ltd.	For Connector XA

#### **Connector Kit for Regenerative Resistor Connection**

Part No. DV0PM20045 (For E-frame)

Components

Title	Part No.	Number	Manufacturer	Note
Connector	04JFAT-SAXGSA-L	1		200 V: For Connector XC
Handle lever	J-FAT-OT-L	2	J.S.T Mfg. Co., Ltd.	* Jumper wire is included.

#### <Remarks>

· For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

#### **Connector Kit for Motor/Encoder Connection**

#### Connector Kit for Motor Connection (Driver side)

Part No.	DV0PM20034	(For A-frame to D-frame)

#### Components Title Part No. Connector 06JFAT-SAXGF J-FAT-OT Handle lever

#### Part No. DV0PM20046 (For E-frame)

#### Components

•				
Title	Part No.	Number	Manufacturer	Note
Connector	03JFAT-SAXGSA-L	1		For Connector XB
Handle lever	J-FAT-OT-L	2	J.S.T Mfg. Co., Ltd.	For Connector XB

#### **Connector Kit for Motor/Encoder Connection**

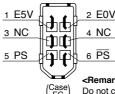
\* When IP65 or IP67 are necessary, the customer must give appropriate processing

Part No.	DV0P4290	80 mm sq. or less Applicable model	

#### Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)	
Shell kit	3E306-3200-008	1	(or equivalent)		
Connector	172161-1	1	Tyco Electronics Japan	For Encoder cable (9-pins)	
Connector pin	170365-1	9	G.K.		
Connector	172159-1	1	Tyco Electronics Japan	For Motor cable	
Connector pin	170366-1	4	G.K.	(4-pins)	

• Pin disposition of connector, • Pin disposition of connector connector X6 for encoder cable





<Remarks> (Case) FG Do not connect anything to NC

(Viewed from cable)

PIN No.	Applic
1	BAT
2	BAT
3	FG(SH
4	P
5	P
6	N
7	E5
8	EO
9	N

\* When you connect the battery for absolute encoder, refer to P.338, "When you make your own cable for 23-bit absolute encoder"

#### <Remarks>

the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

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#### **Options**

A6 Family

A6N Series

A6B Series Special Order Product

Ш

Series

Imformation

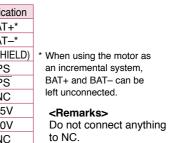
• Please refer to the Dimensions of driver P.57 for connector XB.

Number	Manufacturer	Note
1	J.S.T Mfg. Co., Ltd.	For Connector XB
2	J.S.T MIG. CO., LIG.	* Jumper wire is included.

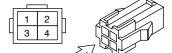
\* MSMF092L1 2, MHMF092L1



\* Connector pin diagram is viewed from the direction of the arrow



· Pin disposition of connector for motor cable



\* Connector pin diagram is viewed from the direction of the arrow.

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

· For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with

A6 Series	Options
	Upuula

#### **Connector Kit for Motor/Encoder Connection**

		art No.	DV0PM20035	80 mm sq. or less Applicable mode
--	--	---------	------------	--------------------------------------

MSMF 50 W to 1000 W \* (Connector type IP67)

1 U

2 V

3 W

PE E

#### Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pine)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN6FR07SM1	1	Japan Aviation	For Encoder cable
Socket contact	LY10-C1-A1-10000	7	Electronics Ind.	(7-pins)
Motor connector	JN8FT04SJ1	1	Japan Aviation	For Motor cable
Socket contact	ST-TMH-S-C1B-3500	4	Electronics Ind.	(4-pins)

 Pin disposition of connector
 Pin disposition of connector connector X6

for encoder cable

4 <u>PS</u>

3 E0V

2 BAT

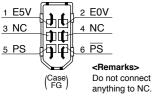
· Pin disposition of connector for motor cable

Gasket

\* MSMF092L1 1

#### [Direction of motor shaft] Gasket 7 PS

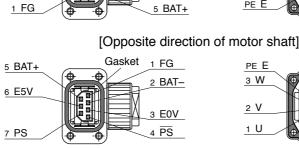
6 E5V

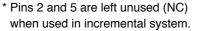


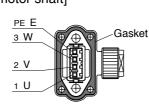
(Viewed from cable)

#### <Remarks>

Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.





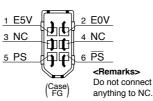


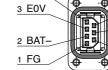
80 mm sq. or less DV0PM24581 Part No. Applicable model

#### Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN6FR07SM1	1	Japan Aviation	For Encoder cable
Socket contact	LY10-C1-A1-10000	7	Electronics Ind.	(7-pins)
Motor connector	JN11FH06SN2	1	Japan Aviation	For Motor cable
Socket contact	JN11S10K4A1	6	Electronics Ind.	(6-pins)

 Pin disposition of connector 
 Pin disposition of connector connector X6 for encoder cable



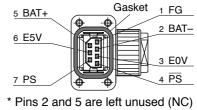


<u>4 PS</u>

(Viewed from cable)

#### <Remarks>

Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.



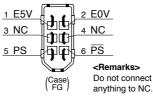
when used in incremental system.

Part No.	DV0PM24582	80 mm sq. or less Applicable model
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#### Components

Title	Part No.	Number	Manufacturer	Note		
Connector (Driver side)	nnector (Driver side) 3E206-0100 KV 1 Sumitomo 3M		For Connector X6 (6-pins)			
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)		
Encoder connector	JN6FR07SM1	1	Japan Aviation	For Encoder cable		
Socket contact	LY10-C1-A1-10000	7	Electronics Ind.	(7-pins)		
Motor connector	JN11FL06SN1	1	Japan Aviation	For Motor cable		
Socket contact	JN11S35H3A1	6	Electronics Ind.	(6-pins)		

 Pin disposition of connector
 Pin disposition of connector connector X6 for encoder cable



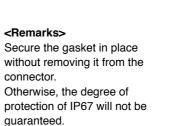


5 BAT+

6 E5V

7 PS

(Viewed from cable)



\* Pins 2 and 5 are left unused (NC) when used in incremental system.

#### <Remarks>

· For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

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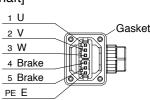
MHMF 50 W, 100 W	with/without brake
(Connector type IP67)	common use



# · Pin disposition of connector for motor cable

# [Direction of motor shaft]





## [Opposite direction of motor shaft]

pe E

зW

2 V

1 U

5 Brake

4 Brake

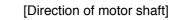
- MQMF 100 W to 400 W, MHMF 200 W to 1000 W (Connector type IP67)
- case of no brake. with/without brake

\* 4-pin and 5-pin are not used in

common use

Gasket

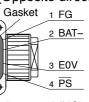
## · Pin disposition of connector for motor cable





1 U	_
_2 V	Gasket
з W	
4 Brake	
5 Brake	
PE E	

#### [Opposite direction of motor shaft]



pe E Gasket 5 Brake 4 Brake зW 2 V 1 U

\* 4-pin and 5-pin are not used in case of no brake.



A6 Family

A6B Series

Ш Series

**Options** 

# \* When IP65 or IP67 are necessary, the customer must give appropria

hen IP65 or IP67 are necessary, the customer must give appropriate processing.	hen I	IP65 or	IP67	are necessary,	, the	customer	must	give	appro	priate	processing	g.
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		100	(IP67 m	notor) Encoder JN2 <	Small siz	e connector>	Without
Part No	o. DV0PM24583	100 mm sq. or more Applicable model	MSMF	1.0 kW * to 2.0 kW,	MDMF	1.0 kW to 2.0 kW	Without brake
			MHMF	1.0 kW *, 1.5 kW,	MGMF	0.85 kW to 1.8 kW	Diake

\* MSMF102L1 , MHMF102L1

#### • Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A20-4SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(One-touch lock type)

		100 mm og or moro		notor) Encoder JN2 <			With
Part No.	DV0PM24585		MSMF	1.0 kW * to 2.0 kW, 1.0 kW *. 1.5 kW.		1.0 kW to 2.0 kW 0.85 kW to 1.8 kW	With brake
				1.0 km, 1.0 km,	in ann		

\* MSMF102L1 , MHMF102L1

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector VC (C nine)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A20-18SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(One-touch lock type)

		100	(IP67 m	notor) Encoder JL10 <	<large si<="" th=""><th>ze connector&gt;</th><th>M/Hour</th></large>	ze connector>	M/Hour
Part No.	DV0PM24587	100 mm sq. or more Applicable model	MSMF	1.0 kW * to 2.0 kW, 1.0 kW *, 1.5 kW,		1.0 kW to 2.0 kW 0.85 kW to 1.8 kW	Without brake
			1				

#### Components

Components

\* MSMF102L1 , MHMF102L1

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A20-4SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(One-touch lock type)

Applicable model         Model	Part No. DV0PM24589 100 mm sq. or more Applicable model MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW
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\* MSMF102L1 . , MHMF102L1

<ul> <li>Components</li> </ul>	
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Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A20-18SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(One-touch lock type)

#### <Remarks>

• For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

Applicable model MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW brak
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#### • Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A22-22SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(One-touch lock type)

Part No	DV0PM24586	100 mm sq. or more Applicable model	MSMF 3	tor) Encoder JN2 < 3.0 kW to 5.0 kW, 2.0 kW to 5.0 kW,	MDMF	e connector> 3.0 kW to 5.0 kW 2.4 kW to 4.4 kW	With brake
-							

#### · Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)	
Shell kit	3E306-3200-008	1	(or equivalent)		
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)	
Motor connector	JL10-6A24-11SE-EB	1	Japan Aviation	For Motor cable	
Cable clamp	JL04-2428CK(17)-R	1	Electronics Ind.	(One-touch lock type)	

		100	(IP67 m	otor) Encoder JL10	<large s<="" th=""><th>ize connector&gt;</th><th>With a</th><th></th></large>	ize connector>	With a		
	Part No.	DV0PM24588	100 mm sq. or more Applicable model	MSMF	3.0 kW to 5.0 kW, 2.0 kW to 5.0 kW.			Without brake	
l						Mann			

#### Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A22-22SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(One-touch lock type)

Part No.	DV0PM24590	100 mm sq. or more Applicable model	MSMF	otor) Encoder JL10 3.0 kW to 5.0 kW, 2.0 kW to 5.0 kW,	MDMF	3.0 kW to 5.0 kW	With brake
• Con	nponents						

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable	
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	(One-touch lock type)	
Motor connector	JL10-6A24-11SE-EB	1	Japan Aviation	For Motor cable	
Cable clamp	JL04-2428CK(17)-R	1	Electronics Ind.	(One-touch lock type)	

#### <Remarks>

· For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

A6 Family



A6B Series Special Order Product

E Series

**Options** 

# Connector Kit for Motor/Encoder Connection \* When IP65 or IP67 are necessary, the customer must give content

hen IP65 or IP67 are necessary, the customer must give appropriate processing.
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		100	(IP67 motor) Encoder JN2 <small connector="" size=""></small>				
Part No.	DV0PM20036	100 mm sq. or more Applicable model	MSMF	1.0 kW * to 2.0 kW,	MDMF	1.0 kW to 2.0 kW	Without brake
			MHMF	1.0 kW *, 1.5 kW,	MGMF	0.85 kW to 1.8 kW	Diake

\* MSMF102L1 , MHMF102L1

#### • Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL04V-6A20-4SE-EB-RK	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(Screwed type)

Part No.	DV0PM20038	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <small con<br="" size="">MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 k MHMF 1.0 kW *, 1.5 kW, MGMF 0.85</small>	W to 2.0 kW	Vith rake
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<ul> <li>Components</li> </ul>
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\* MSMF102L1 , MHMF102L1

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector VC (C nine)	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)	
Motor connector	JL04V-6A20-18SE-EB-RK	1	Japan Aviation	For Motor cable	
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(Screwed type)	

	100 mm on or more		notor) Encoder JL10 <		Without	
Part No.	DV0P4310	100 mm sq. or more Applicable model	MSMF	1.0 kW * to 2.0 kW, 1.0 kW *, 1.5 kW,		Without brake

#### Components

\* MSMF102L1 , MHMF102L1

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)
Motor connector	N/MS3106B20-4S	1	Japan Aviation	For Motor cable
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)

	Part No.	DV0P4330	100 mm sq. or more Applicable model	MSMF	notor) Encoder JL10 < 1.0 kW * to 2.0 kW, 1.0 kW *, 1.5 kW,	MDMF		With brake
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\* MSMF102L1 . , MHMF102L1

#### • Components

•					
Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)	
Motor connector	N/MS3106B20-18S	1	Japan Aviation	For Motor cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)	

#### <Remarks>

• For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

Part No.	(IP67 motor) Encoder JN2 <small connector="" size=""> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4</small>	7 100 mm sq. or more MSMF	Withou brake
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#### Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)	
Shell kit	3E306-3200-008	1	(or equivalent)		
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)	
Motor connector	JL04V-6A22-22SE-EB-R	1	Japan Aviation	For Motor cable	
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(Screwed type)	

	Part No.	DV0PM20039	100 mm sq. or more Applicable model	MSMF	otor) Encoder JN2 < 3.0 kW to 5.0 kW, 2.0 kW to 5.0 kW,	MDMF	3.0 kW to 5.0 kW
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#### Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)	
Shell kit	3E306-3200-008	1	(or equivalent)		
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)	
Motor connector	JL04V-6A24-11SE-EB-R	1	Japan Aviation	For Motor cable	
Cable clamp	JL04-2428CK(17)-R	1	Electronics Ind.	(Screwed type)	

Part No.
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#### Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)	
Motor connector	N/MS3106B22-22S	1	Japan Aviation	For Motor cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)	

		100	(IP67 m	otor) Encoder JL10	<large s<="" th=""><th>ize connector&gt;</th><th>\\/:+h</th></large>	ize connector>	\\/:+h
Part No.	DV0P4340	100 mm sq. or more Applicable model	MSMF	3.0 kW to 5.0 kW, 2.0 kW to 5.0 kW,			With brake
				2.0 KW 10 5.0 KW,	WICHWI	2.4 KW 10 4.4 KW	

#### Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)	
Motor connector	N/MS3106B24-11S	1	Japan Aviation	For Motor cable	
Cable clamp	N/MS3057-16A	1	Electronics Ind.	(Screwed type)	

#### <Remarks>

· For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".



With brake

E Series

A6B Series Special Order Product

A6 Series **Options** 

# Connector Kit for Motor/Encoder Connection \* When IP65 or IP67 are necessary, the customer must give appropriate processing.

Part No.	DV0PM20107	100 mm sq. or more Applicable model		Without brake
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#### Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	(One-touch lock type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable
Cable clamp	JL04-32CK(24)-RK *1	1	Electronics Ind.	(Screwed type)

\*1 Casing size:  $\phi$  22 to  $\phi$  25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

Part No.	DV0PM20108	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <large connector="" size=""> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW</large>	With brake	
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#### Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	(One-touch lock type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable
Cable clamp	JL04-32CK(24)-RK *1	1	Electronics Ind.	(Screwed type)
Brake connector	nnector N/MS3106B14S-2S		Japan Aviation	For Brake cable
Cable clamp	N/MS3057-6A	1	Electronics Ind.	(Screwed type)

\*1 Casing size:  $\phi$  22 to  $\phi$  25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

Part No.	nore N odel N	DV0PM20111	(IP67 motor) Encoder JL10 <large connector="" size=""> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW</large>	Without brake
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#### · Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable
Cable clamp	JL04-32CK(24)-RK *1	1	Electronics Ind.	(Screwed type)

\*1 Casing size: \$\phi 22 to \$\phi 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

Part No.	DV0PM20112	100 mm sq. or more Applicable model	(IP67 m MDMF MGMF
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#### Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	(Driver side) 3E206-0100KV		Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable
Cable clamp	JL04-32CK(24)-RK *1	1	Electronics Ind.	(Screwed type)
Brake connector	N/MS3106B14S-2S	1	Japan Aviation	For Brake cable
Cable clamp	N/MS3057-6A	1	Electronics Ind.	(Screwed type)

\*1 Casing size:  $\phi$  22 to  $\phi$  25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

Part No.         DV0PM20056         100 mm sq. or more Applicable model         (IP67 motor) Encoder MDMF 7.5 kW to 15. MGMF 5.5 kW, MH	Inrake
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#### · Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	(Driver side) 3E206-0100KV		Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable
Cable clamp	JL04-32CK(24)-RK *1	1	Electronics Ind.	(Screwed type)

\*1 Casing size:  $\phi$  22 to  $\phi$  25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

Part No.	DV0PM20057	100 mm sq. or more Applicable model	MUME 7.5 kW to 15.0 kW	With brake
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#### Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	side) 3E206-0100KV		Sumitomo 3M	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable
Cable clamp	JL04-32CK(24)-RK *1	1	Electronics Ind.	(Screwed type)
Brake connector	N/MS3106B14S-2S	1	Japan Aviation	For Brake cable
Cable clamp	N/MS3057-6A	1	Electronics Ind.	(Screwed type)

\*1 Casing size: \$\phi\$ 22 to \$\phi\$ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

#### <Remarks>

· For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

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<Remarks>

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#### motor) Encoder JL10 <Large size connector> 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW

A6 Family

A6N Series

A6B Series Special Order Product

· For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

A6 Series **Options** 

\* When IP44 is necessary, the customer must give appropriate processing.

Dort No.		100 mm sq. or more	(IP44 motor) Encoder JL10 <large connector="" size=""></large>	Without
Part NO.	DV0PM20109	Applicable model	MDMF 22.0 kW	brake

#### Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)	
Shell kit	3E306-3200-008	1	(or equivalent)		
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable	
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	(One-touch lock type)	

Dort No	DV0PM20110	100 mm sq. or more	(IP44 motor) Encoder JL10 <large connector="" size=""></large>	With
Part NO.	DVUPINIZUTTU	Applicable model	MDMF 22.0 kW	brake

#### Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector V6 (6 pipe)	
Shell kit	3E306-3200-008	1 (or equivalent)		For Connector X6 (6-pins)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable	
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	(One-touch lock type)	
Brake connector	N/MS3106B14S-2S	1	Japan Aviation	For Brake cable	
Cable clamp	N/MS3057-6A	1	Electronics Ind.	(Screwed type)	

Dart No	DV0PM20113	100 mm sq. or more	(IP44 motor) Encoder JL10 <large connector="" size=""></large>	Without	
Part NO.	DVUPIVIZUTIS	Applicable model	MDMF 22.0 kW	brake	

#### Components

	Title	Part No.	Number	Manufacturer	Note	
	Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector X6 (6-pins)	
ſ	Shell kit	3E306-3200-008	1	(or equivalent)		
	Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable	
ĺ	Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)	

Dout No	DV0PM20114	100 mm sq. or more	(IP44 m
Part No.	DV0PIVI20114	Applicable model	MDMF

#### Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)
Brake connector	N/MS3106B14S-2S	1	Japan Aviation	For Brake cable
Cable clamp	N/MS3057-6A	1	Electronics Ind.	(Screwed type)

Part No. DV0PM20115 Applicable model MDMF 22.0 kW Without brake		Part No.	DV0PM20115		(IP44 motor) Encoder JN2 <small connector="" size=""> MDMF 22.0 kW</small>	Without brake
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#### Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector VC (C nine)	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)	

Part No.	DV0PM20116	· · ·	(IP44 motor) Encoder JN2 <small connector="" size=""> MDMF 22.0 kW</small>	With brake
• Con	nponents			

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100KV	1	Sumitomo 3M	For Connector V6 (6 pipe)	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)	
Brake connector	N/MS3106B14S-2S	1	Japan Aviation	For Brake cable	
Cable clamp	N/MS3057-6A 1 Electronics Ind.		Electronics Ind.	(Screwed type)	

\* The motor / encoder connection connector kit for MDMF 22.0 kW does not include the connection parts for motor cable (terminal block). Please prepare a round terminal by yourself. (For details, see P.27)

#### <Remarks>

 For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments". <Remarks>

• For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.347 "List of Peripheral Equipments".

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With

brake

A6 Family



E Series

A6B Series Special Order Product

#### Connector Kit for Motor/Brake Connection

Electronics Ind.

\* When IP65 or IP67 are necessary, the customer must give appropriate processing.

#### **Connector Kit for Motor/Brake Connection**

**Options** 

Part No.         DV0PM20040         80 mm sq. or less Applicable model         MSMF 50 W to 1000 W * (Connector type IP67)				ype IP67)		
• Con	ponents					* MSMF092L1 1
	Title	Part No.	Nu	umber	Manufacturer	Note
	Connector	JN4FT02SJM-R	1	1	Japan Aviation	For broke coble
				-	Electronice Ind	For brake cable

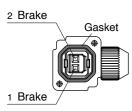
2

Pin disposition of connector for brake cable

[Direction	of	motor	shaft]
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Socket contact

[Opposite direction of motor shaft]



1 Brake Gasket Brake

#### <Remarks>

Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

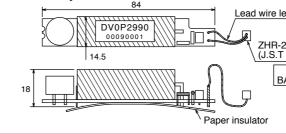
ST-TMH-S-C1B-3500

#### **Battery for Absolute Encoder**

#### **Battery for Absolute Encoder**

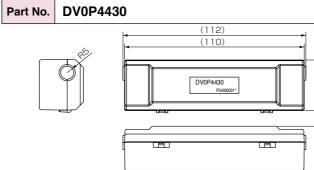


#### Lithium battery: 3.6 V 2000 mAh



#### Battery Box for Absolute Encoder \*

\* Battery is not included. Please buy the absolute encoder battery "DV



#### When waking a cable for 23-bit absolute e

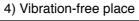
When you make your own cable for 23-bit absolute encoder, connect the optional battery for absolute encoder, DV0P2990 as per the wiring diagram below. Connector of the battery for absolute encoder shall be provided by customer as well.

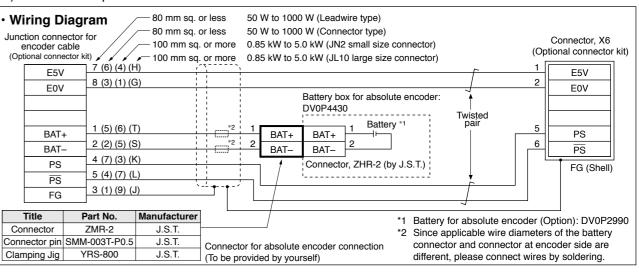
#### <Caution>

Install and fix the battery securely. If the installation and fixing of the battery is not appropriate, it may cause the wire breakdown or damage of the battery. Refer to the instruction manual of the battery for handling the battery.

#### Installation Place of Battery

- 1) Indoors, where the products are not subjected to rain or direct sun beam.
- splash of inflammable gas, grinding oil, oil mist, iron powder or chips and etc. 3) Well-ventilated and humid and dust-free place.





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	Options	A6 Series	
ngth 50mm Mfg. Co., Ltd.) 1 2 AT+ BAT-	<b>Caution&gt;</b> This battery is can hazardous substance be required to present of hazardous substant transport by air (both cargo airlines).	e, and you may nt an application ance when you	A6 Family
0P2990" separately.			A6N Series
	n]		A6B Series Special Order Product
ncoder by you	rself		

Ш Series

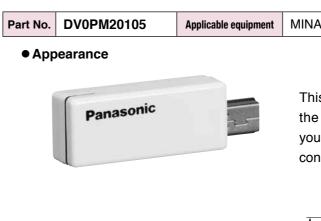
Imformation

2) Where the products are not subjected to corrosive atmospheres such as hydrogen sulfide, sulfurous acid, chlorine, ammonia, chloric gas, sulfuric gas, acid, alkaline and salt and so on, and are free from Recommended components

**Options** 

	Motor	Part No.	Manufacturer
	50 W to 1000 W	TND15G271K	NIPPON CHEMI-CON CORPORATION
MSMF	1.0 kW to 3.0 kW	Z15D151	SEMITEC Corporation
	4.0 kW, 5.0 kW	TNR9G820K	NIPPON CHEMI-CON CORPORATION
MQMF	100W to 400 W	TND15G271K	NIPPON CHEMI-CON
	50 W to 1000 W	INDIGG27 IK	CORPORATION
MHMF	1.0 kW, 1.5 kW	TNR9G820K	NIPPON CHEMI-CON CORPORATION
	2.0 kW to 4.0 kW	Z15D151	SEMITEC Corporation
	5.0 kW, 7.5 kW	NVD07SCD082	KOA Corporation
	1.0 kW to 3.0 kW	TNR9G820K	NIPPON CHEMI-CON CORPORATION
MDMF	4.0 kW	Z15D151	SEMITEC Corporation
	5.0 kW to 22.0 kW	NVD07SCD082	KOA Corporation
	0.85 kW to 1.8 kW	TNR9G820K	NIPPON CHEMI-CON CORPORATION
MGMF	2.4 kW, 2.9 kW	Z15D151	SEMITEC Corporation
	4.4 kW, 5.5 kW	NVD07SCD082	KOA Corporation

#### Wireless LAN Dongle





#### General Specifications

Power supply	DC 5V (Supplied fr 500 mA
Power consumption	Max.2500 mW
Weight	Appr. 4 g
Ambient temperature for use	Temperature for us Temperature for st
Ambient humidity for use	20 %RH – 85 %RF
Interface	USB mini-B
Standards	IEEE802.11b IEEE802.11g IEEE802.11n
Frequency range/ Channels (Center frequency)	2.412 GHz – 2.472 1 – 13 ch
Data transfer speed (Value of standard <sup>*1</sup> )	IEEE802.11b: Max IEEE802.11g: Max IEEE802.11n: Max
Access system	Infrastructure mod
Security	WPA-PSK (TKIP/A
Max. transmission distance (Prospect)	Indoors: Appr. 20 n
Available Countries	Japan, China, Unit

\*1 This is the theoretical speed and the actual communica- tion speed differs due to the usage circumstances or the connected equipment.

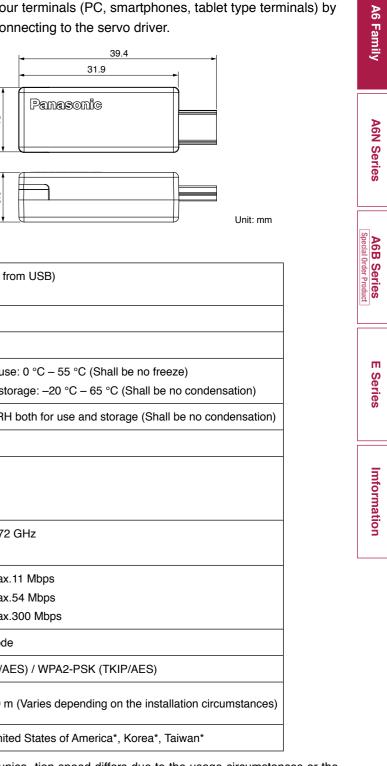
\* Coming soon

#### **Options**

A6 Series

MINAS A6 family (Since October 2016 production)

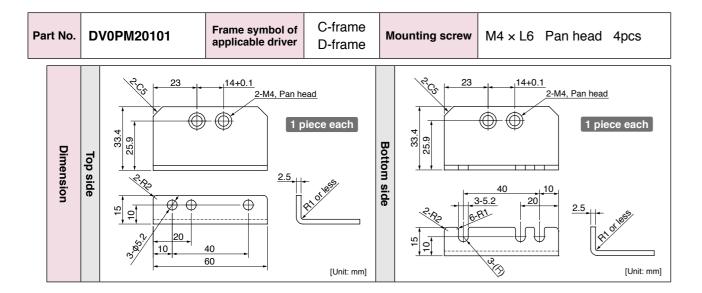
This product is the wireless LAN dongle which enables the wireless connection between the servo driver and your terminals (PC, smartphones, tablet type terminals) by connecting to the servo driver.



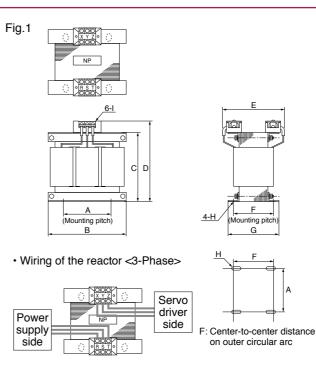
**Options** 

**Mounting Bracket** 

Pa	rt No.	D	V0PM20100	Frame symbol of applicable driver	A-frame B-frame	Mounting screw	$M4 \times L6$	Pan head	4pcs
	Dimension	Top / Bottom side		2-M4, Pan head	2 pcs				



Reactor



	Part No.	A	В	с	D	E(Max)	F	G	н	I	Inductance (mH)	Rated current (A)
	DV0P220	65±1	125±1	(93)	136Max	155	70+3/-0	85±2	4-7φ×12	M4	6.81	3
	DV0P221	60±1	150±1	(113)	155мах	130	60+3/-0	75±2	4-7φ×12	M4	4.02	5
Eig 1	DV0P222	60±1	150±1	(113)	155мах	140	70+3/-0	85±2	4-7φ×12	M4	2	8
Fig.1	DV0P223	60±1	150±1	(113)	155Max	150	79+3/-0	95±2	4-7φ×12	M4	1.39	11
	DV0P224	60±1	150±1	(113)	160Max	155	84+3/-0	100±2	4-7φ×12	M5	0.848	16
	DV0P225	60±1	150±1	(113)	160 <sub>Max</sub>	170	100+3/-0	115±2	4-7φ×12	M5	0.557	25
	DV0P227	55±0.7	80±1	66.5±1	110мах	90	41±2	55±2	4-5φ×10	M4	4.02	5
Fig.2	DV0P228	55±0.7	80±1	66.5±1	110мах	95	46±2	60±2	4-5φ×10	M4	2	8
	DV0PM20047	55±0.7	80±1	66.5±1	110мах	105	56±2	70±2	4-5φ×10	M4	1.39	11

\* For application, refer to P.29 to P.42 and P.205 to P.210 "Table of Part Numbers and Options".

#### Harmonic restraint

Harmonic restraint measures are not common to all countries. Therefore, prepare the measures that meet the requirements of the destination country. When installing a product for Japan, refer to the instruction manual available on our website.

[Panasonic Corporation, Motor Business Unit web site] industrial.panasonic.com/ac/e/

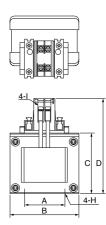
#### <Remarks>

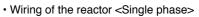
When using a reactor, be sure to install one reactor to one servo driver.

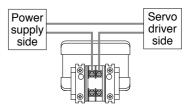
# **Options**

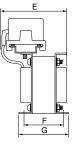
A6 Series













F: Center-to-center distance on slotted hole

[Unit: mm]	
Rated	

A6 Family

A6N Series

A6B Series Special Order Produc

E Series

**Options** 

**External Regenerative Resistor** 

			Spec	cification	s		
Part No.	Manufacturer's	Resistance	cable core outside	Weight	Rated (refere	power ence) <sup>*1</sup>	Activation
Part NO.	part No.	nesistance	diameter	weight	Free air	with fan 1 m/s <sup>*2</sup>	temperature of built-in thermal protector
		Ω	mm	kg	W	W	
DV0P4280	RF70M	50		0.1	10	25	
DV0P4281	RF70M	100		0.1	10	25	140±5 °C B-contact
DV0P4282	RF180B	25	φ1.27 / AWG18 \	0.4	17	50	Open/Close capacity
DV0P4283	RF180B	50	stranded	0.2	17	50	(resistance load)
DV0P4284	RF240	30		0.5	40	100	1 A 125 VAC 6000 times 0.5 A 250 VAC 10000 times
DV0P4285	RH450F	20		1.2	52	130	

Manufacturer : Iwaki Musen Kenkyusho

\*1 Power with which the driver can be used without activating the built-in thermal protector.

A built-in thermal fuse and a thermal protector are provided for safety.

The circuit should be so designed that the power supply will be turned off as the thermal protector operates.

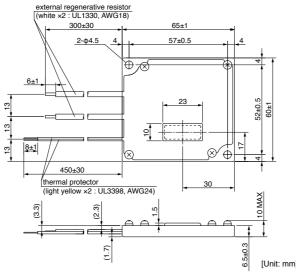
The built-in thermal fuse blows depending on changes in heat dissipation condition, operating temperature limit, power supply voltage or load.

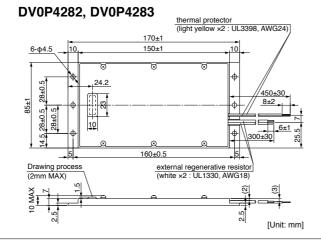
Mount the regenerative resistor on a machine operating under aggressive regenerating condition (high power supply voltage, large load inertia, shorter deceleration time, etc.) and make sure that the surface temperature will not exceed 100 °C.

\*2 If the wind speed is 1m / s by the fan.

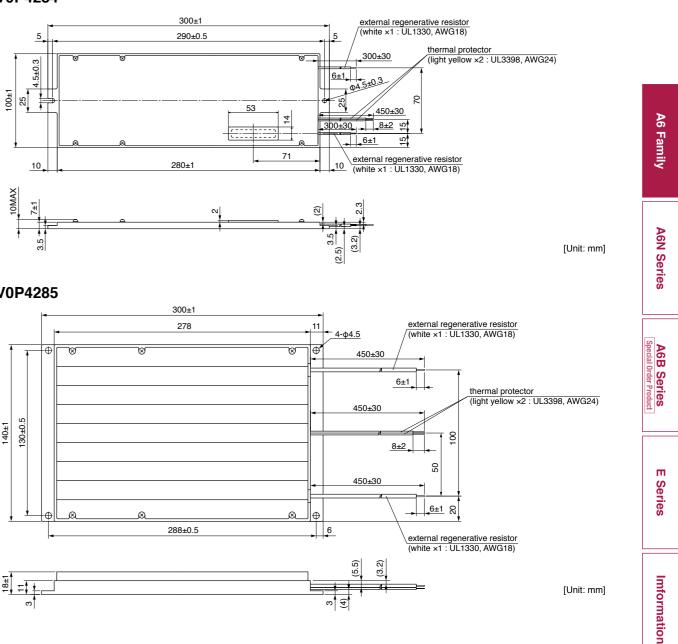
	Power supply					
Frame	Single phase, 100 V	Single phase, 200 V 3-phase, 200 V				
A	DV0P4280	DV0P4281 (100 W or less)				
	B V01 4200	DV0P4283 (200 W)				
В	DV0P4283	DV0P4283				
С	DV0P4282	DV0F4203				
D		DV0P4284				
E		DV0P4284 × 2 in parallel or DV0P4285				
F	_	DV0P4285 × 2 in parallel				
G		DV0P4285 × 3 in parallel				
н		DV0P4285 × 6 in parallel				

DV0P4280, DV0P4281

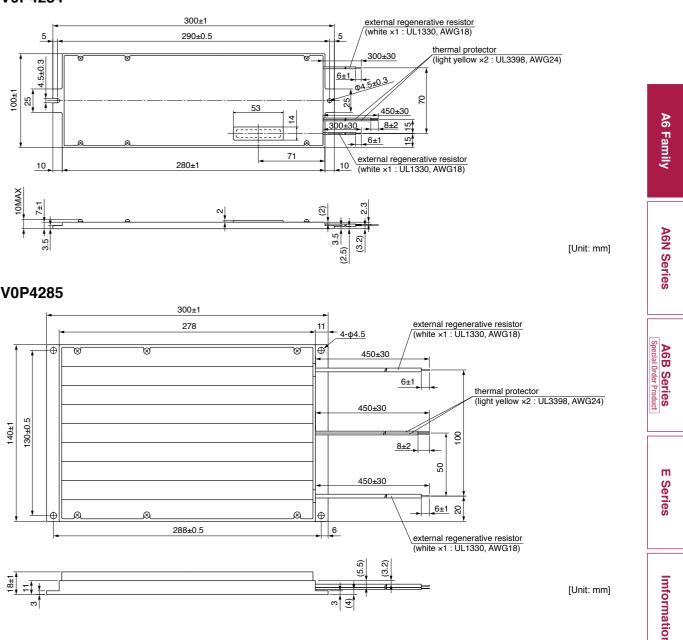


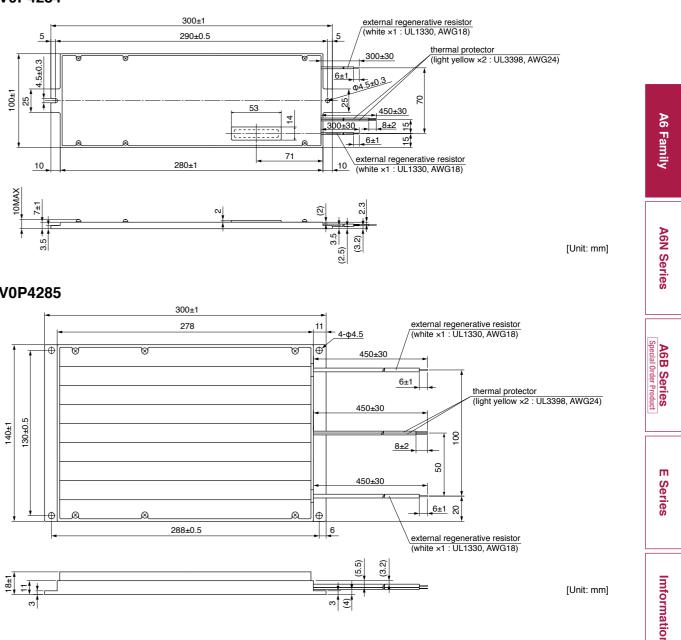


DV0P4284



**DV0P4285** 





<Caution when using external regenerative resistor>

Regenerative resistor gets very hot.

Configure a circuit so that a power supply shuts down when built-in thermal protector of the regenerative resistor works. Because it is automatic reset thermal protector, please apply a self-holding circuit to the outside in order to maintain safety in case of sudden activation. During the failure of the driver, the surface temperature of the regenerative resistor may exceed the operating temperature before thermal protector starts to work. Built-in thermal fuse of regenerative resistor is intended to prevent from ignition during the failure of the driver and not intended to suppress the surface temperature of the resistor.

- Be attached the regenerative resistance to non-combustible material such as metal.
- Do not install the regenerative resistor near flammable materials.

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• Built-in thermal fuse of regenerative resistor is intended to prevent from ignition during the failure of the driver and not intended to suppress the surface temperature of the resistor.

#### Daisy Chain (Excluding A6SE, A6NE, A6BE Series)

**Options** 

#### Part No. DV0PM24610

#### Components

Title	Part No.	Manufacturer	Note
Connector	CIF-PCNS08KK-072R	J.S.T Mfg. Co., Ltd.	For Connector X2 (2-pins)
Cable	3-core cable with shield	_	Core diameter AWG24

<Remarks>

· Do not connect anything to NC.

the shell (housing) of the connector.

• The braided wire of the cable is connected to

Pin disposition of connector, connector X2

<u>485+</u> 485+		NC NC	
<u>485–</u>	8642	GND	Shell: FG
485–	7531	NC	

(Viewed from cable)

#### Table for wiring

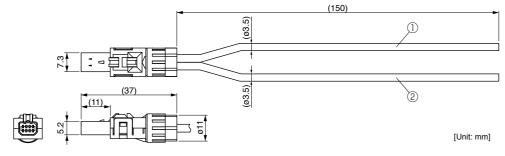
#### Cable (1)

Pin No.	Signal name	Core color
8	485+	Red
7	485–	Yellow
1	GND	White

#### Cable 2

Pin No.	Signal name	Core color
6	485+	Red
5	485–	Yellow
1	GND	White

#### Dimensions



#### Cable part No. Designation

#### **Encoder Cable** 2 3 4 5 6 7 8 9 1 FE C 0 5 M Α 0 0 1 Type classification MFECA: Encoder cable 1) Cable length 2 Cable type 0030 3 m E PVC cable with shie 0050 5 m M Hitachi Cable, Ltd. 0100 10 m T Hitachi Cable, Ltd. 0200 20 m ③ Cable end (Encoder sid A Tyco Electronics Ja J Japan Aviation Elec K Japan Aviation Elec P Japan Aviation Elec S "S" shaped cannon T Japan Aviation Elec ④ Cable end (Driver side) D Connector (Without battery box)

# Motor Cable, Brake Cable

1	2	3	4	5	5	6	7	8	9	10	11	12			
M	F	Μ	C	A		0	0	5	2	Ν	J	D			
					Ì.				<u> </u>		<u> </u>				
AC (	servo r	ootor	aabla	1	)		2		3	4	5	6			
40 8	Servor	10101	Cable												
	1) Ty	pe cl	assific	ation		(4) C	able ty	/pe						ROBO-TO	DP <sup>®</sup> is a trade mark of DYDEN CORPORATIO
	A	Sta	Indard	I		E	RO	30-TC	P <sub>®</sub> 4-v	vire by	DYDE	N COR	POR/	TION	
	В	Spe	ecial			F	RO	30-тс	P <sub>®</sub> 6-v	vire by	DYDE	N COR	POR/	TION	
	:	De	sign o	rder		G	RO	30-тс	P <sub>®</sub> 2-v	vire by	DYDE	N COR	POR	TION	
						N	4-wi	ire by	Hitachi	Cable	, Ltd.	Highly be	ndable	type)	
	2 Ca	able I	ength			Р	4-wi	ire by	Hitachi	i Cable	, Ltd.	Standard	benda	ble type)	
	00	3	3	m		R	2-wi	ire by	Hitachi	i Cable	, Ltd.	Highly be	ndable	type)	
	00	5	5	m		S					,	Standard		, ,	
	01	0	10	m		U	4-wi	ire for	A6 ser	ies sm	all mo	t <b>or</b> * (High	nly ben	dable type)	
	02	0	20	m		V	6-wi	ire for	A6 ser	ies sm	all mo	t <b>or*</b> (High	nly ben	dable type)	
						W	4-wi	ire for	A6 ser	ies sm	all mo	t <b>or*</b> (Stan	ndard b	endable typ	pe)
	·	ection ble c	al are	a of		Х	6-w	ire for	A6 ser	ies sm	all mo	t <b>or*</b> (Stan	ndard b	endable typ	pe)
	0		.75 m	m <sup>2</sup>		<u> </u>									* 80 mm sq. or les
	1	-	.25 m			<u> </u>	able e	nd at r	notor s	side					
	2		.0 mm			С			nnon p						
	3		.5 mm	-		E	-					connec			
	7	0	.3 mm	1 <sup>2</sup>		F						dustry, L		onnector	
		-				G						dustry, L		onnector	(-pp
						J						dustry, L		onnector	1
						K						dustry, L		onnector	
						U	Japa	an Avi	ation E	lectror	nics In	dustry, L	td. p	lug conne	ector
						6 C	able e	nd at o	driver s	side					
						D	Rod	termi	nal						
						Т	Clar	np ter	minal						

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#### **Options**

A6 Family

A6N Series

A6B Series Special Order Product

E Series

Imformation

10	11	12
Μ	J	D
2	3	4

ld by Oki Electric Cable Co., 0.20 mm <sup>2</sup> × 4P(8-wire), 3P(6-wire)
Highly bendable type
Standard bendable type
e)
pan G.K. connector
tronics Industry, Ltd. connector (Direction of motor shaft)
tronics Industry, Ltd. connector (Opposite direction of motor shaft)
tronics Industry, Ltd. plug connector
blug
tronics Industry, Ltd. plug connector

E Connector (With battery box)



**Options** 

#### List of Peripheral Equipments

Manufacturer	Tel No. / Home Page	Peripheral components
Panasonic Corporation Eco Solutions Company	http://panasonic.net/es/	Circuit breaker
Panasonic Corporation Automotive & Industrial Systems Company	http://panasonic.net/id/	Surge absorber Switch, Relay
Iwaki Musen Kenkyusho Co., Ltd.	+81-44-833-4311 http://www.iwakimusen.co.jp/	Regenerative resistor
KOA Corporation	+81-42-336-5300 http://www.koanet.co.jp/en/index.htm	
NIPPON CHEMI-CON CORPORATION	+81-3-5436-7711 http://www.chemi-con.co.jp/e/index.html	Surge absorber for holding brake
SEMITEC Corporation	+81-3-3621-2703 http://www.semitec.co.jp/english2/	
TDK Corporation	+81-3-5201-7229 http://www.global.tdk.com/	
NISSHIN ELECTRIC Co., LTD.	+81-4-2934-4151 http://www.nisshin-electric.com	Ferrite core
Konno Kogyosho Co., Ltd.	+81-184-53-2307	
Okaya Electric Industries Co. Ltd.	+81-3-4544-7040 http://www.okayaelec.co.jp/english/index.html	Surge absorber Noise filter
SOSHIN ELECTRIC Co., Ltd.	+81-3-5730-4500 http://www.soshin-ele.com/	Noise filter
Japan Aviation Electronics Industry, Ltd.	+81-3-3780-2717 http://www.jae.com/en/index.html	
Japan Molex Inc.	+81-462-65-2313 http://www.molex.co.jp	
J.S.T. Mfg. Co., Ltd.	+81-45-543-1271 http://www.jst-mfg.com/index_e.php	Connector
Sumitomo 3M	+81-3-5716-7290 http:/solutions.3m.com/wps/portal/3M/ja_JP/ WW2/Country/	
Tyco Electronics Japan G.K.	+81-44-844-8052 http://www.te.com/ja/home.html	
DYDEN CORPORATION	+81-3-5805-5880 http://www.dyden.co.jp/english/index.htm	Cable
DR. JOHANNES HEIDENHAIN GmbH	+81-3-3234-7781 http://www.heidenhain.de/de_EN/company/contact/	
Fagor Automation S.Coop.	+34-943-719-200 http://www.fagorautomation.com	
Magnescale Co., Ltd.	+81-463-92-7971 http://www.mgscale.com/mgs/language/english/	External scale
Mitutoyo Corporation	+81-44-813-8234 http://www.mitutoyo.co.jp/eng/	
Nidec Sankyo Corporation	+81-3-5740-3006 http://www.nidec-sankyo.co.jp/	
Renishaw plc	+44 1453 524524 www.renishaw.com	

\* The above list is for reference only. We may change the manufacturer without notice.

# \_\_\_\_\_ A6 Family \_\_\_\_\_ \_\_\_\_\_ A6N Series A6B Series Special Order Product -----\_\_\_\_\_ \_\_\_\_\_ ш Series \_\_\_\_\_ Imformation \_\_\_\_\_ \_\_\_\_\_

MEMO

# Communication 0.0625 ms Ultra-high-speed network driver

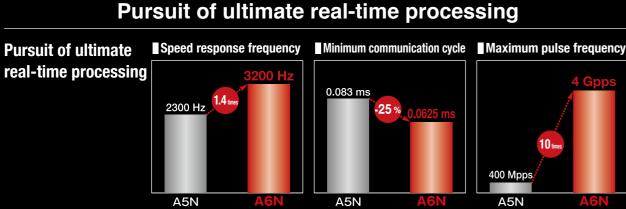


# AC servo motor & driver

N series



# 



-349-

Max.4 Mpps, when using AB-phase external scale

#### Multifunctional capabilities to match various needs

- © Supports all positions, speeds and torque modes (w/built-in positioning function)
- High-precision position latch and comparison
- © Communication cycle can be set to any time between 2 ms and 62.5 µs.
- Easy setup with setup support software "PANATERM".

Simple network

- Satisfies both high performance and low cost requirments
   Synchronization established by communication IC
- $\ensuremath{\mathbb{O}}$  Easier development of compatible equipment

\* For options other than for Interface cable and connector kit for interface, see P.29 to P.42.
 PRealtime Express and RTEX are registered trademarks of Panasonic Corporation.

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A6 Series

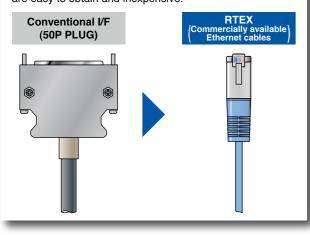
#### MINAS A6 N series

# Merits of RTEX

#### • The "Conventional I/F" used in this document means a pulse train and analog I/F.

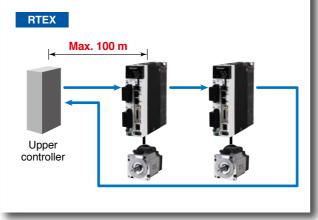
#### Wire-saving

Wire-saving reduces various troubles relating to wires. The cables used are widely available Ethernet cables, which are easy to obtain and inexpensive.



# Maximum length of the node-to-node cable is 100 m.

Flexibility increases in the layout of an upper controller and servo motors. The RTEXs can also support large-scale systems.

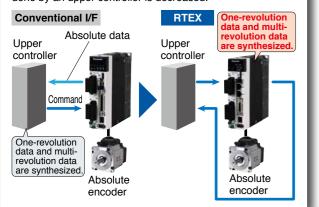


# <text>

including the servo motors. Actual number of controllable axes depends on the specification of an upper controller.

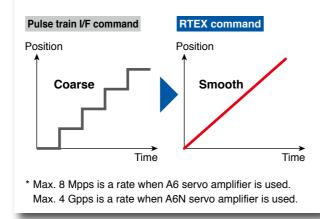
#### Absolute system can easily be built.

Conventional I/F requires an additional wire to transmit absolute data, while the RTEX doesn't. Each servo motor synthesizes one-revolution data and multi-revolution data to produce an actual position, so that the amount of work to be done by an upper controller is decreased.



#### High resolution command is enabled

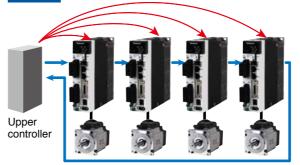
The position command rate of max. 8 Mpps\* in a pulse train I/F is improved to 4 Gpps\* in the RTEX. Vibrations are reduced due to a smooth command sent to a servo motor using the advantage of the high-resolution encoder.



#### **Configurable parameter settings**

Upper controllers can configure servo parameters. This enables parameters to be configured automatically instead by human at installation.

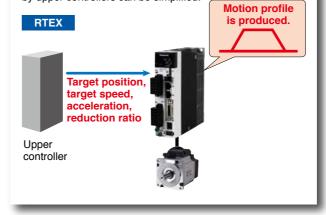
#### RTEX Automatic parameter configuration



\* Parameters can be changed even during operation

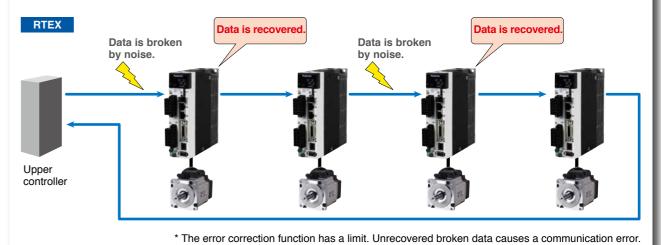
#### Profile position mode is supported

Profile position mode is supported for PTP control as well as cyclic position, speed, and torque. The processing done by upper controllers can be simplified.



# High noise-proof property

With a patented error correction function, noise-proof property is at least 2.5 KV. This conforms to IEC61000-4-4 standard.



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# Real time monitoring is enabled.

Upper controllers can monitor various information, such as position, speed, and torque, etc. in real time. Since alarm codes can also be read out, analysis can be performed promptly at trouble occurrence.



A6 Series

A6N Series

A6B

Series

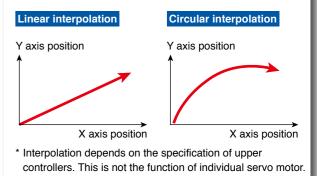
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Series

Imformation

## High synchronization capability among axes

Upper controllers synchronize with entire servo motor axes at high accuracy. With the synchronization capability higher than that of conventional I/F, the RTEX is best suitable for machine tools, robots, gantry systems, and others.



\* For combination of elements of model number, refer to Index P.448.

#### Servo Motor

H 8

				М	S	М	_	5 A	Z		-	_	•	*					ecifica		
	_				1		2 0 <b>C</b> ori	3	4	(5)	6		<u>)</u>		00						
D Typ	e						2 Seri			-	(7) M(	otor s	specifi	cations	: 80 m	ım sq	. or le	SS M	SMF 50		000
Symbol			Ту				Symbol		name				S	haft	Holding	g brake	Oil	seal		encoder inal <sup>*1</sup>	
MSM		w inertia			5.0 kW		F	A6 f	amily		Syr	nbol		Key-way,					Connector		
MQM		iddle inei	,		400 W	,							Round	center tap	without	with	without	with	JN	wire	
MDM		iddle inei	· ·		0 22.0	,					Α	1	•		•		•		•		]
MGM		iddle inei	,		to 5.5	,					Α	2	•		•		•			•	
MHM	ΗI	gh inertia	a (50	J VV 10	7.5 kW	)					В	1	•			•	•		•	-	
B) Mot	tor r	rated o	utput								B	2	•		•	•	•	•	•	•	
Symbol		Rated of	tuatuc	5	Symbol	Rated c	utput	Symbol I	Rated out	put	C	2			•			•	•	•	
5A			50	W	13	1.3 k		44	4.4 kW	•	D	1	•		•	•		•	•	•	
01			100		15	1.5 k	W	50	5.0 kW	1	D	2	•			•		•		•	
02			200	W	18	1.8 k		55	5.5 kW		S	1		•	•		•		•		1
04			400	W	20	2.0 k	W	75	7.5 kW	1	S	2		•	•		•			•	]
08			750	W	24	2.4 k	W	C1	11.0 kW		Т	1		•		•	•		•		
00	0	.85 kW.	1000	W	29	2.9 k	W	C5	15.0 kW		T	2		•	-	•	•	-	-	•	
09		) mm sq.)	(80 mm :	sq.)	30	3.0 k	W	D2	22.0 kW		U	1		•	•			•	•	•	
10			1.0	kW	40	4.0 k	W				V	1			•	•		•	•	•	
- H		e speci				Design					V	2		•		•		•	-	•	
1		10	0 V 00		1		· ·	cations Idard			U III		poon	outionic	: 80 m				IQMF 1		
2	10	20 00 V/ 200	0 V 0 V com	imon	<no< td=""><td>te&gt;</td><td>Star</td><td>dard</td><td>as an incr</td><td>۵-</td><td></td><td></td><td></td><td>haft</td><td></td><td>g brake</td><td></td><td></td><td>IQMF 1</td><td></td><td>o 40 encod</td></no<>	te>	Star	dard	as an incr	۵-				haft		g brake			IQMF 1		o 40 encod
1	10	20 00 V/ 200	0 V 0	imon	<no Whe men</no 	<b>te&gt;</b> In using tal system	Star a rotary e m (not us	idard encoder a sing multi	as an incr -turn data ute encoo	l), do		nbol					without	N	IQMF 1	00 W to Motor e termi	o 40 encod inal <sup>*1</sup> Lea
1 2 Z		20 00 V/ 200	00 V 0 V com V only)		<no Whe men not o</no 	te> en using tal syste connect a	Star a rotary e m (not us	idard encoder a sing multi	-turn data	l), do	Syr	nbol 1	SI Round	haft Key-way,	Holding without	g brake	without	N Oil se	al With protective	00 W to Motor e termi Connector	encod inal <sup>*1</sup> Lea
1 2 Z	ary	20 00 V/ 200 (50 V	00 V 0 V com V only) <b>ler sp</b> o	ecific	<no Whe men not o ation</no 	te> en using tal syste connect a	Star a rotary e m (not us a battery	idard encoder a sing multi for absol	-turn data	l), do	Syr A A	nbol 1 2	SI Round	haft Key-way,	Holding	g brake with	without	N Oil se	al With protective	00 W to Motor e termi Connector JN	o 40 encod
1 2 Z	ary	20 00 V/ 200 (50 V encod	00 V 0 V com V only) <b>Ier sp</b> o at	ecific	<no Whe men not o</no 	te> en using tal syste connect a	Star a rotary e m (not us	encoder a sing multi for absol	-turn data ute encoo	l), do	Syr A A B	nbol 1 2 1	SI Round •	haft Key-way,	Holding without	g brake with	without	N Oil se	al With protective	00 W to Motor e termi Connector JN	encod inal <sup>*1</sup> Lea wir
1 2 Z B Rot Symbol L	ary	20 00 V/ 200 (50 V encod Form Absolu	00 V 0 V com V only) ler spo at ute	ecific Pu	<no Whe men not c ations se cou 23-bit</no 	te> en using a tal system connect a S nts	Star a rotary e m (not us a battery Resolutio 838860	idard encoder a sing multi for absol	-turn data ute encoo Wires 7	l), do	Syr A A B B	nbol 1 2 1 2	Round • • •	haft Key-way,	Holding without	g brake with	without	V Oil se with	al With protective	00 W to Motor e termi Connector JN	encod inal <sup>*1</sup> Lea win
1 2 Z B Rot Symbol L	ary	20 00 V/ 200 (50 V encod Form Absolu	00 V 0 V com V only) ler spo at ute	ecific Pu	<no Whe men not o ation 23-bit 7 * 100</no 	te> en using tal syste connect a s nts	Star a rotary e m (not us a battery Resolutio 838860 <b>q. to 22</b>	encoder a sing multi for absol	-turn data ute encoo Wires 7	l), do	Syr A A B	nbol 1 2 1	SI Round •	haft Key-way,	Holding without	g brake with	without	N Oil se	al With protective	00 W to Motor e termi Connector JN	encod inal <sup>11</sup> Lea win
1 2 Z Symbol L	ary	20 00 V/ 200 (50 V encod Form Absolu	0 V 0 V com V only) ler spo at ute ations	ecific Pu : IP6 MS	<no Whe men not c ations se cou 23-bit 7<sup>*2</sup> 100 MF, MI</no 	te> en using tal syste connect a s nts 0 mm s HMF, M	Star a rotary e m (not us a battery <u>Resolutio</u> 838860 <b>q. to 22</b> <b>DMF, M</b>	dard encoder a sing multi for absol on B 0 mm s GMF	-turn data ute encod Wires 7 <b>q.</b>	l), do	Syr A A B B C	nbol 1 2 1 2 1	Round • • • • •	haft Key-way,	Holding without	g brake with	without	V Oil se with	al With protective	00 W to Motor e termi Connector JN	encod inal <sup>11</sup> Lea win
1 2 Z 5) Rot Symbol L 7) Mot	ary or s	20 00 V/ 200 (50 V encod Form Absolu	0 V 0 V com V only) ler spo at ute ations	ecific Pu : IP6 MS	<no Whe men not o ation 23-bit 7 * 100</no 	te> en using tal syste connect a s nts 0 mm s HMF, M	Star a rotary e m (not us a battery Resolutio 838860 <b>q. to 22</b> <b>DMF, M</b> il seal	encoder a sing multi for absol on 8 0 mm s GMF Encod	-turn data ute encoo Wires 7 <b>q.</b> er terminal	i), do der.	Syr A A B B C C C C C	nbol 1 2 1 2 1 2	Si Round • • • • • • • • • •	haft Key-way,	Holding without	g brake with	without	V Oil se with	Al With protective	OOW to Motor e termi Connector JN	encod inal <sup>*1</sup> Lea win
1 2 Z B Rot Symbol L	ary or s	20 00 V/ 200 (50 V encod Form Absolu	0 V 0 V com V only) ler spo at ute ations aft Key-	ecific Pu : IP6 MS	<no Whe men not c ations 23-bit 7<sup>-2</sup> 100 MF, MI ng brake</no 	te> en using stal syste connect a s nts D mm s HMF, M	Star a rotary e m (not us a battery Resolution 8388600 q. to 22 DMF, M ill seal With protective	encoder a sing multi for absol on 8 0 mm s GMF Encod Connecto JN2	Wires 7 <b>q.</b> Connector JL10	.), do der.	Syr A B C C C C C D	nbol 1 2 1 2 1 2 3 4 1	Round	haft Key-way,	Holding without	y brake with	without	V Oil se with	All With protective lip	OOW to Motor e termi Connector JN	D 40 encodinal <sup>11</sup> Lee win
1 2 Z Bymbol L Mot Symb	or s	20 00 V/ 200 (50 V encod Form Absolu pecific Sh Round	00 V 0 V com V only) ler spo at ute ations aft	ecific Pu : IP6 MS Holdi withou	<no Whe men not c ations 23-bit 7<sup>-2</sup> 100 MF, MI ng brake</no 	te> nusing tal syste connect a s nts D mm s HMF, M a O u with	Star a rotary e m (not us a battery Resolutio 838860 q. to 22 DMF, M il seal With	encoder a sing multi for absol on 8 0 mm s GMF Connecto JN2 (Small size)	-turn data ute encod Wires 7 <b>q.</b> Connector JL10	.), do der.	Syr A B B C C C C C C D D	nbol 1 2 1 2 1 2 3 4 1 2 3 4 1 2	Round	haft Key-way,	Holding without	o brake with	without	V Oil se with	IQMF 1 al With protective lip	OOW to Motor e termi Connector JN O O	o 40 encod inal <sup>11</sup> Lea win
1 2 Z Symbol L Symbol Symbol	or s	20 00 V/ 20C (50 V encod Form Absolu specific Sh Round	0 V 0 V com V only) ler spo at ute ations aft Key-	ecific Pu : IP6 MSi Holdi withou	<no Whe men not c ations 23-bit 7<sup>-2</sup> 100 MF, MI ng brake</no 	te> en using tal syste connect a s nts D mm s HMF, M a 0 u with	Star a rotary e m (not us a battery Resolution 8388600 q. to 22 DMF, M ill seal With protective	encoder a sing multi for absol on 8 0 mm s GMF Encod Connecto JN2	turn data ute encod Wires 7 <b>q.</b> er terminal Connector JL10 (Large size)	.), do der.	Syr A B B C C C C C C D D D D	nbol 1 2 1 2 1 2 3 4 1 2 3 4 1 2 3	Round Control Control	haft Key-way,	Holding without	y brake with	without	V Oil se with	IQMF 1 al With protective lip	OOW to Motor e termi Connector JN • •	D 40 encoddinal "1" Leeawin 0 0
1 2 Z Symbol L Symbol C C	or s	20 00 V/ 20C (50 V encod Form Absolu pecific Sh Round	0 V 0 V com V only) ler spo at ute ations aft Key-	ecific Pu : IP6 MSi Holdi withou	<no Whe men not c ations 23-bit 7<sup>-2</sup> 100 MF, MI ng brake</no 	te> nusing tal syste connect a s nts D mm s HMF, M a O u with	Star a rotary e m (not us a battery Resolution 8388600 q. to 22 DMF, M ill seal With protective lip	and and and an	Wires 7 <b>q.</b> Connector JL10	.), do der.	Syr A A B B C C C C C C C D D D D	nbol 1 2 1 2 1 2 3 4 1 2 3 4 1 2 3 4	Round	haft Key-way, center tap	Holding without	o brake with	without	V Oil se with	IQMF 1 al With protective lip	00 W to Motor e termi Connector JN • • • •	D 40 encodo inal <sup>11</sup> Lee wii
1 2 Z PRot symbol L Mot Symb	or s	20 00 V/ 20C (50 V encod Form Absolu specific Sh Round	0 V 0 V com V only) ler spo at ute ations aft Key-	ecific Pu : IP6 MSi Holdi withou	<no Whe men not c ations 23-bit 7<sup>-2</sup> 100 MF, MI ng brake</no 	te> en using tal syste connect a s nts D mm s HMF, M a 0 u with	Star a rotary e m (not us a battery Resolution 8388600 q. to 22 DMF, M ill seal With protective	encoder a sing multi for absol on 8 0 mm s GMF Connecto JN2 (Small size)	turn data ute encod Wires 7 <b>q.</b> er terminal Connector JL10 (Large size)	.), do der.	Syr A B B C C C C C C D D D D	nbol 1 2 1 2 1 2 3 4 1 2 3 4 1 2 3	Round Control Control	haft Key-way,	Holding without	y brake with	without	V Oil se with	IQMF 1 al With protective lip	OO W to Motor e termi Connector JN O O O	Le wi
1 2 Z 9) Rot ymbol L 9) Mot	or s	200 V/ 200 (50 V encod Form Absolu pecific Sh Round •	0 V 0 V com V only) ler spo at ute ations aft Key-	ecific Pu S: IP6 MS Holdi withou	<no Whe men not c ations 23-bit 7<sup>-2</sup> 100 MF, MI ng brake</no 	te> en using tal syste connect a s nts D mm s HMF, M a 0 u with	Star a rotary e m (not us a battery Resolutio 838860 q. to 22 DMF, M ill seal With protective lip	and and and an	-turn data ute encod 7 <b>q.</b> er terminal (Large size) •	.), do der.	Syr A A B B C C C C C C C D D D D S	nbol 1 2 1 2 1 2 3 4 1 2 3 4 1 2 3 4 1	Round Control Control	haft Key-way, center tap	Holding without • • • • • • • • • • • • • • • • • • •	y brake with	without	V Oil se with	IQMF 1 al With protective lip	00 W to Motor e termi Connector JN • • • •	Le wi
1 2 Z Symbol L Symbol C C C C	ary ( or s)	20 00 V/ 200 (50 V encod Form Absolu pecific Sh Round • •	0 V 0 V com V only) ler spo at ute ations aft Key-	ecific Pu S: IP6 MS Holdi withou	<no Whe men not c ations 23-bit 7 <sup>2</sup> 100 MF, MI ng brake t with</no 	te> en using a tal syste connect a s nts D mm s HMF, M a O u with	Star a rotary e m (not us a battery Resolutio 838860 q. to 22 DMF, M ill seal With protective lip	dard encoder a sing multi for absol on B 0 mm s GMF Encod Connecto JN2 (Small size)  •	-turn data ute encod 7 <b>q.</b> er terminal (Large size) •	.), do der.	Syr A A B C C C C C C C C D D D S S S	nbol 1 2 1 2 1 2 3 4 1 2 3 4 1 2 3 4 1 2 2 3	Round Control Control	haft Key-way, center tap	Holding without • • • • • • • • • • • • • • • • • • •	e brake	without • • • • • • • • • • • • •	V Oil se with	IQMF 1 al With protective lip	00 W to Motor e termi Connector JN 0 0 0 0 0 0 0 0 0 0	D 400 encocotinal <sup>11</sup> Le wi
1 2 Z Symbol L Symbol C C C C C C C D D D	ary ( or s)	200 V/ 200 (50 V encod Form Absolu pecific Sh Round • • • •	0 V 0 V com V only) ler spo at ute ations aft Key-	ecific Pu S: IP6 MS Holdi withou	No Whe men not d with the second s	te> tal syste connect a s nts 0 mm s HMF, M e 0 with e 0	Star a rotary e m (not us a battery Resolutio 838860 q. to 22 DMF, M il seal With protective lip	dard encoder a sing multi for absol on B 0 mm s GMF Encod Connecto JN2 (Small size)  •	-turn data ute encod Wires 7 q. er terminal Connector JL10 (Large size) •	.), do der.	Sym A A B B C C C C C C C C D D D D S S S T T T U	nbol 1 2 1 2 3 4 1 2 3 4 1 2 3 4 1 2 1 2 1 2 1	Round Control Control	haft Key-way, center tap	Holding without	y brake with	without • • • • • • • • • • • • •	N Oil se with	IQMF 1 al With protective lip	00 W to Motor e termi Connector JN 0 0 0 0 0 0 0 0 0 0	D 40 encoordinal "" Le with O
1 2 Z Symbol L Mot Symb C C C C C C C D D D D	ary ( or s 5 6 7 8 5 6 7 8 5 6 7 8	200 V/ 200 (50 V encod Form Absolu pecific Sh Round • • • •	NO V O V com V only) Ner spo at ute ations aft Key- way	ECIFIC Pu S: IP6 MSI Holdi withou	<no Whe men not c ations ise cou 23-bit 7<sup>-2</sup> 100 WF, MI ng brake t with</no 	te> en using i tal syste connect a s nts D mm s HMF, M a O with 0 with 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Star a rotary e m (not us a battery Resolution 838860 q. to 22 DMF, M ill seal With protective lip	dard encoder a sing multi for absol on B 0 mm s GMF Encodo UN2 (Small size)  • • • • • • • • • • • • • • • • • •	-turn data ute encod Wires 7 q. er terminal (large size) •	.), do der.	Syrr A B B C C C C C C C C D D D D S S S T T U U	nbol 1 2 1 2 3 4 1 2 3 4 1 2 3 4 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 3 3 4 4 1 2 3 3 4 4 1 1 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 3 4 4 1 1 2 2 3 3 4 4 1 1 2 2 3 3 3 4 4 1 1 2 2 3 3 3 4 4 1 2 2 3 3 3 4 4 1 2 2 3 3 3 4 4 1 2 2 3 3 3 3 4 4 1 2 3 3 3 3 4 4 1 2 3 3 3 3 3 4 4 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Round Control Control	haft Key-way, center tap	Holding without	y brake with	without • • • • • • • • • • • • •	N Oil se with	IQMF 1 al With protective lip	00 W to Motor e termi Connector JN O O O O O O O O O O O O O O O O O O	
1 2 Z Wymbol L ) Mot C C C C C C C C C C C C C C C C C C C	ary ( oor s) 5 6 7 8 5 6 7 8 5 5 6 7 8 5	200 V/ 200 (50 V encod Form Absolu pecific Sh Round • • • •	e V V com V only) er spo at at at te ations aft Key- way	Pu Pu File Pu Pu Pu Pu Pu Pu Pu Pu Pu Pu Pu Pu Pu	No Whe men not d with the second s	te> en using 4 tal syste connect 6 S nts D mm S HMF, M e 0 with 0 0 with 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Star a rotary e m (not us a battery Resolutio 838860 q. to 22 DMF, M il seal With protective lip	ancoder a sing multi for absol	-turn data ute encod Wires 7 <b>q.</b> er terminal (large size) • • •	.), do der.	Syr A A B B C C C C C C C C D D D D S S T T T U U U	1 2 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 1 2 1 2 1 2 3 3	Round Control Control	haft Key-way, center tap	Holding without	y brake with	without • • • • • • • • • • • • •	N Oil se with	IQMF 1 al With protective lip	00 W to Motor e termi Connector JN O O O O O O O O O O O O O O O O O O	
1 2 Z Symbol L Mot Symbol C C C C C C C C C C C C C C C C C C C	ary ( or s) or s) 5 6 7 8 5 6 7 8 5 6 7 8 5 6 6 7 8 5 6 6	200 V/ 200 (50 V encod Form Absolu pecific Sh Round • • • •	er spo at at at aft Key- way	Ecific Pu Bis: IP6 MSI Holdi withou 0 0 0 0	No Whe men not d with the second s	te> en using i tal syste connect a s nts D mm s HMF, M a O with 0 with 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Star a rotary e m (not us a battery Resolution 8388600 q. to 22 DMF, M iil seal With protective lip 0 0 0 0 0 0 0	dard encoder a sing multi for absol on B 0 mm s GMF Encod Connecto JN2 (Small size)	-turn data ute encod Wires 7 q. er terminal Connector JL10 (Large size) •	.), do der.	Syr A A B B C C C C C C C C D D D D D D D S S S T T T U U U U	1 2 1 2 1 2 3 4 1 2 3 3 4 1 2 3 3 4 1 2 2 1 2 2 3 3 4	Round Control Control	haft Key-way, center tap	Holding without	g brake with	without • • • • • • • • • • • • •	N Oil se with	IQMF 1 al With protective lip	00 W to Motor e termi Connector JN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
1 2 Z Rot kymbol L ) Mot C C C C C C C C C C C C C C C C C C C	ary ( oor s) 5 6 7 8 5 6 7 8 5 5 6 7 8 5	200 V/ 200 (50 V encod Form Absolu pecific Sh Round • • • •	e V V com V only) er spo at at at te ations aft Key- way	Pu Pu File Pu Pu Pu Pu Pu Pu Pu Pu Pu Pu Pu Pu Pu	No Whe men not d with the second s	te> en using 4 tal syste connect 6 S nts D mm S HMF, M e 0 with 0 0 with 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Star a rotary e m (not us a battery Resolutio 838860 q. to 22 DMF, M il seal With protective lip	dard encoder a sing multi for absol on B 0 mm s GMF Encodo UN2 (Small size)  • • • • • • • • • • • • • • • • • •	-turn data ute encod Wires 7 <b>q.</b> er terminal (large size) • • •	.), do der.	Syr A A B B C C C C C C C C D D D D S S T T T U U U	1 2 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 1 2 1 2 1 2 3 3	Round Control Control	haft Key-way, center tap	Holding without	y brake with	without • • • • • • • • • • • • •	N Oil se with	IQMF 1 al With protective lip	00 W to Motor e termi Connector JN O O O O O O O O O O O O O O O O O O	Le wi
1 2 Z 3 3 9 Rott L 3 7 Mot C C C C C C C C C C C C C C C C C C C	ary ( or s) 5 ( 6 7 8 5 6 7 8 5 6 7 8 5 6 7	200 V/ 200 (50 V encod Form Absolu pecific Sh Round • • • •	er spo at at at at way	ecific Pu Bi Holdi withou	No Whe men not d with the second s	te> en using 4 tal syste connect 6 S nts D mm S HMF, M e 0 with 0 0 with 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Star a rotary e m (not us a battery Resolutic 838860 q. to 22 DMF, M ill seal With protective lip	dard encoder a sing multi for absol on B 0 mm s GMF Encod Connecto JN2 (Small size)	-turn data ute encod Wires 7 q. er terminal JL10 (Large size) • • •	.), do der.	A A A B B C C C C C C D D D D D D D D S S S T T T U U U U V	nbol 1 2 1 2 1 2 3 4 1 2 3 4 1 2 1 2 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 3 4 1 2 3 3 4 1 2 3 3 4 1 2 3 3 4 1 2 3 3 4 1 2 3 3 4 1 2 3 3 4 1 2 3 3 4 1 2 3 3 4 1 2 3 3 4 1 1 2 3 3 4 1 1 2 3 3 4 1 1 2 3 3 4 1 1 2 3 3 4 1 1 2 3 3 4 1 1 2 3 3 4 1 1 2 3 3 4 1 1 2 3 3 4 1 2 1 1 2 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 3 3 4 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	Round Control Control	haft Key-way, center tap	Holding without	g brake with	without • • • • • • • • • • • • •	Vil se with	IQMF 1 al With protective lip	00 W to Motor e termi Connector JN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	

\*1 Connector type: IP67, Lead wire type: IP65 \*2 22.0 kW: IP44 \*3 Connector on the motor side encoder. (Also applicable to screwed type.)

\* \* \*

#### Servo Driver

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# MADLN15NE

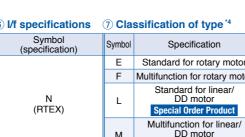
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			(1	)	(	2) (	3 (	4	5	6	$\bigcirc$
1) Fra	me symb	ol			<b>④ Ma</b>	x. cui	rrent i	rat	ting		
Symbol	Frame	Symbol	Frame		Symbol	Curre	nt rating	3	Symbol	Current	rating
MAD	A-Frame	MED	E-Frame		0		6 A		9	8	0 A 0
MBD	B-Frame	MFD	F-Frame		1		8 A		Α	10	0 A 0
MCD	C-Frame	MGD	G-Frame		2		12 A		В	12	0 A
MDD	D-Frame	MHD	H-Frame		3	1	22 A		С	16	0 A 0
			minamo		4		24 A		E	24	0 A 0
<li>2 Ser</li>	ies				5		40 A		F	36	0 A 0
Symbol	Series	name			8	(	60 A				
L	A6 fa		]		(5) Sup	oply v	oltag	je	speci	ficatio	ns
(3) Saf	ety Func	tion *4			Symbol		Spec	cifio	cations		
Symbol	Spe	ecificatio	ns		1	Sin	gle ph	as	e 100 V	/	
Ν	without th	ne safety	function		3	3-р	hase 2	200	V (		
Т	with the s	afety fu	nction		5	Sin	igle/3-p	bha	ase 200	V	

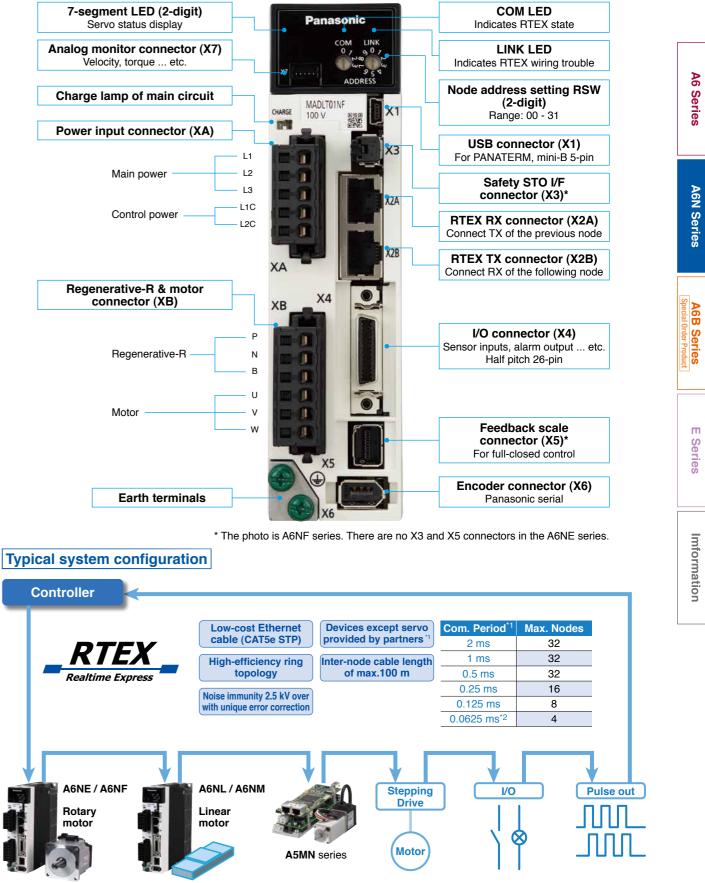
<b>(6)</b> I/f specifications	7 Cla	ssification of type *4
Symbol (specification)	Symbol	Specification
	E	Standard for rotary motor
	F	Multifunction for rotary motor
N	L	Standard for linear/ DD motor
(RTEX)		<b>Special Order Product</b>
	М	Multifunction for linear/ DD motor Special Order Product

\*4 Standard type (with a part number ending in E or L) has no safety function. Multi-function type (with a part number ending in F or M) has a safety function



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Special specifications



\*1: The communication period and connection of slave devices depend on the controller specification. \*2: For communication period 0.0625 ms, command update period is 0.125 ms only.

MINAS A6 N series

Appearance

# **Appearance/** System configuration

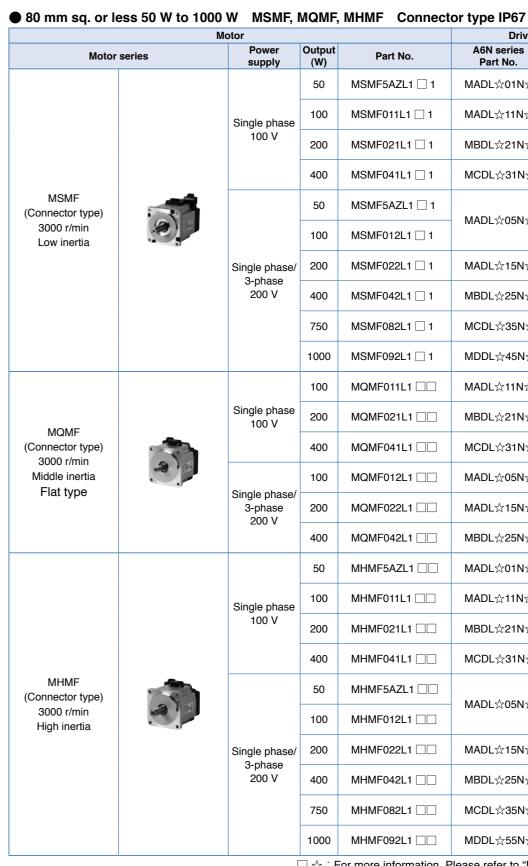
A6 Series

A6N Series

**E** Series

#### ● 80 mm sq. or less 50 W to 1000 W MSMF, MQMF, MHMF Leadwire type IP65

		Notor Power Output			A6N series	Dimension	Power capacity	
Motor	series	supply	(W)	Part No.	Part No.	Frame	(at rated load	
			50	MSMF5AZL1 🗌 2	MADL☆01N☆			
		Single phase	100	MSMF011L1 2	MADL☆11N☆	A-frame	Approx. 0.4 k	
		100 V	200	MSMF021L1 2	MBDL☆21N☆	B-frame	Approx. 0.5 k	
MSMF (Leadwire type)			400	MSMF041L1 2	MCDL☆31N☆	C-frame	Approx. 0.9 k	
			50	MSMF5AZL1 🗌 2				
3000 r/min Low inertia	3		100	MSMF012L1 2	MADL☆05N☆	A-frame	Approx. 0.5	
		Single phase/ 3-phase	200	MSMF022L1 🗌 2	MADL☆15N☆			
		200 V	400	MSMF042L1 🗌 2	MBDL☆25N☆	B-frame	Approx. 0.9	
			750	MSMF082L1 2	MCDL☆35N☆	C-frame	Approx. 1.8	
			1000	MSMF092L1 🗌 2	MDDL☆45N☆	D-frame	Approx. 2.4	
			100	MQMF011L1	MADL☆11N☆	A-frame	Approx. 0.4	
MQMF		Single phase 100 V	200	MQMF021L1	MBDL☆21N☆	B-frame	Approx. 0.5	
(Leadwire type) 3000 r/min			400	MQMF041L1	MCDL☆31N☆	C-frame	Approx. 0.9	
Middle inertia Flat type		Single phase/	100	MQMF012L1	MADL☆05N☆	A-frame	Approx. 0.5	
		3-phase 200 V	200	MQMF022L1	MADL☆15N☆			
			400	MQMF042L1	MBDL☆25N☆	B-frame	Approx. 0.9	
			50	MHMF5AZL1	MADL☆01N☆	A-frame	Approx. 0.4	
		Single phase	100	MHMF011L1	MADL☆11N☆			
		100 V	200	MHMF021L1	MBDL☆21N☆	B-frame	Approx. 0.5	
			400	MHMF041L1	MCDL☆31N☆	C-frame	Approx. 0.9	
MHMF (Leadwire type)			50	MHMF5AZL1	MADL☆05N☆			
3000 r/min High inertia			100	MHMF012L1		A-frame	Approx. 0.5	
		Single phase/ 3-phase	200	MHMF022L1	MADL☆15N☆			
		200 V	400	MHMF042L1	MBDL☆25N☆	B-frame	Approx. 0.9 k	
			750	MHMF082L1	MCDL☆35N☆	C-frame	Approx. 1.8 k	
			1000	MHMF092L1	MDDL☆55N☆	D-frame	Approx. 2.4 k	



,	MHMF Connect	or type IP67				
_		Driver	-			
t	Part No.	A6N series Part No.	Dimension Frame	capacity (at rated load)		
	MSMF5AZL1 🗌 1	MADL☆01N☆	Flaine	(utrated load)		
	MSMF011L1 [] 1	MADL☆11N☆	A-frame	Approx. 0.4 kVA		
	MSMF021L1 [] 1	MBDL☆21N☆	B-frame	Approx. 0.5 kVA		
	MSMF041L1 [] 1	MCDL☆31N☆	C-frame	Approx. 0.9 kVA		
	MSMF5AZL1 🗌 1	MADL☆05N☆				
	MSMF012L1 🗌 1	MADEXUSINX	A-frame	Approx. 0.5 kVA		
	MSMF022L1 🗌 1	MADL☆15N☆				
	MSMF042L1 🗌 1	MBDL☆25N☆	B-frame	Approx. 0.9 kVA		
	MSMF082L1 🗌 1	MCDL☆35N☆	C-frame	Approx. 1.8 kVA		
	MSMF092L1 🗌 1	MDDL☆45N☆	D-frame	Approx. 2.4 kVA		
	MQMF011L1	MADL☆11N☆	A-frame	Approx. 0.4 kVA		
	MQMF021L1	MBDL☆21N☆	B-frame	Approx. 0.5 kVA		
	MQMF041L1	MCDL☆31N☆	C-frame	Approx. 0.9 kVA		
	MQMF012L1	MADL☆05N☆	A-frame	Approx. 0.5 kVA		
	MQMF022L1	MADL☆15N☆				
	MQMF042L1	MBDL☆25N☆	B-frame	Approx. 0.9 kVA		
	MHMF5AZL1	MADL☆01N☆	A-frame	Approx. 0.4 kV		
	MHMF011L1	MADL☆11N☆				
	MHMF021L1	MBDL☆21N☆	B-frame	Approx. 0.5 kVA		
	MHMF041L1	MCDL☆31N☆	C-frame	Approx. 0.9 kVA		
	MHMF5AZL1	MADL☆05N☆				
	MHMF012L1	,,	A-frame	Approx. 0.5 kVA		
	MHMF022L1	MADL☆15N☆				
	MHMF042L1	MBDL☆25N☆	B-frame	Approx. 0.9 kVA		
	MHMF082L1	MCDL☆35N☆	C-frame	Approx. 1.8 kVA		
	MHMF092L1	MDDL☆55N☆	D-frame	Approx. 2.4 kVA		
F	For more information, F	Please refer to "Moo	del Design	ation" in P.353		

 $\hfill\square \not\precsim$  : For more information, Please refer to "Model Designation" in P.353.

A6 Series

A6N Series

A6B Series Special Order Product

E Series

#### • 100 mm sq. or more 0.85 kW to 5.0 kW MSMF, MDMF, MGMF, MHMF Encoder connector (Large size JL10)<sup>\*1</sup> type IP67

	Moto	Driver		Power		
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	capacity (at rated load)
	Single phase/ 3-phase 200 V	1000	MSMF102L1	MDDL☆55N☆	D fromo	
MSMF		1500	MSMF152L1	MDDLX00NX	D-frame	Approx. 2.9 kVA
Large size JL10 type) 3000 r/min Low inertia	3-phase 200 V	2000	MSMF202L1	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		3000	MSMF302L1	MFDL☆A3N☆		Approx. 5.2 kVA
IP67		4000	MSMF402L1		F-frame	
		5000	MSMF502L1	MFDL☆B3N☆		Approx. 7.8 kVA
	Single phase/	1000	MDMF102L1	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
MDMF	3-phase 200 V	1500	MDMF152L1	MDDL☆55N☆		Approx. 2.9 kVA
(Large size JL10 type)	3-phase 200 V	2000	MDMF202L1	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
2000 r/min Middle inertia		3000	MDMF302L1	MFDL☆A3N☆	F-frame	Approx. 5.2 kVA
IP67		4000	MDMF402L1	MFDL☆B3N☆		
		5000	MDMF502L1			Approx. 7.8 kVA
MGMF	Single phase/ 3-phase 200 V	850	MGMF092L1	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
(Large size JL10 type)		1300	MGMF132L1	MDDL☆55N☆		Approx. 2.9 kVA
Low speed/	3-phase 200 V	1800	MGMF182L1	MEDL☆83N☆	E frama	Approx. 3.8 kVA
High torque type 1500 r/min		2400	MGMF242L1	MEDL☆93N☆	E-frame	Approx. 4.5 kVA
Middle inertia		2900	MGMF292L1	MFDL☆B3N☆	E (	
IP67		4400	MGMF442L1		F-frame	Approx. 7.8 kVA
	Single phase/ 3-phase 200 V	1000	MHMF102L1	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
MHMF (Large size JL10 type) 2000 r/min High inertia IP67		1500	MHMF152L1	MDDL☆55N☆		Approx. 2.9 kVA
	3-phase 200 V	2000	MHMF202L1	MEDL☆83N☆	E-frame	Approx. 3.8 kVA
		3000	MHMF302L1	MFDL☆A3N☆		Approx. 5.2 kVA
		4000	MHMF402L1	MFDL☆B3N☆	F-frame	Approx. 7.8 kVA
11 07		5000	MHMF502L1			

 $\Box$   $\precsim$  : For more information, Please refer to "Model Designation" in P.353.

#### • 100 mm sq. or more 0.85 kW to 5.0 kW MSMF, MDMF, MGMF, MHMF Encoder connector (Small size JN2)<sup>2</sup> type IP67

	Moto	Driver		Power		
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	capacity (at rated load)
	Single phase/	1000	MSMF102L1	MDDL☆55N☆	D from a	Amar 0.0 IV
MSMF Small size JN2 type)	3-phase 200 V	1500	MSMF152L1		D-frame	Approx. 2.9 kV
		2000	MSMF202L1	MEDL☆83N☆	E-frame	Approx. 3.8 kV
3000 r/min Low inertia	3-phase	3000	MSMF302L1	MFDL☆A3N☆		Approx. 5.2 kV
IP67	200 V	4000	MSMF402L1	MFDL☆B3N☆	F-frame	Approx. 7.8 kV
		5000	MSMF502L1			Approx. 7.6 KV
	Single phase/	1000	MDMF102L1	MDDL☆45N☆	D-frame	Approx. 2.4 kV
MDMF	3-phase 200 V	1500	MDMF152L1	MDDL☆55N☆	D-Irame	Approx. 2.9 kV
(Small size JN2 type)	3-phase 200 V	2000	MDMF202L1	MEDL☆83N☆	E-frame	Approx. 3.8 kV
2000 r/min Middle inertia		3000	MDMF302L1	MFDL☆A3N☆	F-frame	Approx. 5.2 kV
IP67		4000	MDMF402L1	MFDL☆B3N☆		Approx. 7.8 kV
		5000	MDMF502L1	- WFDLXD3NX		Approx. 7.8 KV
MGMF (Small size JN2 type) [ Low speed/ [High torque type] 1500 r/min Middle inertia IP67	Single phase/ 3-phase 200 V	850	MGMF092L1	MDDL☆45N☆	D-frame	Approx. 2.4 kV
		1300	MGMF132L1	MDDL☆55N☆		Approx. 2.9 kV
	3-phase 200 V	1800	MGMF182L1	MEDL☆83N☆	E-frame	Approx. 3.8 kV
		2400	MGMF242L1	MEDL☆93N☆	E-Itallie	Approx. 4.5 kV
		2900	MGMF292L1	MFDL☆B3N☆	F-frame	Approx. 7.8 kV
		4400	MGMF442L1		F-ITallie	Approx. 7.0 KV
MHMF 3	Single phase/ 3-phase 200 V	1000	MHMF102L1	MDDL☆45N☆	D-frame	Approx. 2.4 kV
		1500	MHMF152L1	MDDL☆55N☆		Approx. 2.9 kV
(Small size JN2 type) 2000 r/min	ype) 3-phase 200 V	2000	MHMF202L1	MEDL☆83N☆	E-frame	Approx. 3.8 kV
2000 f/min High inertia IP67		3000	MHMF302L1	MFDL☆A3N☆		Approx. 5.2 kV
		4000	MHMF402L1	MFDL☆B3N☆	F-frame	
		5000	MHMF502L1			Approx. 7.8 kV

● 176 mm sq. or more 5.5 kW or more MDMF, MGMF, MHMF Encoder connector (Large size JL10)<sup>\*1</sup> type IP67

	Motor			Driver		Power
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	capacity (at rated load)
MDMF	3-phase 200 V	7500	MDMF752L1 🗌 6	MGDLTC3NF	G-frame	Approx. 11 kVA
(Large size JL10 type)		11000	MDMFC12L1 🗌 6	MHDLTE3NF	H-frame	Approx. 15 kVA
1500 r/min Middle inertia		15000	MDMFC52L1 🗌 6	MHDLTE3NF		Approx. 20 kVA
IP67 <sup>*3</sup>		22000 *3	MDMFD22L1 🗌 6	MHDLTF3NF		Approx. 28 kVA
MGMF (Large size JL10 type) Low speed/ High torque type] 1500 r/min Middle inertia IP67	3-phase 200 V	5500	MGMF552L1 🗌 6	MGDLTC3NF	G-frame	Approx. 8.5 kVA
MHMF (Large size JL10 type) 1500 r/min High inertia IP67	3-phase 200 V	7500	MHMF752L1 🗌 6	MGDLTC3NF	G-frame	Approx. 11 kVA

#### ● 176 mm sq. or more 5.5 kW or more MDMF, MGMF, MHMF Encoder connector (Small size JN2)<sup>\*2</sup> type IP67

	Motor			Driver		Power
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	capacity (at rated load)
MDMF	3-phase 200 V	7500	MDMF752L1 🗌 5	MGDLTC3NF	G-frame	Approx. 11 kVA
(Small size JN2 type)		11000	MDMFC12L1 🗌 5	MHDLTE3NF		Approx. 15 kV/
1500 r/min Middle inertia		15000	MDMFC52L1 🗌 5	MHDLTE3NF	H-frame	Approx. 20 kV/
IP67*3		22000 *3	MDMFD22L1 🗌 5	MHDLTF3NF		Approx. 28 kV/
MGMF (Small size JN2 type) Low speed/ High torque type 1500 r/min Middle inertia IP67	3-phase 200 V	5500	MGMF552L1 🗌 5	MGDLTC3NF	G-frame	Approx. 8.5 kV/
MHMF (Small size JN2 type) 1500 r/min High inertia IP67	3-phase 200 V	7500	MHMF752L1 🗌 5	MGDLTC3NF	G-frame	Approx. 11 kV/

(Large size JL10)



\*3: 22.0 kW motor is IP44.

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 $\Box$   $\gtrsim$  For more information, Please refer to "Model Designation" in P.353.

(Small size JN2)



A6 Series

A6N Series

A6B Series Special Order Product

E Series

#### A6N Series Driver Specifications

A6NF series (Multifanction type)

Position, Speed, Torque, Full-close type

	Input power		Mair	n circuit	Single phase 100 V $^{+10}_{-15}$ % to 120 V $^{+10}_{-15}$ % 56	60 Hz / 60 Hz		
		100 V	Control circuit		±10 % ±10 %	60 Hz / 60 Hz		
		Input	200 V	Main	A-frame to D-frame	±10 % ±10 %	60 Hz / 60 Hz	
		/		circuit	E-frame to H-frame	3-phase 200 V <sup>+10 %</sup> <sub>-15 %</sub> to 240 V <sup>+10 %</sup> 50	60 Hz / 60 Hz	
				Control		Single phase 200 V <sup>+10 %</sup> <sub>-15 %</sub> to 240 V <sup>+10 %</sup> <sub>-15 %</sub> 50	60 Hz / 60 Hz	
			circuit	E-frame to H-frame	Single phase 200 V <sup>+10 %</sup> <sub>-15 %</sub> to 240 V <sup>+10 %</sup> <sub>-15 %</sub> 56	60 Hz / 60 Hz		
	temperature				Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation <sup>*1</sup> )			
	Env	vironment	hu	midity	Both operating and storage : 20 %RH to 85 %RH (free from c	condensation <sup>*1</sup> )		
			Al	titude	Lower than 1000 m			
			Vibration		5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz			
	Со	ntrol metho	d		IGBT PWM Sinusoidal wave drive			
	Encoder feedback				<ul> <li>23-bit (8388608 resolution) absolute encoder, 7-wire serial</li> <li>* When using it as an incremental system (not using multiturn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to "1" (factory settings).</li> </ul>			
Basic S	External scale feedback				<ul> <li>A/B phase, homing signal differential input. Serial communication is also supported.</li> <li>Manufacturers that support serial communication scale:</li> <li>Fagor Automation S.Coop., HEIDENHAIN, Magnescale Co., Ltd., Mitutoyo Corporation</li> <li>Nidec Sankyo Corporation, Renishaw plc</li> </ul>			
pecif	Inte		ignal Input Output		Each 8 input can be assigned by the parameter.			
Specifications	Interface connector	Control si			Each 3 output can be assigned by the parameter.			
ß	conne	Analog signal Outpu		Output	2 outputs for analog monitors 1 and 2			
	ector	Pulse signal		Output	Line driver output for encoder pulses (A/B phase signal) or ex	ternal scale pulses.		
			Realtime Express (RTEX)		Communication for transmission of a real-time operation command, the parameter setting, or the status monitoring.			
	Cor	nmunication	USB		USB interface to connect to computers (setup support software PANATERM) for parameter setting or status monitoring.			
	Sat	ety termina	al		Terminal to support safety function.			
	Front panel				<ul> <li>(1) 7 segment LED (double digits) (2) Network status LED(LINK,COM)</li> <li>(3) Rotary switch for node address setting</li> <li>(4) Analog monitor output(Analog monitors 1 and 2)</li> </ul>			
	Re	generation			Size A, B, G and H: Without built-in regenerative resistor (use external resistor) Size C to F: Built-in regenerative resistor (External regenerative resistor is also available)			
	Dyı	namic brak	е		A to G frame: built-in H frame: External resistor only			
	Co	ntrol mode			<ul> <li>(1) Semi-closed control Position control: Profile position control (PP), Cyclic position control (CP) Velocity control: Cyclic velocity control (CV) Torque control: Cyclic torque control (CT)</li> <li>(2) Full-closed control Position control: Plofile position control (PP), Cyclic position control (CP)</li> </ul>			
					The two modes, [1] and [2] above are switched by parame Switch PP/CP/CV/CT mode according to the RTEX commun			

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

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		-			
			Control input		Positive direction drive inf
			· ·		Near home position, etc
			Control output	Input mode	Positioning completion etc Command type by RTEX
			Position command input	Smoothing filter	Either a primary delay filte
		-	Damping control	Onioothing inter	Available (Up to 3 frequence
		soc	Model type damp	ing filter	Available (2 filter available
		itio	Feed forward fun	-	Available (speed/torque)
		2		ppression control	Available
		Position control	Gain 3 switching	function	Available
		ò	Quadrant gritch i	nhibit function	Available
			Two-degree-of-fre	edom control mode	Available
			Motor operatable	-	Available
			External scale positi	on information monitor	Available
			Other available fu	unctions	Friction torque compensa function, Single-turn abso
		<u> </u>	Control input		Positive direction drive inf
			Control output		At speed etc.
			Position		· ·
			command input	Input mode	Command type by RTEX
		Speed control	Soft start/slowdo	wn function	0 s to 10 s / 1000 r/min A
		eec			S-curve acceleration/dece
		8	Feed forward fun		Available (torque)
		ntr	Load variation sup	· · · · · · · · · · · · · · · · · · ·	Available
		으	Two-degree-of-free		Available (standard type)
			monitor	sition information	Available
			Other available functions		Friction torque compensa
					function, Single-turn abso
			Control input		Positive direction drive inf
		Forc	Control output		At speed etc.
		Torque control	Position command input	Input mode	Command type by RTEX
	S	ğ	Speed limit funct	on	Speed limit value can be
	-unction	trol		on information monitor	Available
	ž		Other available fu	unctions	Single-turn absolute funct
			Control input		Positive direction drive inf
			· ·		home position , etc
			Control output	lana ut an e el e	Positioning completion etc
			Position command input	Input mode Smoothing filter	Command type by RTEX Either a primary delay filte
			command input	Smoothing litter	1/40 times to 125200 time
		п	Setting range of external scale division/multiplication.		Although the ratio of the e
		Ę			can be set anywhere betw
		Full-closed control			denominator, Please use
		sed	Damping control		Available(Up to 3 frequen
		8	Feed forward fun		Available (speed/torque)
		ntro		ppression control	Available Available
		⊆	Gain 3 switching	uppression function	Available
			Quadrant gritch i		Available
				edom control mode	Available (standard type)
			Motor operatable		Available
				on information monitor	Available
			Other available fu		Friction torque compensation
					Applicable scaling ratio: 1
			Electronic gear ra	atio setting	Although any value of 1 to
					used, resulting value shou Identifies the load inertia
			Auto tuning		stiffness setting when the
		Q	Notch filter		Available (5 filters availab
		Ĕ	Gain switching fu	nction	Available
		Commor	2-step torque filte		Available
		_ ا		son output function	Available
			Protective function	n	Over-voltage, under-volta
					encoder error, excess pos
			Alarm data trace b		Tracing back of alarm dat
			Deterioration diag		Available

inhibit input,	Negative direction drive inhibit, Latch signal,
C	

tc.

command

ter or a FIR type filter can be selected against command input. ncy settings,out of 4 settings in total,can be used simultaneously.) le used simultaneously)

ation, Torque limit switching function, Torque saturation protection solute function, Continuous rotating absolute encoder function nhibit input, Negative direction drive inhibit, Latch signal, etc

command

Acceleration and deceleration can be set separately. eleration is also available.

ation, Torque limit switching function, Torque saturation protection olute function, Continuous rotating absolute encoder function nhibit input, Negative direction drive inhibit, Latch signal, etc

command

set by parameter. (Switchd by RTEX command.)

ction Continuous rotating absolute encoder function nhibit input, Negative direction drive inhibit, Latch signal, Near

tc.

command

ter or a FIR type filter can be selected against command input. nes

encoder pulse (numerator) and external scale pulse (denominator) tween the range of 1 to 2<sup>23</sup> for the numerator and 1 to 2<sup>23</sup> for the within the range indicated above.

ncy settings,out of 4 settings in total,can be used simultaneously.)

ion, Torque limit switching function, Torque saturation protection function 1/1000 to 8000

to 2<sup>30</sup> (numerator) and any value of 1 to 2<sup>30</sup> (denominator) can be uld be within the range shown above.

a real-time and automatically sets up the gain that meets the e motor is running with upper and internal operation commands. ble)

age, over-speed, over-load, over-heat, over-current, sition deviation, EEPROM error etc. ata is available

A6 Series

A6N Series

A6B Special 0 3 Series Order Product

> m Series

Imformation

#### A6N Series Driver Specifications A6NE series (Besic type) Position, Speed, Torque type

	Input power	100 V	Main circuit		Single phase 100 V $^{+10}_{-15}$ % to 120 V $^{+10}_{-15}$ % 50 Hz / 60 Hz		
		100 V	Control circuit		Single phase 100 V $^{+10}_{-15}$ % to 120 V $^{+10}_{-15}$ % 50 Hz / 60 Hz		
		200 V	Main	A-frame to D-frame	Single/3-phase 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ % 50 Hz / 60 Hz		
			200.1/		circuit	E-frame, F-frame	3-phase 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ % 50 Hz / 60 Hz
			200 V	Control	A-frame to D-frame	Single phase 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ % 50 Hz / 60 Hz	
			circuit	E-frame, F-frame	Single phase 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ % 50 Hz / 60 Hz		
	temperature				Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation <sup>*1</sup> )		
	Env	vironment	hu	midity	Both operating and storage : 20 %RH to 85 %RH (free from condensation <sup>-1</sup> )		
			AI	titude	Lower than 1000 m		
			Vibration		5.88 m/s² or less, 10 Hz to 60 Hz		
	Co	ntrol metho	od		IGBT PWM Sinusoidal wave drive		
Basic Sp	Encoder feedback				<ul> <li>23-bit (8388608 resolution) absolute encoder, 7-wire serial</li> <li>* When using it as an incremental system (not using multiturn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to "1" (factory settings).</li> </ul>		
Specifications	Inter	Control si	gnal Input Output		Each 8 input can be assigned by the parameter.		
ations	face	CONTROLS			Each 3 output can be assigned by the parameter.		
0.	Interface connector	Analog signal Out		Output	2 outputs for analog monitors 1 and 2		
	octor	Pulse signal		Output	Line driver output for encoder pulses (A/B phase signal).		
	Realtime Ex (RTEX			•	Communication for transmission of a real-time operation command, the parameter setting, or the status monitoring.		
	Communication		USB		USB interface to connect to computers (setup support software PANATERM) for parameter setting or status monitoring.		
-	Front panel				<ul> <li>(1) 7 segment LED (double digits) (2) Network status LED(LINK,COM)</li> <li>(3) Rotary switch for node address setting</li> <li>(4) Analog monitor output(Analog monitors 1 and 2)</li> </ul>		
-	Regeneration				Size A and B: Without built-in regenerative resistor (use external resistor) Size C to F: Built-in regenerative resistor (External regenerative resistor is also available)		
	Dynamic brake				A to F frame: built-in		
	Control mode				<ul> <li>(1) Semi-closed control</li> <li>Position control: Profile position control (PP), Cyclic position control (CP)</li> <li>Velocity control: Cyclic velocity control (CV)</li> <li>Torque control: Cyclic torque control (CT)</li> <li>Switch PP/CP/CV/CT mode according to the RTEX communication command.</li> </ul>		

Positive direction drive Control input Near home position, Control output Positioning completion etc. Command type by RTEX command Input mode Position Either a primary delay filter or a FIR type filter can be selected against command command input Smoothing filter input. Available(Up to 3 frequency settings,out of 4 settings in total,can be used P Damping control simultaneously.) itior Model type damping filter Available(2 filter available used simultaneously) Feed forward function Available (speed/torque) 8 Load variation suppression control ntro Available Gain 3 switching function Available Quadrant gritch inhibit function Available Available Two-degree-of-freedom control mode Motor operatable setup function Available Friction torgue compensation, Torgue limit switching function, Other available functions Torque saturation protection function, Single-turn absolute function, Continuous rotating absolute encoder function Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, etc Control input Control output At speed etc. Position Command type by RTEX command Input mode command input 0 s to 10 s / 1000 r/min Acceleration and deceleration can be set separately. l de Soft start/slowdown function S-curve acceleration/deceleration is also available. Function 8 Feed forward function Available (torque) Load variation suppression control Available Two-degree-of-freedom control mode Available (standard type) Friction torque compensation, Torque limit switching function, Torque saturation Other available functions protection function, Single-turn absolute function, Continuous rotating absolute encoder function Control input Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, etc ō Control output At speed etc. que Position Command type by RTEX command Input mode command input contro Speed limit function Speed limit value can be set by parameter. (Switchd by RTEX command.) Other available functions Single-turn absolute function Continuous rotating absolute encoder function Applicable scaling ratio: 1/1000 to 8000 Electronic gear ratio setting Although any value of 1 to 2<sup>30</sup> (numerator) and any value of 1 to 2<sup>30</sup> (denominator) can be used, resulting value should be within the range shown above. Identifies the load inertia real-time and automatically sets up the gain that meets the stiffness setting when the motor is running with upper and internal operation Auto tuning commands. Common Notch filter Available (5 filters available) Gain switching function Available 2-step torque filter Available Position comparison output function Available Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current, Protective function encoder error, excess position deviation, EEPROM error etc. Alarm data trace back function Tracing back of alarm data is available Deterioration diagnosis function Available

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

e inhibit input,	Negative direction drive inhibit, Latch signal,
etc	

A6

**Series** 

A6N Series

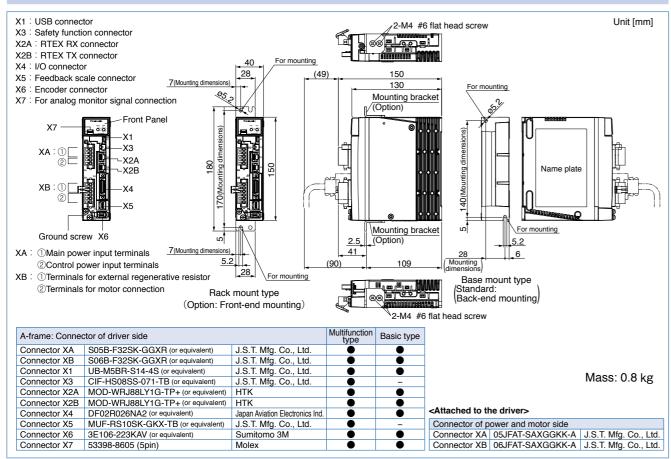


Ш Series

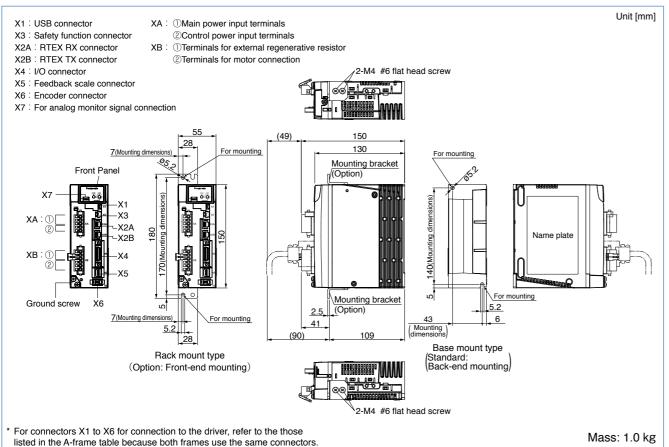
Imformation

\* All dimensions shown in this catalog are for the A6NF series, but outer dimensions are the same as the A6NE series.

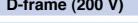
#### A-frame

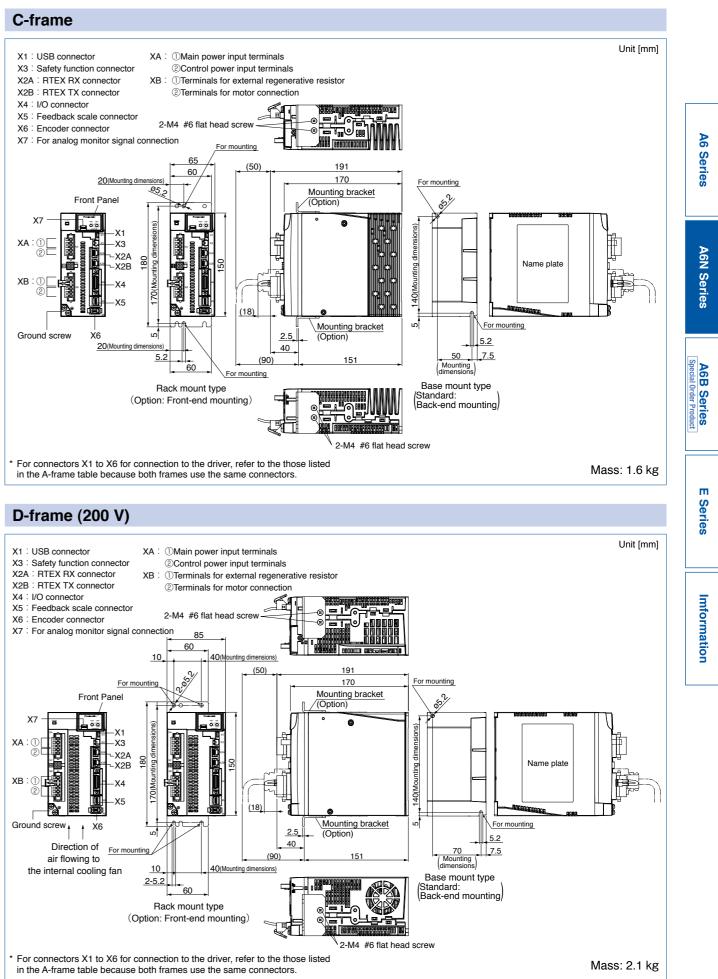


#### **B-frame**



#### C-frame X1 : USB connector XA : ①Main power input terminals X3 : Safety function connector ②Control power input terminals X2A : RTEX RX connector X2B : RTEX TX connector ②Terminals for motor connection X4 : I/O connector X5 : Feedback scale connector 2-M4 #6 flat head screw -X6 : Encoder connector X7 : For analog monitor signal connection For mounting 65 (50) 60 / 20(Mounting dimensions) 05.2 Front Panel (Option X7 XA -X3 -X2A -X2B XB : **0**} Ground screw 2.5 YE 20(Mounting di 40 5.2 (90)60 For mounting Rack mount type (Option: Front-end mounting) For connectors X1 to X6 for connection to the driver, refer to the those listed in the A-frame table because both frames use the same connectors.



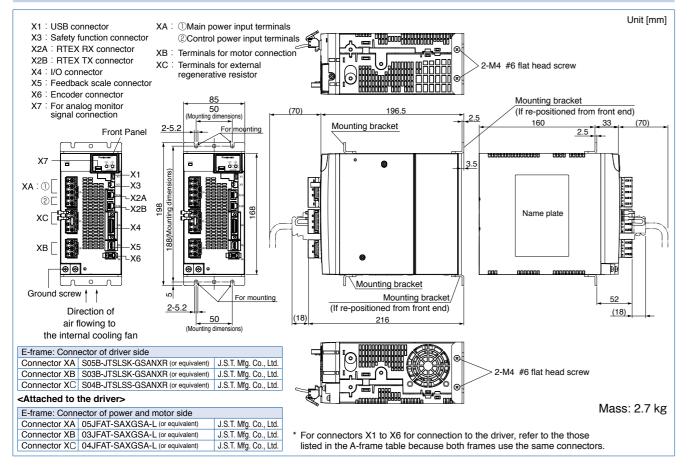


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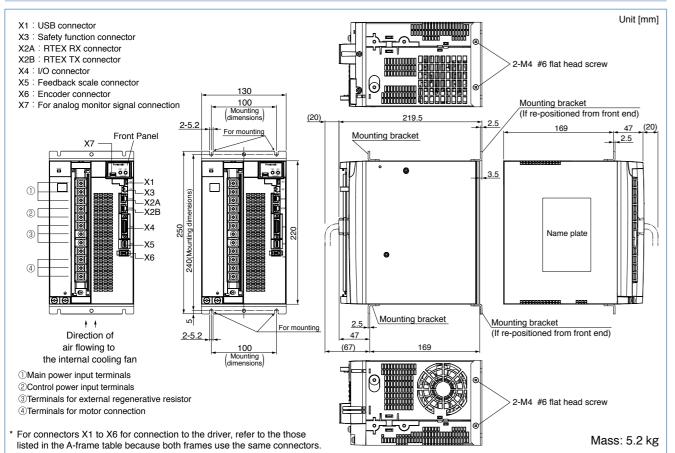
A6N Series Dimensions of Driver

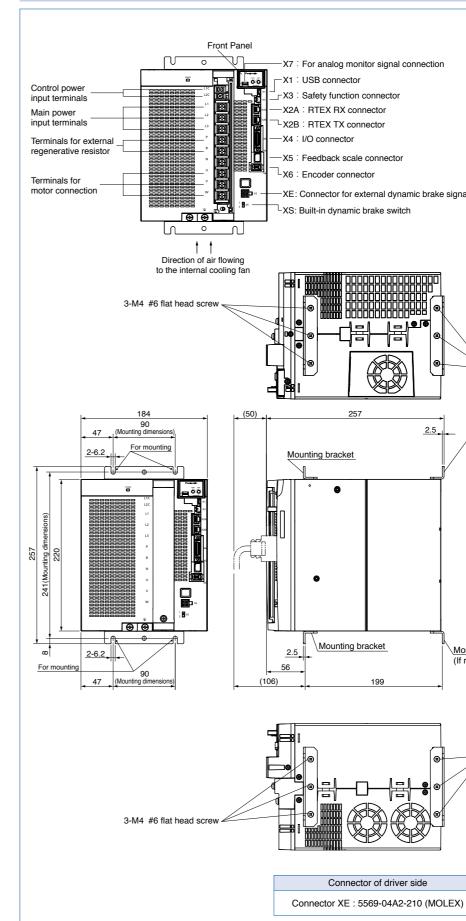
\* All dimensions shown in this catalog are for the A6NF series, but outer dimensions are the same as the A6NE series.

#### E-frame (200 V)



#### F-frame (200 V)





\* For connectors X1 to X6 for connection to the driver, refer to the those listed in the A-frame table because both frames use the same connectors.

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#### G-frame (200 V) (The A6NE series is not line up)

Unit [mm] X7 : For analog monitor signal connection A6 Series -XE: Connector for external dynamic brake signal A6N Series <u>|</u> ∟ |∎]● A6B Series Special Order Product 3-M4 #6 flat head screw 257 Mounting bracket (If re-positioned from front end) 2.5 (50) 2.5 Ш Series Name plate Imformation Mounting bracket Mounting bracket (If re-positioned from front end) 199 -3-M4 #6 flat head screw

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Pin

Controlor side (customer prepares)

Connector : 5557-04R-210 (MOLEX)

Mass: 8.2 kg

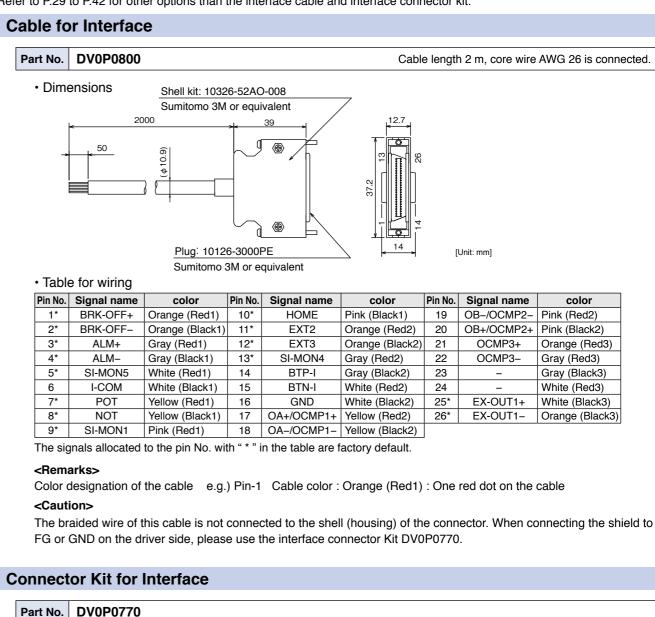
: 5556PBTL

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### H-frame (200 V) (The A6NE series is not line up) Unit [mm] Front Panel ୲୲⊛୰ രി ଧେନ -X7 : For analog monitor signal connection -X1 USB connector ōō -X3 : Safety function connector -X2A : RTEX RX connector -X2B : RTEX TX connector -X4 : I/O connector X5 : Feedback scale connector X6 : Encoder connector ົ ຄັ ່⊙່⊙ ്ക് ⊕ ∩ Ground screws (2 places) Direction of air flowing to the internal cooling fan Terminal for external dynamic brake control signal Control power input terminals Terminals for motor connection Terminals for external regenerative resistor Main power input terminals 184 (Mounting dimension 244 (70)222 For mountin 13/ lame plat Carrying pit 6 . • 2-7.3 For mounting 30 184 (Mounting dimensions) Mass: MHDLTE3NF/ 14.2 kg For connectors X1 to X6 for connection to the driver, refer to the those MHDLTF3NF/ 15.2 kg listed in the A-frame table because both frames use the same connectors

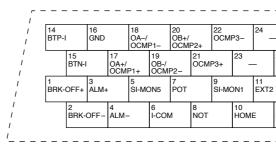
### Interface Cable / Connector Kit

Refer to P.29 to P.42 for other options than the interface cable and interface connector kit.



Components							
Title	Part No.	Number	Manufacturer	Note			
Connector	10126-3000PE	1	Sumitomo 3M	For CN X4			
Connector cover	10326-52A0-008	1	(or equivalent)	(26-pins)			

· Pin disposition: Connector X4 (26 pins) (viewed from the soldering side)



#### <Remarks>

- 1. Check the stamped pin-No. on the connector body while making a wiring.
- operation manual.

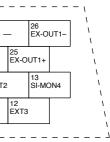
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#### **Options**

le	COIOF	PIN NO.	Signal name	COIOF
	Pink (Black1)	19	OB-/OCMP2-	Pink (Red2)
	Orange (Red2)	20	OB+/OCMP2+	Pink (Black2)
	Orange (Black2)	21	OCMP3+	Orange (Red3)
	Gray (Red2)	22	OCMP3-	Gray (Red3)
	Gray (Black2)	23	-	Gray (Black3)
	White (Red2)	24	-	White (Red3)
	White (Black2)	25*	EX-OUT1+	White (Black3)
1+	Yellow (Red2)	26*	EX-OUT1-	Orange (Black3)
1–	Yellow (Black2)			



2. For the symbols representing the signal names or the functions of the signals in the figure above, refer to the

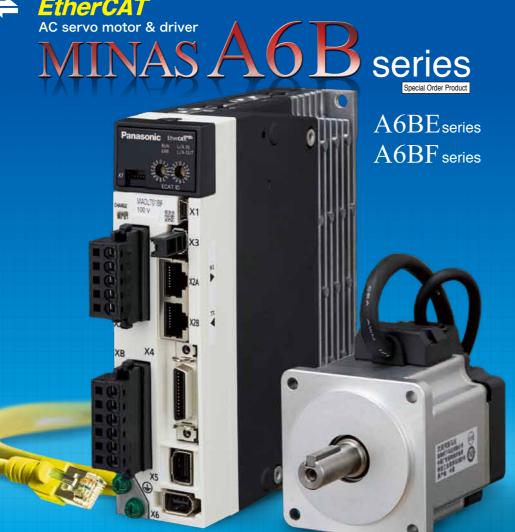
**A6N Series** 

A6N Series A6B Series Special Order Product Ш Series

A6 Series

# Servo driver with EtherCAT open network







Response frequency 3200 Hz & communication rate 100 Mbps enable fast and highly accurate operation.

Configurable even for motors with a maximum rotating speed 6500 r/min.\* \* MHMF and MQMF types with a maximum wattage 400 W

New algorithm "Two-degree-of-freedom control method" is used to improve machining accuracy and productivity.

Wiselv

Easy and speedy set-up with set-up support software "PANATERM" Easily Optional wireless LAN dongle (available separately) enables wireless connection with PCs, smart phones, and tablet terminals.

• Fully-featured EtherCAT application (7 control modes, 32 origin-return modes, 2 synchronous modes, and an asynchronous mode.) • Capable of system upgrade with various slaves. • Capable of establishing PC-based systems without needing dedicated hardware. ● Planed to pass official EtherCAT Conformance Test. ● Under development of A6BF with safety I/F corresponding to international standard, and A6BL/A6BM supporting linear motors \*2 : IEC61800-5-2 STO, IEC61508 SIL3

•The EtherCAT is a registered trademark of patented technology licensed from Beckhoff Autmation GmbH in Germany.



Features

Driver .....

**Driver appearance** 

System configretion

Dimensions of drive

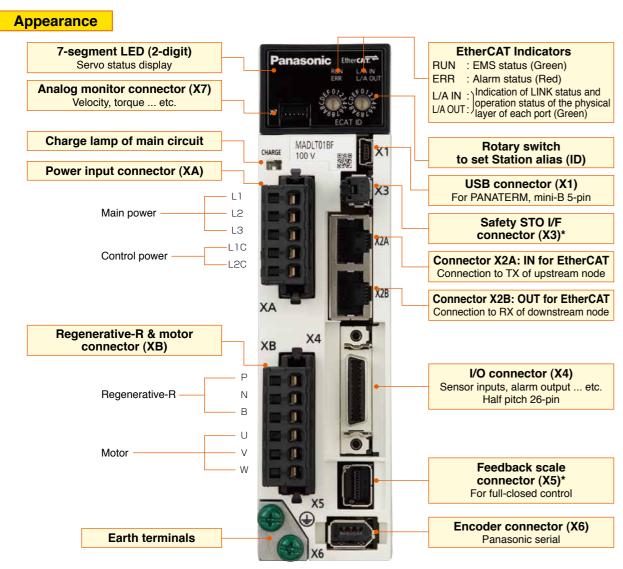
#### INDEX

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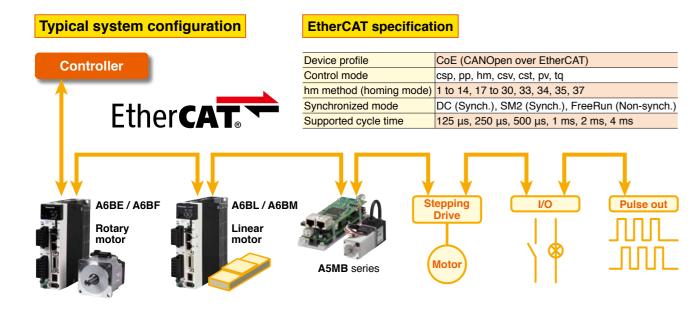
Special Order Product For more information, please visit our website or request to our distributors separately.

# MINAS A6B series

# Appearance/ System configuration



\* The photo is A6BF series. There are no X3 and X5 connectors in the A6BE series.

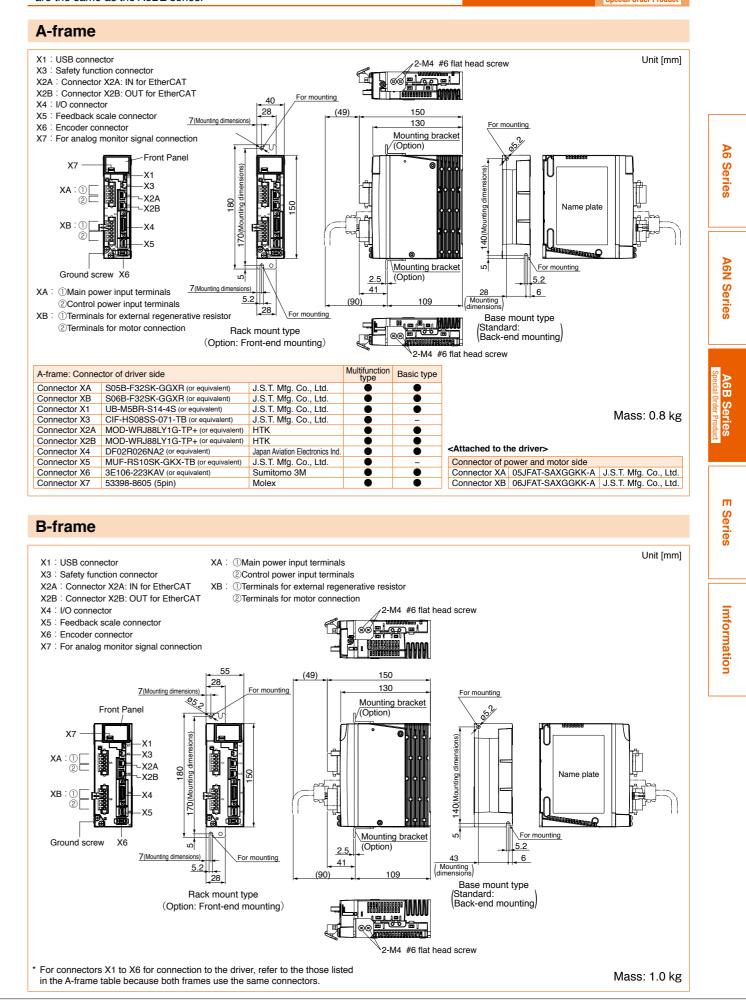


• For supported motors, refer to A6 series P.29 to P.42. For options, refer to A6N series P.368 For more information, refer to specification sheets because "Signal names" and "Pin configuration" of connectors vary.

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\* All dimensions shown in this catalog are for the A6BF series, but outer dimensions are the same as the A6BE series.



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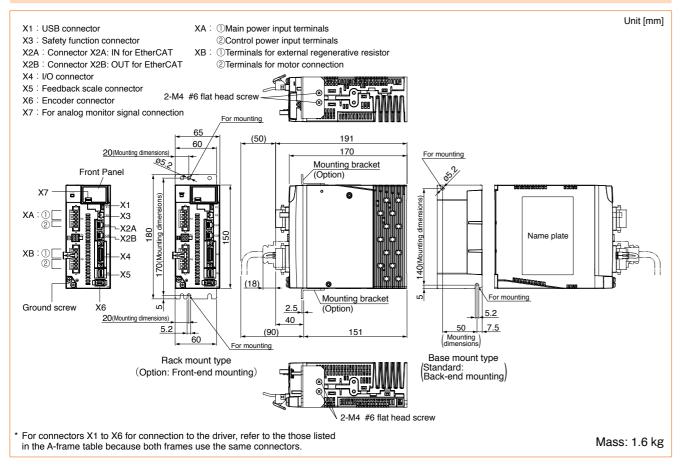
Dimensions of Driver

Special Order Produc

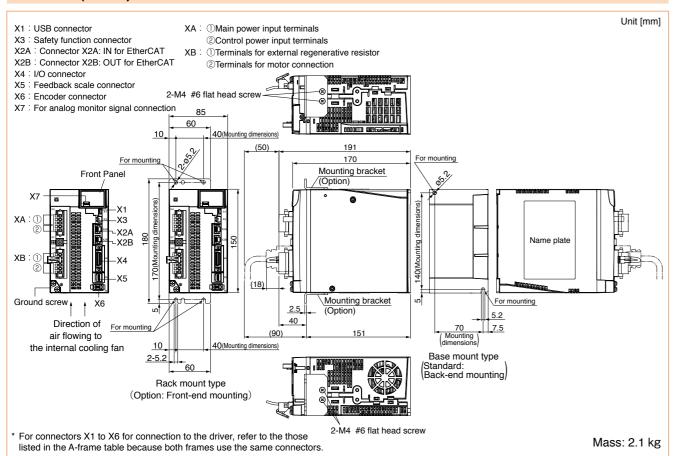
A6B Series **Dimensions of Driver** ecial Order Produ

\* All dimensions shown in this catalog are for the A6BF series, but outer dimensions are the same as the A6BE series.

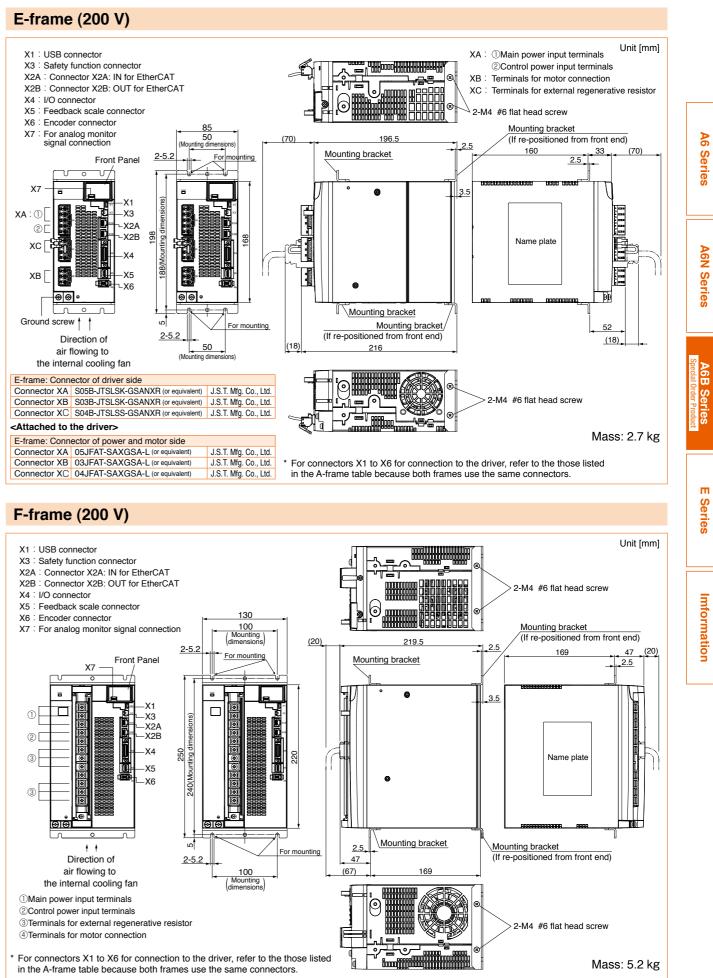
#### C-frame



#### **D-frame (200 V)**

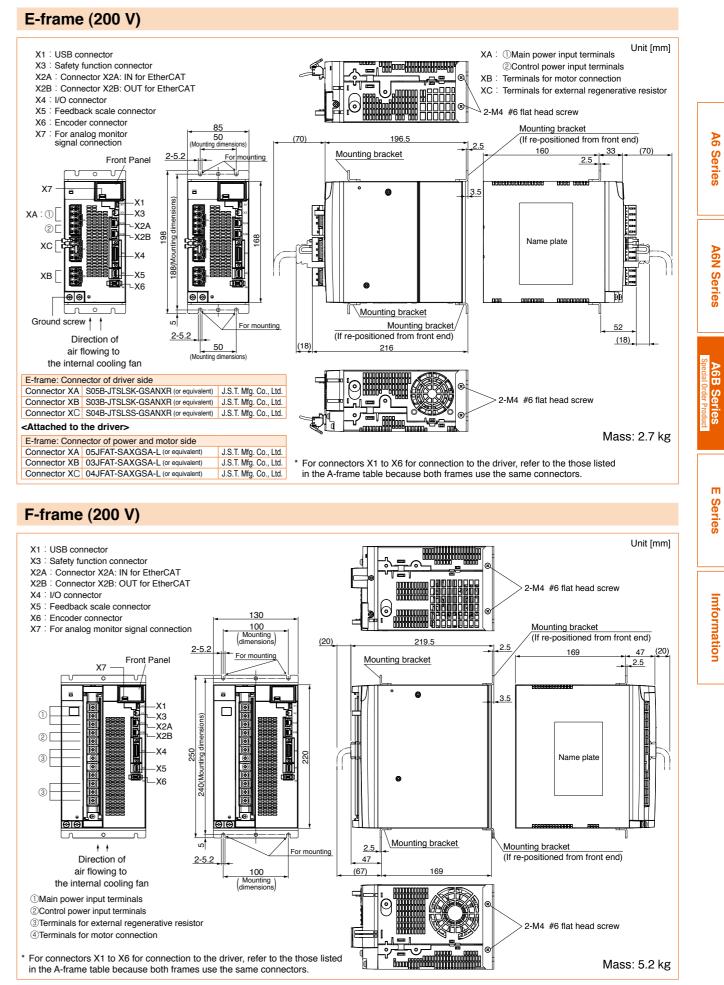


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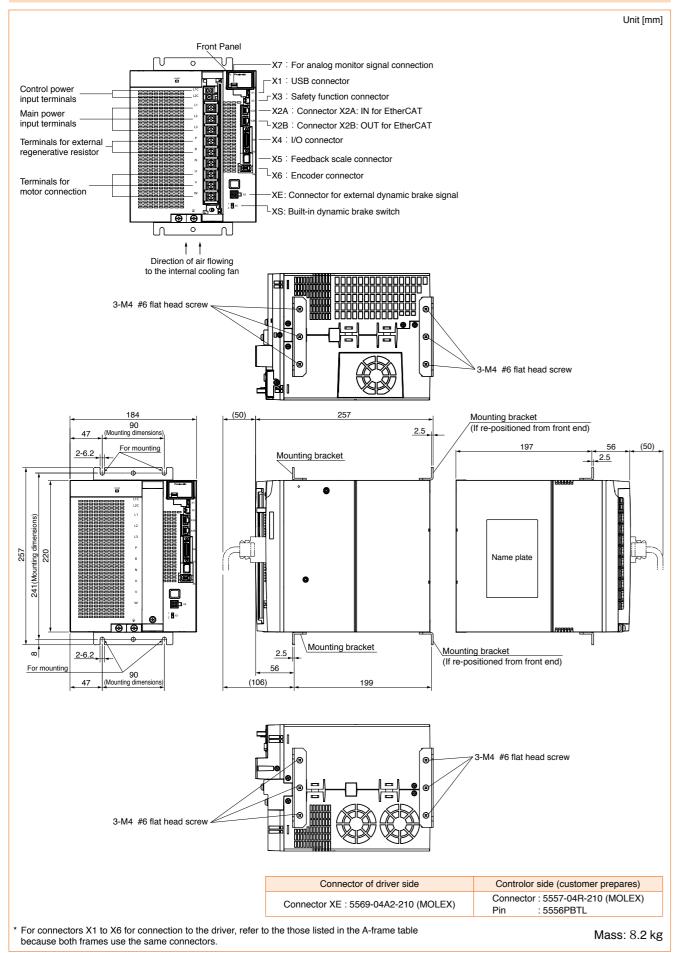
Panasonic Corporation Electromechanical Control Business Division

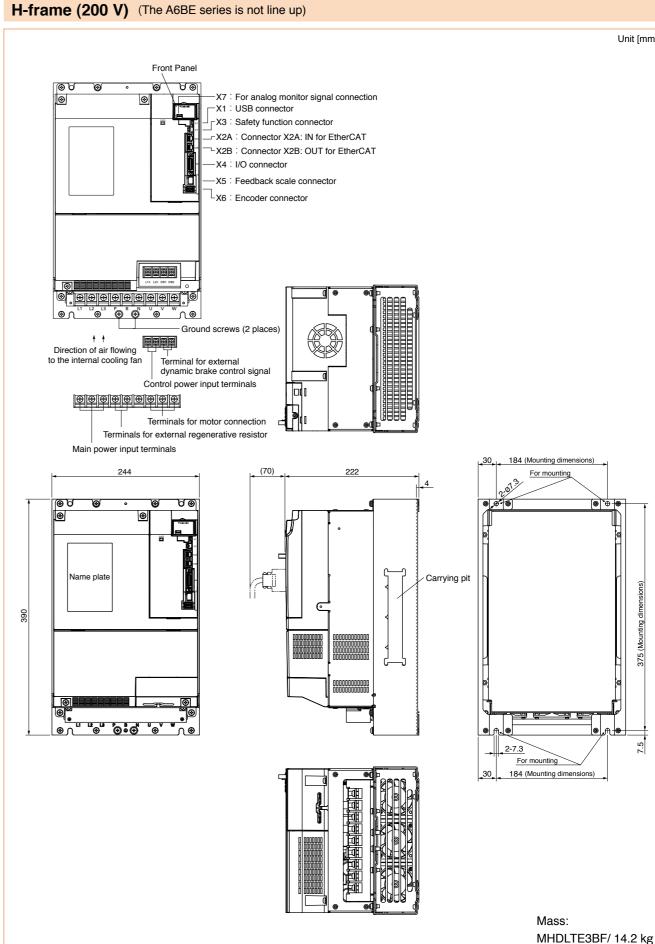
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#### G-frame (200 V) (The A6BE series is not line up)





For connectors X1 to X6 for connection to the driver, refer to the those listed in the A-frame table because both frames use the same connectors.

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Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

Unit [mm]

A6 Series

A6N Series

A6B Series

m

Series

Imformation

# **Compact Servo Only for Position Control.**

# Ultra compact position control type

# MINAS E Series



# **Best Fit to Small Drives**

 Further evolution in down-sizing, by 47 % in size. (Note) Exclusively designed for position control.

(Note) Compared to MUDS043A1

### Easy to Handle, Easy to Use

- DIN-rail mounting unit (option) improves handling/installation.
- User-friendly Console makes the setup easy.
- High functionality Real-Time Auto-Gain Tuning enables adjustment-free operation.



### **High-Speed Positioning with Resonance Suppression Filters**

Built-In notch filter suppresses resonance of the machine.

Built-in adaptive filter detect resonance frequency and suppress vibration.

### **Smoother operation for Low Stiffness Machine**

Damping control function suppresses vibration during acceleration/deceleration

#### Contents

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Driver and List of Applicable Peripheral Equipments						
Driver						
Driver Specifications						
Standard Wiring Example of Main Circuit						
Encoder Wiring Diagram						
Control Circuit Standard Wiring Example						
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Setup Support Software Cable part No. Designation Cable Set Encoder Cable Motor Cable Brake Cable						
Setup Support Software Cable part No. Designation Cable Set Encoder Cable Motor Cable Brake Cable Connector Kit						
Setup Support Software Cable part No. Designation Cable Set Encoder Cable Motor Cable Brake Cable Connector Kit Interface Cable						
Setup Support Software Cable part No. Designation Cable Set Encoder Cable Motor Cable Brake Cable Connector Kit Interface Cable Communication Cable						
Setup Support Software Cable part No. Designation Cable Set Encoder Cable Motor Cable Brake Cable Connector Kit Interface Cable Communication Cable Console						
Setup Support Software Cable part No. Designation Cable Set Encoder Cable Motor Cable Brake Cable Connector Kit Interface Cable Communication Cable DIN Rail Mounting Unit						
Setup Support Software Cable part No. Designation Cable Set Encoder Cable Motor Cable Brake Cable Connector Kit Interface Cable Communication Cable Console DIN Rail Mounting Unit External Regenerative Resistor						

A6 Series

# **Lasy to Handle, Easy to Use**

#### High-functionality Real-Time Auto-Gain Tuning (Note 1

- Offers real automatic gain tuning for low and high stiffness machines with a combination of an adaptive filter.
- Supports the vertical axis application where the load torque is different in rotational direction.

# Further Reduction of Vibration

#### Adaptive filter (Note1)

#### Notch filter (Note1)

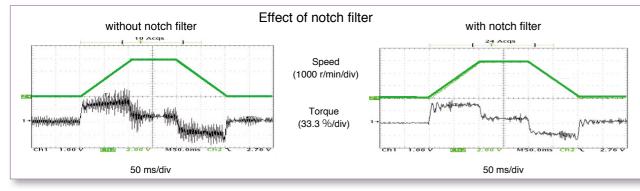
DIN-rail mounting unit (option)

DIN-rail mounting unit allows parallel mounting with small

control devices such as PLC.

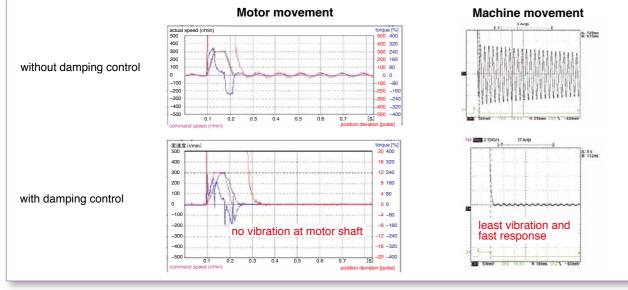
Easy to mount and easy to dismount.

- Makes the notch filter frequency automatically follow the machine resonance frequency in real-time auto-gain tuning.
- Suppression of "Judder" noise of the machine, which is caused by variation of the machines or resonance frequency due to aging, can be expected.
- 1-channel notch filter is equipped in the driver independent from adaptive filter. Each of 2 filters can set up frequency and notch width,
- and frequency in 1Hz unit. Suppression of "Judder" noise of the machine which has multiple resonance points can be expected.



#### Damping control (Note1)

You can suppress vibration occurring at both starting and stopping in low stiffness machine, by manually setting up vibration frequency in 0.1 Hz unit. Note) Only applies to manual adjustment



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(Note1) Select at positioning action mode

At high speed positioning mode (Pr02=0) Select either one of notch filter damping control or high-functionality real-time auto- gain tuning. Not possible to use them all at the same time. Adaptive filter cannot be used

· At high-functionality positioning mode (Pr02=1) All of notch filter, damping control, high-functionality real-time auto-gain tuning and adaptive filter can be used at the same time

# **3**. Further Flexibility and Multiplicity

#### Console (Option)

- You can set up parameters, copy and make a JOG run.
- Convenient for maintenance at site.
- Refer to P.403, Options.

#### **Command control modes**

- Offers 2 command modes. "Position control" and "Internal velocity control".
- You can make a 4-speed running at preset values with parameter at internal velocity control mode.

#### Inrush current suppressing function

- Inrush suppressing resistor, which prevent the circuit breaker shutdown of the power supply caused by inrush current at power-on, is equipped in this driver.
- Prevents unintentional shutdown of the power supply circuit breaker in multi axis application and does not give load to the power line.

#### Regeneration discharging function

- Discharges the regenerative energy with external resistor, where energy is generated while stopping the load with large moment of inertia, or use in up-down operation, and is returned to the driver from the motor.
- No regenerative resistor is installed in the driver.
- It is highly recommended to install an external regenerative resistor (option).

#### **Built-in dynamic brake**

- You can select the dynamic brake action which short the servo motor windings of U, V and W, at Servo-OFF, CW/ CCW over- travel inhibition, power shutdown and trip.
- You can select the action sequence depending on the machine requirement.

#### Setup support software (Option)

With the setup support software, "PANATERM" via RS232 / RS485 communication port, you can monitor the running status of the driver and set up parameters. Note) Refer to P.398 for setup support software.

#### Key-way shaft and tapped shaft end

- Easy pulley attachment and easy maintenance
- Attache screw to the tapped shaft to prevent key or pulley from being pulled out.

#### Wave-form graphic function

- With the setup support software, "PANATERM", you can monitor the "Command speed", "Actual speed", "Torque", "Position deviation" and "Positioning complete signal".
- Helps you to analyze the machine and shorten the setup time

Note) Refer to P.398 for setup support software.

#### Frequency analyzing function

- You can confirm the response frequency characteristics of total machine mechanism including the servo motor with the setup support software, "PANATERM".
- Helps you to analyze the machine and shorten the setup time

Note) Refer to P.398 for setup support software.

#### Torque limit switching function

- You can select 2 preset torque limit value from external input.
- Use this function for tension control or press-hold control.

#### **Conformity to CE and UL Standards**

C	E





Subject		Standard conformed	
Motor	IEC60034-1	IEC60034-5 UL1004	Conforms to
WIOtor		CSA22.2 No.100	Low-Voltage
	EN50178	UL508C CSA22.2 No.14	Directives
	EN55011	Radio Disturbance Characteristics of	
		Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment	
	EN61000-6-2	Immunity for Industrial Environments	
Matar	EC61000-4-2	Electrostatic Discharge Immunity Test	
Motor and driver	IEC61000-4-3	Radio Frequency Electromagnetic Field Immunity Test	Conforms to references
unver	IEC61000-4-4	Electric High-Speed Transition Phenomenon/Burst Immunity Test	by EMC Directives
	IEC61000-4-5	Lightening Surge Immunity Test	1
	IEC61000-4-6	High Frequency Conduction Immunity Test	
	IEC61000-4-11	Instantaneous Outage Immunity Test	1
EN : E EMC : E	uropaischen No lectromagnetic (	Compatibility	
UL :U	Inderwriters Lab	oratories	
CSA : C	Canadian Standa	rds Association	
Pursuar	nt to at the direct	ve 2004/108/EC,article 9(2)	
Panasor	nic Testina Centr	e	

Panasonic Service Europe

a division of Panasonic Marketing Europe GmbH Winsbergring 15,22525 Hamburg, F.R.Germany

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



A6N Series



#### MINAS $E_{series}$ Motor Line-up

			Rated rotational	Rotary	encoder	Brake	Gear				
	Motor series	Rated output (kW)	speed (Max. (speed) (r/min)	2500 P/r incremental	17bit absolute/ incremental	Holding	High precision	UL/ CSA	Enclosure	Features	Applications
	MUMA										
Ultra low inertia		0.05 to 0.4 0.05 0.1 0.2 0.4	3000 (5000)	0	_	0	0	0		Small capacity Ultra low inertia	SMT machines Inserters High repetitive positioning application

#### MINAS E Series Model Designation

Servo Motor

#### M U M A 5 A Z P 1 S \*\* Symbol Series MUMA Ultra low inertia (50 W to 400 W) Motor rated output Symbol Rated output **Voltage specifications** 5A 50 W Symbol Specifications 01 100 W 02 200 W 1 100 V 04 400 W 2 200 V 100 V/200 V common Ζ (50 W only)

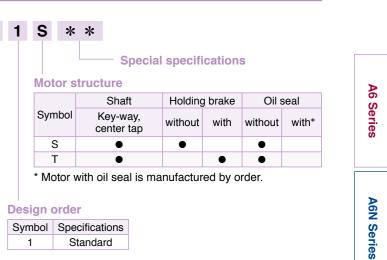
#### **Rotary encoder specifications**

Symbol	Format	Pulse counts	Resolution	Wires
Р	Incremental	2500 P/r	10000	5

# Motor with gear reducer

·	incremente		200017	<u></u>	10000						S	ee P.38	9 for m	otor sp	pecifications	Spec
Mo	otor with g	gear re	educe	er												A6B Series Special Order Product
		мU	JM	Α	0 1	1	Ρ	3	1	Ν						B **
					ed outpu					Gear re	duction ra	atio, ge	ar typ	е		
Symbol	Series	ذ		ol Ra	ated outp	out					Gear	Moto	or outpu	ut (W)		п
MUMA	Ultra low in		01		100 W					Symbol	reduction ratio	ו 100	200	400	Gear type	Series
VICI	(100 W to 4	00 W)	02		200 W					1N	1/5	•	•	•		ries
			04		400 W					2N	1/9	•	•	•	For high	
		Voltage	o enec	ificat	ione —					4N	1/25	•	•	•	accuracy	
	-	Symbol									-					
		3y11001	· ·	00 V	10					- Motor s		11.1.1.				=
	1	2		00 V						Symbol	Shaft Key-way		ng brake			
-										3	Key-way	without	t with	1		
-	encoder spe							-		4			-			200
ymbol P	Format Incrementa		ulse cou 2500 P/		Resolutio			4			-		-			1
	ervo Driver e symbol — pol Fran	МK	( D	Е	T 1	3	1	0	P	* *	(	Special Control Symbol	I mode	e ification	าร	
MKD			_								Ĺ	Р	Puls	se train		
MLD			_								C	Current current	t rating	g		
	Po	wer dev	vice -				-			pecificatio	ns	Symbol	Curre	ent ratir	ng	
		ax. curre		ting		Symb			•	ifications	4	05		5 A		
	S	ymbol C	Current	rating	<i>,</i>	1		-		nase, 100 V nase, 200 V		10		10 A		
		T1	10 /	A	1					ase, 200 v	4					
						1				200 V						
		T2	15 /	A		3				200 V phase, 200 V	1					

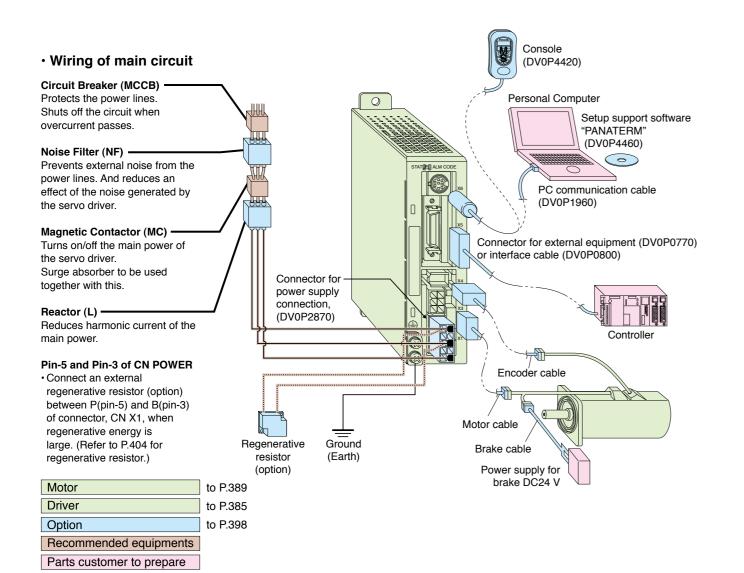
		JM				1	Ľ	Ĭ	-	Ν					
		Motor r								- Gear red	duction r	atio, gea	ar type	)	
Series		Symbol									Gear		r output	t (W)	<b>.</b>
low in		01		00 W						Symbol	reduction ratio	100	200	400	Gear type
V to 40	00 W)	02		00 W	_					1N	1/5				
		04	40	00 W						2N	1/9	•	•	•	For high
,	Voltag	e specifi	atio	ne —						4N	1/25			•	accuracy
		I Specifica		_											
	1	100		-						- Motor s					
	2	200								Symbol	Shaft		g brake		
L			_							3	Key-way	without	with		
r spe	cificat	ions —								4		•			
rmat	P	ulse count	_			Wire	s								
menta	ai	2500 P/r		10000	)	5									
	r									See P.394	for motor	with gea	ar redu	cer sp	ecifications
rive		( D I	_	т 4	1	3	1	0	D			-			
		( D I		T 1	1 ;	3	1	0	Ρ	See P.394		with gea			
rive		C D E		T 1	1	3	1	0	P		·	-	specif	ficatio	
river	Mł		=	T 1	1	3	1	0	P		·	Special	specif mode	ficatio	ons
river ol — Frar	M I		=	T 1	1	3	1	0	P		·	Special Control	specif mode Specif	ficatio	ons
river ol — Frar eries,	Mł	9	=	T 1						* *		Special Control Symbol	specif mode Specif Pulse detec	fication ication e train tor	ons
river ol – Frar eries, eries,	MI me K-frame L-frame	9	=	T 1								Special Control Symbol P Current	specif mode Specif Pulse detec rating	fication ication e train tor	s
river ool — Frar eries, eries,	M I me K-frame L-frame	evice —		T 1	Sı		y vo	ltag	ge sp Specif	* *		Special Control Symbol P Current Current Symbol 05	specif mode Specif Pulse detec rating Curre	fication ication e train tor	s
river ool — Frar eries, eries, Ma	M I me K-frame L-frame wer de ix. curr	evice — rent ratin	g	T 1	Sı	upply Symbo	y vo pl s	Itag Singl	ge sp Specifi le pha	* * ecificatio ications ase, 100 V		Special Control Symbol P Current Current Symbol	specif mode Specif Pulse detec rating Curre	fication ication e train tor nt ratir	s
river ol — Frar eries, Po Ma Sy	M I me K-frame L-frame wer de ix. curr	evice —	g	<b>T</b> 1	Sı	symbol 1 2	y vo bl s	Itag Singl	ge sp Specif le pha	* * ecificatio ications ase, 100 V ase, 200 V		Special Control Symbol P Current Current Symbol 05	specif mode Specif Pulse detec rating Curre	fication e train tor nt ratir 5 A	s
river ol — Frar eries, eries, Sy	M I me K-frame L-frame wer de ix. curr /mbol	evice — rent ratin Current rat	g	T 1	Sı	upply Symbo	y vo bl S S 3	Itag S Singl Singl	ge sp Specif le pha ase, 2	* * ecificatio ications ase, 100 V	ns	Special Control Symbol P Current Current Symbol 05	specif mode Specif Pulse detec rating Curre	fication e train tor nt ratir 5 A	s



#### See P.389 for motor specifications

# MINAS $E_{\text{Series}}$

### **Overall Wiring/ Driver and List of Applicable Peripheral Equipments**



#### List of recommended peripheral equipments

_	Мо	otor	Power			Magnetic	
Power supply	Series	Output	capacity (at rated) output )	Circuit Breaker (Rated current)	Noise Filter	Contactor (Contact Composition)	Wire diameter (L1, L2, L3, U, V and W)
Single		50 W	0.3 kVA	(5. \)		10.4	
phase,		100 W	0.4 kVA	(5 A)		10 A (3P+1a)	
100 V		200 W	0.5 kVA	(10 A)		(01 +14)	
		50 W	0.0 14/4				
Single		100 W	0.3 kVA	(5 A)		15 A	
phase, 200 V	MUMA	200 W	0.5 kVA		DV0P4160	(3P+1a)	0.75 mm <sup>2</sup> to 0.85 mm <sup>2</sup> AWG18
200 .		400 W	0.9 kVA	(10 A)			Awaro
		50 W	0.0.1.)//				
3-phase		100 W	0.3 kVA	(5 A)		10 A	
200 V		200 W	0.5 kVA			(3P+1a)	
		400 W	0.9 kVA	(10 A)			

\* Select the single and 3-phase common specifications corresponding to the power supplies.

To conform to EC Directives, install a circuit breaker which conforms to IEC and UL Standards (Listed, ()) marked) between

Corrying page

noise filter and power supply.

For details of the noise filters, refer to 416.

#### <Remarks>

· Use a copper conductor cables with temperature rating of 60 °C or higher for main power connector and ground terminal wiring.

Use a cable for ground with diameter of 2.0 mm<sup>2</sup> (AWG14) or larger.

# **Table of Part Numbers and Options**

			2500P/r, Inc	remental				Option			
Power supply	Output (W)	Motor Note) 1	Rating/Spec. (page)	Driver	Dimensions (Frame (symbol)	Encoder Cable Note) 2	Motor Cable Note) 2	Brake Cable Note) 2	External Regenerative Resistor	Reactor	Noise Filter
Single	50	MUMA5AZP1 🗌	389	MKDET1105P	388 (K)					DV0P227	
phase	100	MUMA011P1	389	MKDET1110P	388 (K)				DV0P2890	DV0F227	
100 V	200	MUMA021P1	389	MLDET2110P	388 (L)					DV0P228	
	50	MUMA5AZP1	391	MKDET1505P	388 (K)						
Single	100	MUMA012P1	391	MKDET1505P	388 (K)						
phase 200 V	200	MUMA022P1	391	MLDET2210P	388 (L)						
	400	MUMA042P1	391	MLDET2510P	388 (L)	MFECAU * * UEAM	MFMCA0 * * 0AEB	MFMCB0 * * 0GET			DV0P4160
	50	MUMA5AZP1 🗌	391	MKDET1505P	388 (K)				DV0P2891	DV0P220	
	100	MUMA012P1	391	MKDET1505P	388 (K)						
3-phase 200 V	200	MUMA022P1	391	MKDET1310P	388 (K)						
200 V	400		004	MLDET2510P	000 (1)						
	400	MUMA042P1	391	MLDET2310P	388 (L)						

Note) 1 Motor model number suffix:

S: Key way with center tap, without brake

T: Kew way with center tap, with brake

Note) 2 \*\* represents cable length. For details, refer to P.399.

Carrying p	age	9			
	Opt	ions		Part No.	Carrying page
Console				DV0P4420	403
Setup Support			Japanese		
Software, PANATERM			English	DV0P4460	398
RS232 Commu (for Connection				DV0P1960	403
Interface Cable	)			DV0P0800	403
Connector Kit f	or Ir	nterfa	ace	DV0P0770	402
Connector Kit f	or N	lotor	and Encoder	DV0P3670	401
Connector Kit f	or D	)river	Power Supply	DV0P2870	401
Encoder Cable			MFECA0 * *	0EAM	400
Motor Cable			MFMCA0 * *	0AEB	400
Brake Cable			MFMCB0 * *	400	
Cable Set (3 m	) <sup>(Not</sup>	e 3)	DV0P37300	400	
Cable Set (5 m	) <sup>(Not</sup>	e 3)	DV0P39200		400
DIN Rail Moun	t Un	it	DV0P3811		404
External	10	0 V	50 Ω 10 W	DV0P2890	404
Regenerative Resistor	20	0 V	100 Ω 10 W	DV0P2891	404
			100 V	DV0P227	
Reactor			100 V	DV0P228	405
			200 V	DV0P220	
Noise Filter				DV0P4160	416
Surge Absorbe	r		gle phase ) V, 200 V	DV0P4190	416
		3-р	hase 200 V	DV0P1450	
Ferrite core				DV0P1460	416

A6 Series

A6N Series

A6B Series Special Order Product

E Series

Imformation

(Note 3) Cable set (3 m) contains,

1) Interface cable: DV0P0800

2) Encoder cable (3 m) : MFECA0030EAM

3) Motor cable (3 m) : MFMCA0030AEB

4) Connector kit for driver power supply connection : DV0P2870 Cable set (5 m) contains,

1) Interface cable: DV0P0800

2) Encoder cable (5 m) : MFECA0050EAM

3) Motor cable (5 m) : MFMCA0050AEB

4) Connector kit for driver power supply connection : DV0P2870

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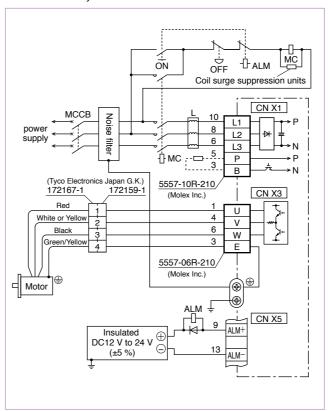
#### Driver Specifications E Series

	_	Sing	le phase, 100 V	Single phase, 100 V to 115 V +10 % -15 % 50 Hz/60 Hz
	Input power	Sing	le phase, 200 V	Single phase, 200 V to 240 V +10 % -15 % 50 Hz/60 Hz
	wer	3-ph	ase, 200 V	3-phase, 200 V to 240 V +10 % -15 % 50 Hz/60 Hz
	Ē	Tem	perature	Operating : 0 °C to 55 °C, Storage : -20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal temperature="">)</nomal>
	Environment	Hum	nidity	Both operating and storage : 90 %RH or less (free from condensation)
	ıme	Altitu	ude	1000 m or lower
	Ħ	Vibr	ation	5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz (No continuous use at resonance frequency)
	With	stand	voltage	Should be 1500 VAC (Sensed current: 20 mA) for 1 minute between Primary and Ground.
	Con	trol me	ethod	IGBT PWM Sinusoidal wave drive
	Enco	oder fe	eedback	2500 P/r (10000 resolution) incremental encoder
<i>u</i>	, o	Inpu	t	7 inputs (1) Servo-ON, (2) Alarm clear and other inputs vary depending on the control mode.
signal	Control	Outp	put	4 outputs (1) Servo alarm, (2) Alarm, (3) Release signal of external brake and other outputs vary depending on the control mode.
		Inpu	t	2 inputs Supports both line driver I/F and open collector I/F.
signai	Pulse	Outp		4 outputs Feed out the encoder pulse (A, B and Z-phase) in line driver. Z-phase pulse is also feed out in open collector.
	Corr	munie	cation function RS232	1 : 1 communication to a host with RS232 interface is enabled.
		olay LE		(1) Status LED (STATUS), (2) Alarm code LED (ALM-CODE)
	Ŭ	enera		No built-in regenerative resistor (external resistor only)
_	Dyna	amic t	orake	Built-in
	Con	trol m	ode	3 modes of (1) High-speed position control, (2) Internal velocity control and (3) High-functionality positioning control are selectable with parameter.
		Con	trol input	<ul> <li>(1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Deviation counter clear,</li> <li>(4) Gain switching, (5) Electronic gear switching</li> </ul>
	σ	Con	trol output	(1) Positioning complete (In-position)
	osition		Max. command pulse frequency	Line driver : 500 kpps, Open collector : 200 kpps
	Position control	Pulse input	Type of input pulse train	Differential input. Selectable with parameter, ((1) CW/CCW, (2) A and B-phase, (3) Command and Direction)
	<u>o</u>	input	Electronic gear (Division/Multiplication (of command pulse	Setup of electronic gear ratio Setup range of $(1-10000) \times 2^{(0-17)}/(1-10000)$
			Smoothing filter	Primary delay filter or FIR type filter is selectable to the command input.
	Inter	Con	trol input	<ul> <li>(1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Selection 1 of internal command speed,</li> <li>(4) Selection 2 of internal command speed, (5) Speed zero clamp</li> </ul>
	nal	Con	trol output	(1) Speed arrival (at-speed)
•	spee	Inter	rnal speed command	Internal 4-speed is selectable with control input.
	Internal speed control	Soft	-start/down function	Individual setup of acceleration and deceleration are enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled.
	<u>o</u>	Zerc	-speed clamp	0-clamp of internal speed command with speed zero clamp input is enabled.
		Auto-ga	Real-time	Estimates the load inertia in real-time in actual operation and sets up the gain automatically corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control.
		Auto-gain tuning	Normal mode	Estimates the load inertia with an action command inside of the driver, and sets up the gain automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control.
		Mas inpu	king of unnecessary t	Masking of the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching
	Common	Divis puls	sion of encoder feedback e	1 P/r to 2500 P/r (encoder pulses count is the max.).
	nor	Protective function	Hardware error	Over-voltage, under-voltage, over-speed over-load, over-heat, over-current and encoder error etc.
			Software error	Excess position deviation, command pulse division error, EEPROM error etc.
			eability of alarm data	Traceable up to past 14 alarms including the present one.
		Dam	ping control function	Manual setup with parameter
		Setup	Manual	Console
		dn	Setup support software	PANATERM (Supporting OS : Windows98, Windows ME, Windows2000, and WindowsXP)

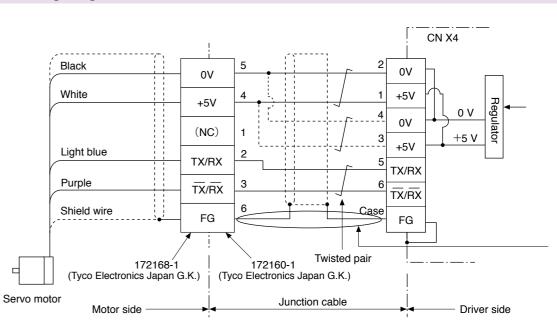
Standard Wiring Example of Main Circuit/ **Encoder Wiring Diagram** 

#### Standard Wiring Example of Main Circuit

3-Phase, 200 V



**Encoder Wiring Diagram** 

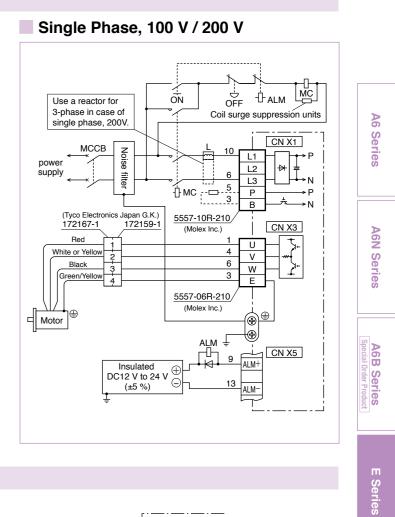


- 1) Refer the wiring diagram.
- bending resistance.
- 3) Use the twisted pair wire for the corresponding signal and power supply. 4) Shielding
  - Connect the shield of the driver to the case of CN X4. Connect the shield of the motor to Pin-6.

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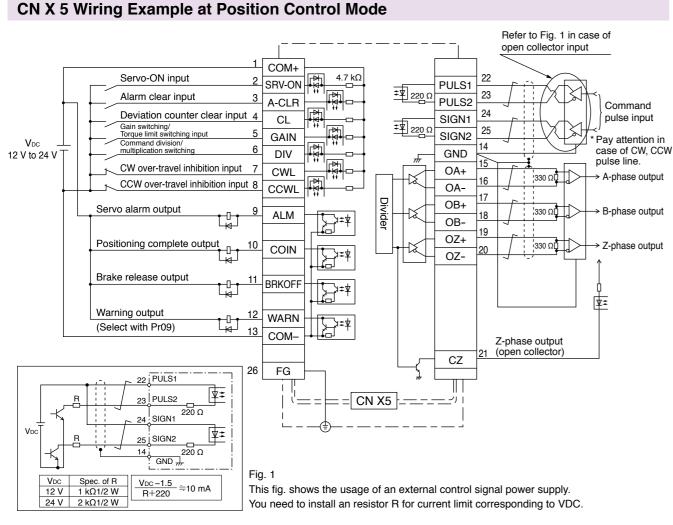
Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/

Imformation

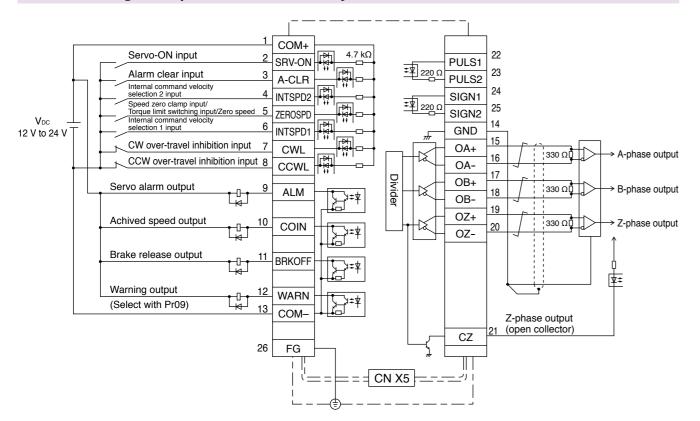


#### When you make your own junction cable for encoder (Refer to P.401, P.402 "Options" for connector.)

2) Use the twisted pair wire with shield, with core diameter of 0.18 mm2 (AWG24) or larger, with higher



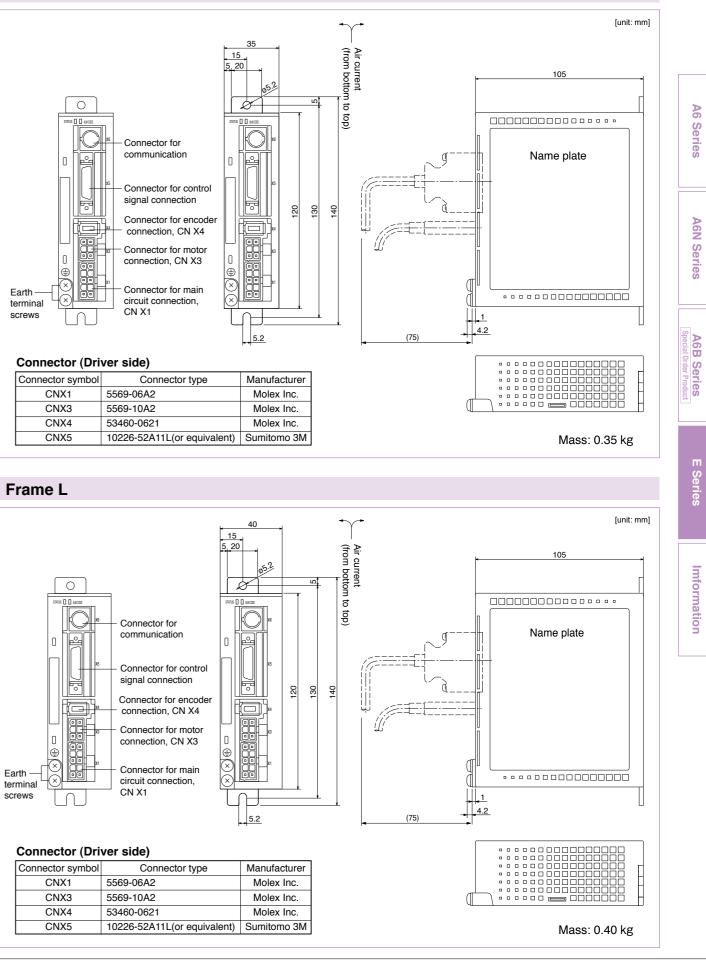
#### **CN X 5 Wiring Example at Internal Velocity Control Mode**



#### Ο Connector for communication Connector for control signal connection Connector for encode connection, CN X4 Connector for motor connection, CN X3 $(\times$ Connector for main Earth circuit connection, terminal CN X1 screws

Frame K

Connector symbol	Connector type	Manufacturer
CNX1	5569-06A2	Molex Inc.
CNX3	5569-10A2	Molex Inc.
CNX4	53460-0621	Molex Inc.
CNX5	10226-52A11L(or equivalent)	Sumitomo 3M



Connector symbol	Connector type	Manufacturer
CNX1	5569-06A2	Molex Inc.
CNX3	5569-10A2	Molex Inc.
CNX4	53460-0621	Molex Inc.
CNX5	10226-52A11L(or equivalent)	Sumitomo 3M

**E** Series

				AC100 V					
Motor model		MUMA	5AZP1	011P1	021P1				
Annulis ships ships		Model No.	MKDET1105P	MKDET1110P	MLDET2110P				
Applicable drive	r	Frame symbol	Fram	ne K	Frame L				
Power supply ca	apacity (	kVA)	0.3	0.4	0.5				
Rated output (W	/)		50	50 100					
Rated torque (N	l∙m)		0.16	0.32	0.64				
Momentary Max	. peak t	orque (N·m)	0.48	0.95	1.91				
Rated current (A	Arms)		1.0	1.6	2.5				
Max. current (A	o-p)		4.3	6.9	11.7				
Regenerative bi	rake	Without option		No limit Note)2					
frequency (times/min)	Note)1	DV0P2890		No limit Note)2					
Rated rotational	speed (	(r/min)		3000					
Max. rotational	speed (r	/min)		5000					
Moment of inert	ia	Without brake	0.021 0.032 0.10						
of rotor (×10 <sup>-4</sup> kg·m²)		With brake	0.026	0.026 0.036					
Recommended of the load and			30 times or less						
Datamanda				2500 P/r					
Rotary encoder	specific	auons		Incremental					
F	Resolutio	n per single turn		10000					
Protective enclo	osure rat	ting	IP65 (except ro	tating portion of output shaft and	lead wire end)				
	Ambient	temperature		free from freezing), Storage : -20 guarantee 80 °C for 72 hours <n< td=""><td></td></n<>					
	Ambient	humidity	85 %	6RH or lower (free from condensi	ng)				
Environment	Installati	on location	Indoors (no direct sunlight),	, free from corrosive gas, inflamm	able gas, oil mist and dus				
	Altitude			1000 m or lower					
	Vibratior	n resistance		49 m/s <sup>2</sup> or less					
Mass (kg), ( ) rei	oresents	holding brake type	0.4 (0.6)	0.5 (0.7)	0.96 (1.36)				

Diake spec	incations (This blake with	i be released when it is energized. Do not use this for braking	
Static friction	n torque (N m)	0.29	1.27
Engaging tir	me (ms)	25	50
Releasing ti	me (ms) Note)4	20 (30)	15 (100)
Exciting curr	rent (DC) (A)	0.26	0.36
Releasing v	oltage	DC 1 V or more	
Exciting volt	tage	DV 24 V ±10 %	
Permissible	load		
During	Radial load P-direction (N)	147	392

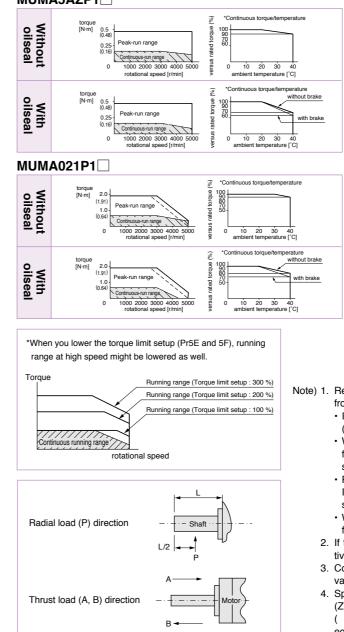
During assembly	Thrust load A-direction (N)	88	147
	Thrust load B-direction (N)	117	196
	Radial load P-direction (N)	68	245
During operation	Thrust load A-direction (N)	58	98
·	Thrust load B-direction (N)	58	98

For motor dimensions, refer to P.393, and for the driver, refer to P.388.

		M	<u>A</u> 5	AZ		1 <u>S</u>					
Symbol	Series	5				sign order Standard					
MUMA	Ultra low in (50 W to 2					Motor stru	icture				
		,					Shaft	Holding	brake	Oil sea	al
lotor rate	ed output		Voltage s	pecifications		Symbol	Key-way, center tap	without	with	without	with
Symbol	Rated output	ıt	Symbol	Specifications		S		•		•	
5A	50 W		1	100 V		T	•	-		•	
01 02	100 W 200 W	_	Z	100/200 V (50 W only)		L			1	I	
			·		Rotary er	coder specifica	tions				
					Symbol	Format	Pulse coun	ts Resc	olution	Wires	]
					P	Incremental	2500 P/r	10	000	5	1

#### Iorque Characteristics [at AC100 V of power voltage (Dotted line represents the torque at 10 % less supply voltage.)]





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#### MUMA011P1 \*Continuous torque/temperature Without oilseal 0.95 (U Peak-run range 10 20 30 torque [N·m] 1.0 (0.95 ithout brake With oilseal Peak-run range th brake 0.5 Cont un range 1000 2000 3000 4 10 20

A6B Series Special Order Product

E Series

Imformation

Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

• If the load is connected, frequency will be defined as 1/(m+1), where m = (load moment of inertia) / (rotor moment of inertia).

• When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).

• Power supply voltage is AC115 V (at 100 V of the main voltage).

If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.

• When regeneration occurs continuosly such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

2. If the effective torque is within the rated torque, there is no limit in regenerative brake.

3. Consult us or a dealer if the load moment of inertia exceeds the specified value.

4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by SEMITEC Corporation or equivalent).

( ) represents the actually measured value using a diode (200 V, 1 A or equivalent)

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				AC20	00 V			
Motor model		MUMA	5AZP1	012P1	022P1	042P1		
					MKDET1310P	MLDET2310P		
Applicable driver	r	Model No.	MKDE.	T1505P	MKDET2210P	MLDET2510F		
		Frame symbol	Fra	me K	Frame K Frame L	Frame L		
Power supply ca	apacity (I	kVA)	0.3	0.3	0.5	0.9		
Rated output (W	/)		50	100	200	400		
Rated torque (N	· m)		0.16	0.32	0.64	1.3		
Momentary Max	. peak to	orque (N · m)	0.48	0.95	1.91	3.8		
Rated current (A	(rms)		1.0	1.0	1.6	2.5		
Max. current (Ac	p-p)		4.3	4.3	7.5	11.7		
Regenerative bra		Without option		No limit	Note)2			
frequency (time	es/min) Note)1	DV0P2891		No limit	Note)2			
Rated rotational	speed (	r/min)		30	00			
Max. rotational s	speed (r/	/min)	5000					
Moment of inerti	а	Without brake	0.021	0.032	0.10	0.17		
of rotor (×10 <sup>-4</sup> kg·m²)		With brake	0.026	0.036	0.13	0.20		
Recommended i of the load and				30 times	or less			
Deterry encoder	onosifiar	tione		250	0 P/r			
Rotary encoder	specifica	ations		Incre	mental			
	Resoluti	ion per single turn		10	000			
Protective enclos	sure rati	ing	IP65 (	except rotating portion of	output shaft and lead wir	e end)		
	Ambien	nt temperature		to 40 °C (free from freezi mperature guarantee 80 °				
_	Ambien	nt humidity		85 %RH or lower (fre	e from condensing)			
Environment	Installa	tion location	Indoors (no direct	sunlight), free from corros	sive gas, inflammable gas	s, oil mist and dust		
	Altitude	9		1000 m	or lower			
_	Vibratio	on resistance		49 m/s²	or less			
Mass (kg), ( ) rep	oresents I	holding brake type	0.4 (0.6)	0.5 (0.7)	0.96 (1.36)	1.5 (1.9)		

Diake specifications (This blake with	i be released when it is chergized. Bo not use t	nis for braking the motor in motori.
Static friction torque (N · m)	0.29	1.27
Engaging time (ms)	25	50
Releasing time (ms) Note)4	20 (30)	15 (100)
Exciting current (DC) (A)	0.26	0.36
Releasing voltage	DC 1 V	or more
Exciting voltage	DV 24	V ±10 %

Permissible le	bad		
	Radial load P-direction (N)	147	392
During assembly	Thrust load A-direction (N)	88	147
	Thrust load B-direction (N)	117	196
	Radial load P-direction (N)	68	245
During operation	Thrust load A-direction (N)	58	98
	Thrust load B-direction (N)	58	98

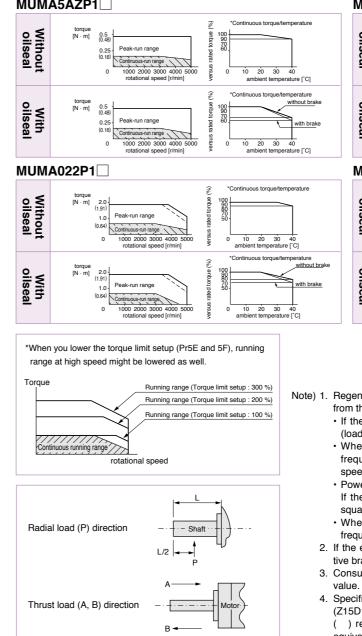
For motor dimensions, refer to P.393, and for the driver, refer to P.388.

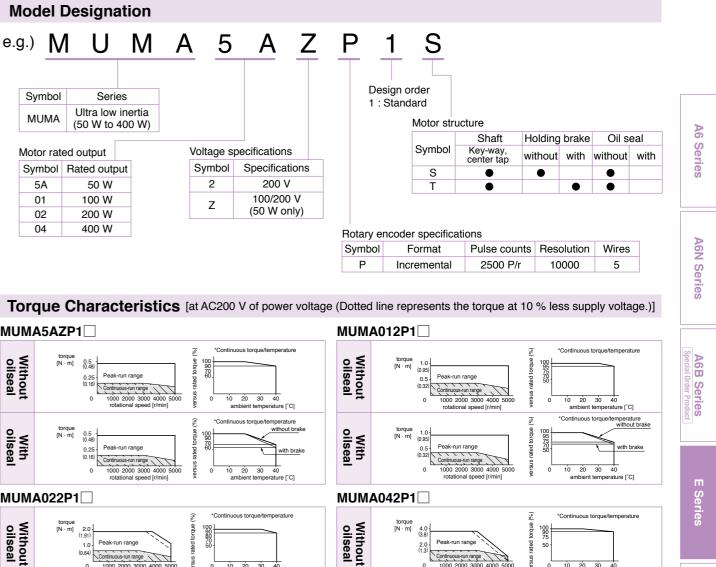
Note) Driver for 50 W and 100 W has a common power supply of single phase and 3-phase 200 V.

Driver for 200 W, the upper row is the power supply of 3-phase 200 V, and lower is the power supply of single-phase 200 V.

Driver for 400 W, the upper row is the power supply of 3-phase 200 V, and lower is the common power supply of single-phase and 3-phase 200 V.







10 20 30 40

10 20 30 40

ambient temperature [°C]

\*Continuous torque/temperature

Imformation

Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

• If the load is connected, frequency will be defined as 1/(m+1), where m = (load moment of inertia) / (rotor moment of inertia).

• When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).

• Power supply voltage is AC240 V (at 200 V of the main voltage).

Continuous-run range

1000 2000 3000 rotational speed [r/r

(3.8) 2.0 (1.3) Continuous-run range

1000 2000 3000 400

If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/240) relative to the value in the table.

• When regeneration occurs continuosly such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

2. If the effective torque is within the rated torque, there is no limit in regenerative brake.

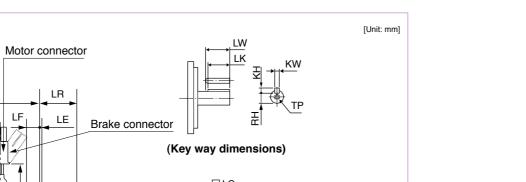
3. Consult us or a dealer if the load moment of inertia exceeds the specified

4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by SEMITEC Corporation or equivalent).

( ) represents the actually measured value using a diode (200 V, 1 A or equivalent)

With oilseal

Encoder



Motor Types/ Model No. Designation Specifications

# **MINAS E Series Motors with Gear Reducer**

#### Motor Types with Gear Reducer

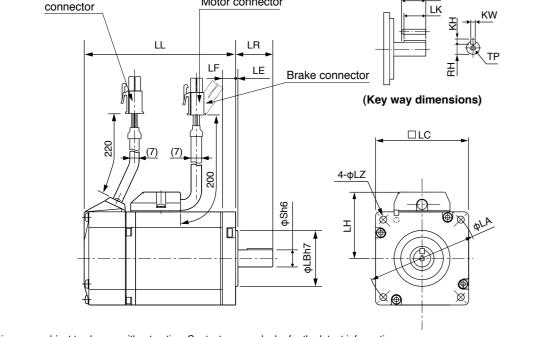
Reduction	Мо	Type of		
ratio	100	200	400	reducer
1/5	•	•		
1/9	•	•		For high
1/25				precision

q.)	Μ	UΜ	Α	<u>م</u>	) 1	
			-		-	_
	Symbol	Series				
	MUMA	Low inertia (100 to 400	•			
	Motor rate	· · ·				
	Symbol	Rated output		Voltage s	pecificati	ons
	01	100 W			Specific	cations
	01	100 W 200 W		Symbol	opeenid	
	01 02 04	100 W 200 W 400 W		Symbol 1	100	

i totai y on	obaci opeoinioationio			
Symbol	Format	Pulse counts	Pulse counts	
Р	Incremental	2500 P/r	10000	

#### Specifications of Motor with Gear Reducer

	Motor series
	Backlash
	Composition of gear
	Gear efficiency
Coor	Rotational direction at output shaft (of reducer)
Gear	Composition of gear
reducer	Mounting method
	Permissible moment of inertia of the load
	(conversion to the motor shaft)
	Protective structure
	Ambient temperature
E	Ambient humidity
Environment	Vibration resistance
	Impact resistance



\* Dimensions are subject to change without notice. Contact us or a dealer for the latest information

		_				[Unit:	
				MUMA series	(Ultra low inertia)		
Motor output	ıt		50 W	100 W	200 W	400 W	
Motor mode	•	MUMA	5A 🗆 P 1 🗌	P1       01       P1       02       P1         0 P/r       2500 P/r       2500 P/r       2500 P/r         nental       Incremental       Incremental       Incremental         5.5       92.5       96       96         17       124       129         4       24       30         8       11       96         92       22       50         2       22       50         2       2       3			
Rotary enco	oder spec	sifications	2500 P/r Incremental			2500 P/r Incremental	
		Without brake	75.5	92.5	96	123.5	
L L With brake		With brake	107	124	129	156.5	
	LR		24	24	30	30	
	S		8	8	11	14	
	LA		48	48	70	70	
	LB		22	22	50	50	
	LC		42	42	60	60	
	LE		2	2	2 3		
	LF		7	7	7	7	
	LH		34	34	43	43	
	LZ		3.4	3.4	4.5	4.5	
	LW		14	14	20	25	
	LK		12.5	12.5	18	22.5	
Kauman	ΚW		3h9	3h9	4h9	5h9	
Key way	КH		3	3	4	5	
	RH		6.2	6.2	8.5	11	
-	TP		M3 × 6 (depth)	M3 × 6 (depth)	M4 × 8 (depth)	M5 × 10 (depth)	
		Without brake	0.40	0.50	0.96	1.5	
Mass (kg)		With brake	0.60	0.70	1.36	1.9	
Connector/F	Plug spec	cifications		refer to Options	, P.401, P.402.		

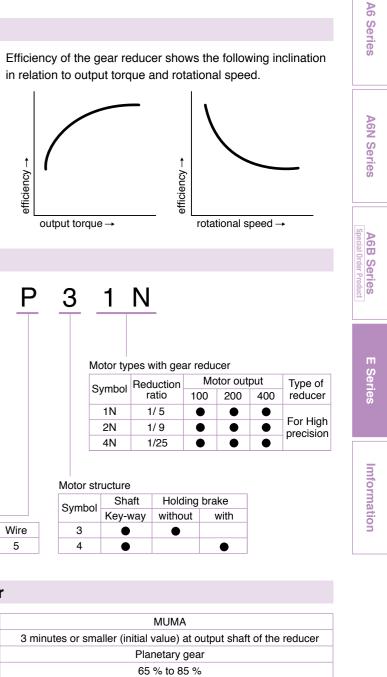
#### <Cautions>

Reduce the moment of inertia ratio if high speed response operation is required. Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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**E** Series

otors with



Same direction as the motor output shaft Planetary gear Flange mounting 10 times or smaller than rotor moment of inertia of the motor IP44 (at gear reducer) 0 °C to 40 °C 85 %RH (free from condensation) or less

49 m/s<sup>2</sup> or less (at motor frame)

98 m/s<sup>2</sup> or less

Table of Motor Specifications/ The Combination of the Driver and the Motor

#### Table of Motor with Gear Reducer Specifications

Motors with

	Motor					M	JMA with g	ear reduc	er				
Model	Output	Reduction	Output	Rated	Max.		Peak max.	(motor + redu	tor + reducer/converted to motor shaft		(converted) Mass		Permissible thrust load
		ratio	-	speed	speed	torque	torque	w/o brake	w/ brake		radial load	trirust 10a0	
	(W)		(W)	(r/min)	(r/min)	(N·m)	(N·m)	J ( × 10	<sup>-₄</sup> kg·m²)	(k	g)	(N)	(N)
MUMA01 P 1N		1/5	75	600	1000	1.18	3.72	0.072	0.076	1.05	1.25	490	245
MUMA01 P 2N	100	1/9	80	333	555	2.25	6.86	0.0663	0.0703	1.05	1.25	588	294
MUMA01 P 4N		1/25	80	120	200	6.27	19.0	0.0645	0.0685	2.20	2.40	1670	833
MUMA02 P 1N		1/5	170	600	1000	2.65	8.04	0.218	0.248	1.68	2.08	490	245
MUMA02 P 2N	200	1/9	132	333	555	3.72	11.3	0.368	0.398	2.66	3.06	1180	588
MUMA02 P 4N		1/25	140	120	200	11.1	33.3	0.388	0.418	2.66	3.06	1670	833
MUMA042P 1N		1/5	340	600	1000	5.39	16.2	0.533	0.563	3.2	3.6	980	490
MUMA042P 2N	400	1/9	332	333	555	9.51	28.5	0.438	0.468	3.2	3.6	1180	588
MUMA042P 4N		1/25	332	120	200	26.4	79.2	0.470	0.500	4.7	5.1	2060	1030

For dimensions, refer to P.397.

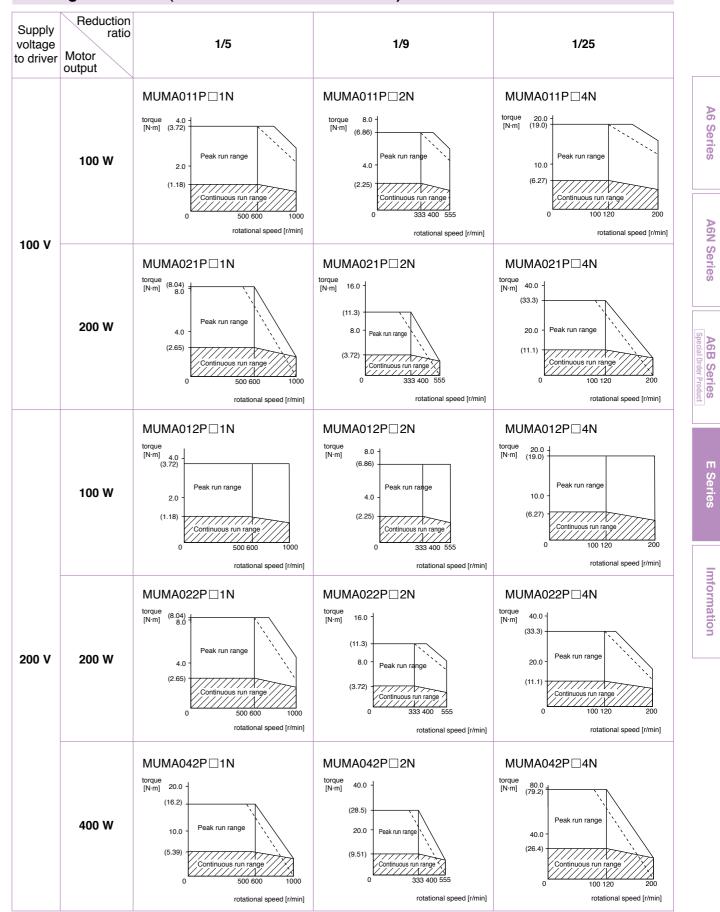
#### The Combination of the Driver and the Motor with Gear Reducer

Combination with driver		10	0 V	200 V			
Encoder	Motor Part No. of motor Single phase, 100 V Part No. of motor		Part No. of motor	3-phase, 200 V	Single phase, 200 V		
Liicodei	output	with gear reducer	Part No. of driver	with gear reducer	Part No. of driver	Part No. of driver	
	100 W	MUMA011P	MKDET1110P	MUMA012P	MKDET1505P	MKDET1505P	
2500 P/r	200 W	MUMA021P	MLDET2110P	MUMA022P	MKDET1310P	MLDET2210P	
Incremental	400 W			MUMA042P	MLDET2510P	MLDET2510P	
	400 W				MLDET2310P	MILDE12510P	

For dimensions of driver, refer to P.388.

#### **Torque Characteristics**

#### For High Precision (MUMA Series 100 W to 400 W)



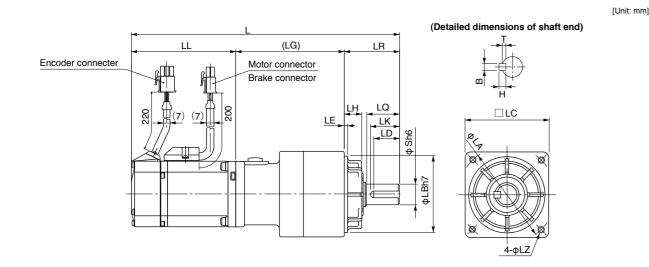
Dotted line represents the torque at 10 % less supply voltage.

# Motors with

**E** Series

Motor Dimensions

#### **MUMA series with Gear Reducer**



#### 2500 P/r Encoder

																[U	Jnit: mm		
Model	Motor output	Reduction ratio	L	LL	LR	LQ	LC	LB	LA	s	LH	LZ	LK	(LG)	LE	Key way B×H×LD	т		
MUMA01 P 1N		1/5	192	92.5															
		175	223.5	124	32	20	52	50	60	12	10	M5	18	67.5		4×4×16	2.5		
MUMA01 P 2N		1/0	192	92.5	52	20	52	50	00	12	10	(Depth: 12)	10	07.5		424210	2.5		
		175	223.5	124															
MUMA01 P 4N		1/25	234.5	92.5	50	30	78	70	90	19	17	M6	26	92	3	6×6×22	3.5		
		1/25	266	124	50	30	70	10	90	19	17	(Depth: 20)	20	92	3	0x0x22	5.5		
MUMA02 P 1N		1/5	200.5	96	32	20	52	50	60	12	10	M5	18	72.5		4×4×16	2.5		
		175	233.5	129	52	20	52	50	00	12	10	(Depth: 12)	10	12.5		444.10	2.0		
MUMA02 P 2N	200 W	1/9	235.5	96										89.5					
	200 W	175	268.5	129											00.0				
MUMA02 P 4N		1/25	246	96												100			
		1725	279	129	50	30	78	70	90	19	17	M6	M6 26	100	6×6×22	3.5			
MUMA042P 1N				1/5	263	123.5	50	50	10	10	30	15	17	(Depth: 20)	20		1	070722	0.0
		296 156.5 263 123.5				89.5													
MUMA042P 2N	400 W					09.0													
	400 W	175	296	156.5															
MUMA042P 4N		1/25	288.5	123.5	61	40	98	90	115	24	18	M8	35	104	5	8×7×30	4		
		1725	321.5	156.5		0	30	30	115	24	10	(Depth: 20)	55	104	5	027230	4		

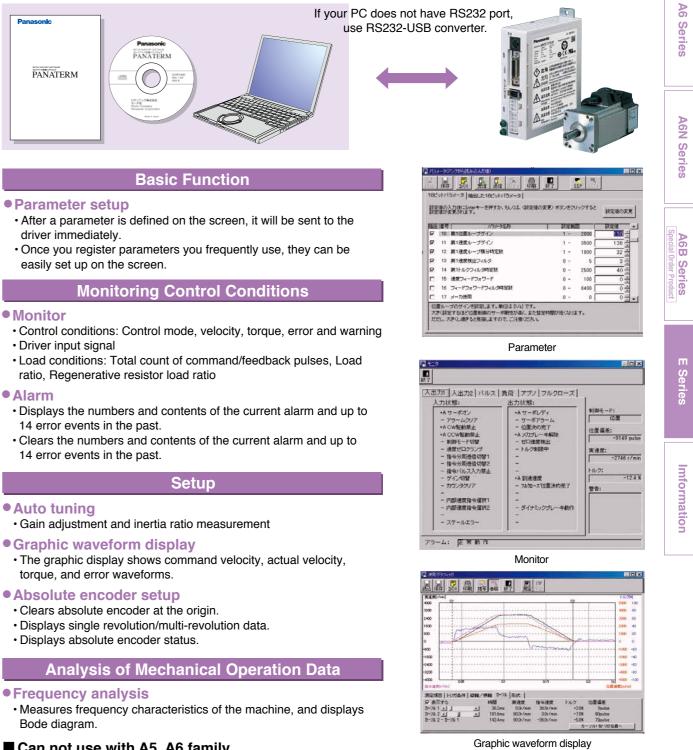
Upper column : without brake Lower column · with brake

### Setup Support Software

### Setup Support Software "PANATERM" for MINAS series AC Servo Motor & Driver

#### Part No. DV0P4460 (Japanese/English version)

The PANATERM assists users in setting parameters, monitoring control conditions, setup support, and analyzing mechanical operation data on the PC screen, when installed in a commercially available personal computer, and connected to the MINAS A4 series, E series through the RS232 serial interface.



#### Parameter setup

#### Monitor

#### • Alarm

#### Absolute encoder setup

#### Can not use with A5, A6 family.

#### Hardware configuration

[Personal computer] · CPU : Pentium 100MHz or more · Memory : 16 MB or more (32 MB recommended) • Hard disk capacity (vacancy of 25 MB or more recommended) • OS : Windows® 98, Windows® Me, Windows® 2000, Windows® XP (US version) Communication speed of serial communication port : 2400 bps or more (The software may not operate normally using USB-to-Serial adapter.) [Display] • Resolution : 640\*480 (VGA) or more (desirably 1024\*768) • Number of colors : 256 colors or more [CD-ROM drive] · CD-ROM drive operable on the above-mentioned personal computer

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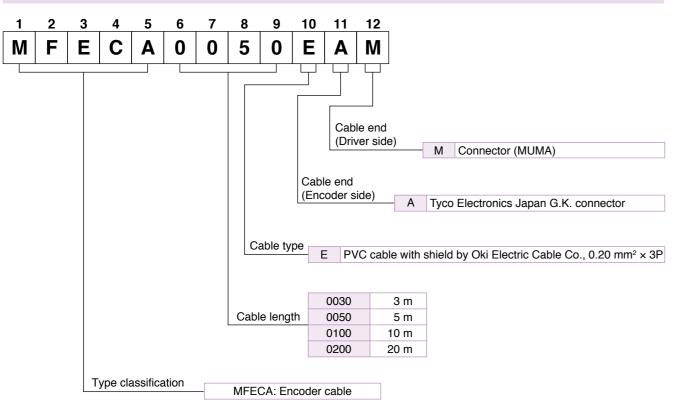
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#### **Options**

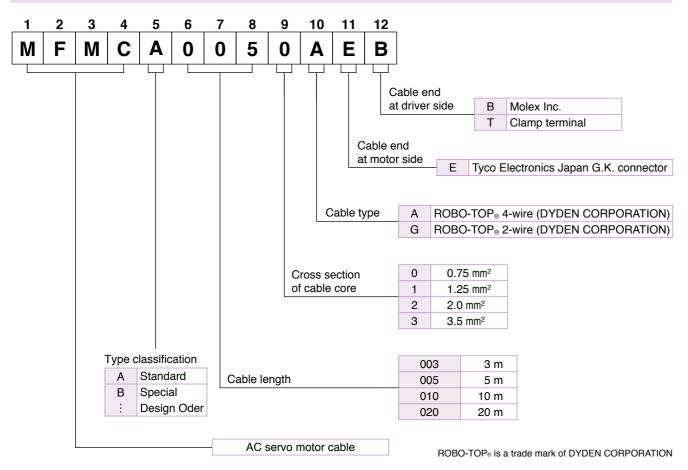
Options

Cable part No. Designation

#### **Encoder Cable**



#### Motor Cable, Brake Cable



Cable

Part No.	DV0P37300
1) Interfac	ce cable : DV0P0800
2) Encode	er cable (3 m) : MFECA0030EAM
3) Motor of	cable (3 m) : MFMCA0030AEB
4) Connec	ctor kit for driver power supply connection
	070
DV0P2	870
DV0P2	870
Encoder Part No.	Cable
Encoder	Cable

Title	Part No.
Connector (Driver side)	3E206-0100KV
Shell kit	3E306-3200-008
Connector	172160-1
Connector Pin	170365-1
Cable	0.20 mm <sup>2</sup> × 3P

### Motor Cable (ROBO-TOP® 105 °C 600 V . DP)

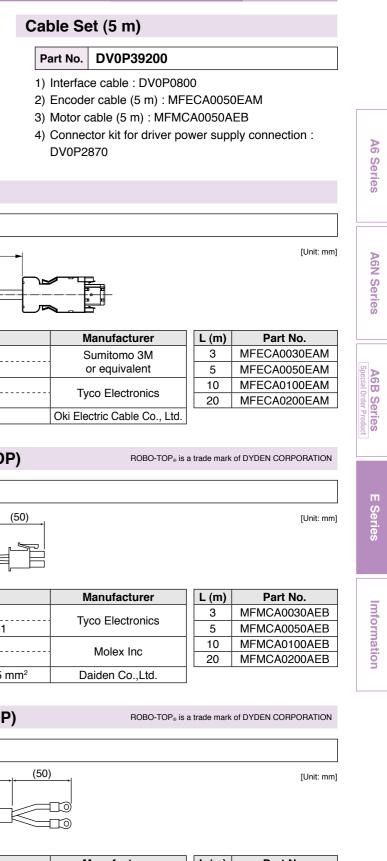
Part No.	MFMCA0 * * 0	AEB
	<del>-</del>	(50) L
	Title	Part No.
	Connector	172159-1
[	Connector Pin	170362-1, 170366-1
	Connector	5557-06R-210
[	Connector Pin	5556T
	Cable	ROBO-TOP 600 V 0.75 r

#### Brake Cable (ROBO-TOP® 105 °C 600V . DP)

Part No.	MFMCB0 * * 0G	ìΕΤ			
					[Unit: mm]
	Title	Part No.	Manufacturer	L (m)	Part No.
	Connector	172157-1	Tura Flastranica	3	MFMCB0030GET
[	Connector Pin	170362-1, 170366-1	Tyco Electronics	5	MFMCB0050GET
Nylon i	nsulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100GET
	Cable	ROBO-TOP 600 V 0.75 mm <sup>2</sup>	Daiden Co.,Ltd.	20	MFMCB0200GET

### **Options**

**E** Series



#### **Connector Kit for Power Supply Connection**

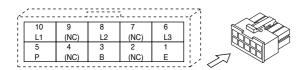
**Options** 

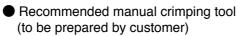
#### Part No. DV0P2870

#### Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector (10 pins)	Connector (10 pins) 5557-10R-210		Molex Inc.	For connector, CN X1
Connector pin	5556PBTL	6	IVIOIEX IIIC.	(10 pins)

#### Pin configuration of connector CN X1





Part No.	Cable material
57026-5000	UL1007
57027-5000	UL1015

#### <Cautions>

- 1. The above pin disposition is shown when viewed from the terminal inserting direction. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- 2. Refer to P.386 for wiring and connection.
- 3. Do not connect anything to pins marked "NC".

#### Connector Kit for Motor/Encoder Connection

#### Part No. DV0P3670 (Incremental 2500 pulse, 5-wire)

This option is required when you make your own encoder cable and motor cable. (Brake cable is required for brake.)

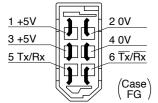
#### Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For connector, CN X4
Shell kit	3E306-3200-008	1	or equivalent	(6 pins)
Connector (6 pins)	172160-1	1	Tyco Electronics	For junction to encoder cable
Connector pin	170365-1	6	Tyco Electronics	(6 pins)
Connector (4 pins)	172159-1	1	Tyco Electronics	For junction to motor power cable
Connector pin	170366-1	4	Tyco Electronics	(4 pins)
Connector (6 pins)	5557-06R-210	1	Molex Inc.	For connector, CN X3
Connector pin	5556PBTL 4		WOIEX INC.	(6 pins)

#### <Remarks>

We may use parts equivalent to the above for shell and connector cover.

#### Pin configuration of connector CN X4 plug



Recommended manual crimping tool (to be prepared by customer)

Title Part No.		Manufacturer	Cable material	
For encoder cable junction 755330-1		Tyco Electronics		
For motor power cable junction	755331-1	Tyco Electronics	-	
For Connector CN X3	57026-5000	Molex Inc.	UL1007	
	57027-5000	WOIEX INC.	UL1015	

#### <Remarks>

- 1. The above pin configuration is shown when viewed from the pin-soldering direction. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- 2. Connect the shield of the wire to the case (FG) without fail.
- 3. For wiring and connection, refer to P.386.

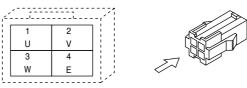
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### Pin configuration of encoder cable junction

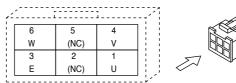
1	2	3	1
NC	-		
NC	TX/RX	TX/RX	1
4	5	6	
+5V	0V	FG	



#### Pin configuration of motor power cable junction



Pin configuration of mating connector to CN X3 connector



#### <Cautions>

- checking the stamped pin numbers on the connector itself.
- 2. Refer to P.386 for wiring and connection.

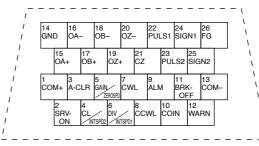
### **Connector Kit for Interface**

### Part No. DV0P0770

Parts composition
-------------------

Title	Part No.	Number	Manufacturer	Note
Connector	10126-3000PE	1	Sumitomo 3M	For connector, CN X5
Connector cover	10326-52A0-008	1	or equivalent	(26 pins)

#### Pin configuration of connector CN X5 (26 pins) (viewed from the soldering side)



#### <Cautions>

- 1. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- 2. Refer to P.387 for symbols and functions of the above signals.

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# 1. The above pin configuration is shown when viewed from the terminal inserting direction. Make a correct wiring by

A6 Series
A6N Series
A6B Series Special Order Product
E Series
Imformation

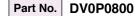
**Options** 

#### Interface Cable/ Communication Cable/ Console

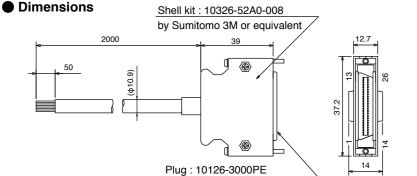
[Unit: mm]

Cable of 2 m is connected.

#### **Interface Cable**



Shell kit : 10326-52A0-008



by Sumitomo 3M or equivalent

#### • Wiring table

Pin No.	Title of signal	Color or cable	Pin No.	Title of signal	Color or cable	Pin No.	Title of signal	Color or cable
1	COM+	Orange (Red 1)	10	COIN	Pink (Black 1)	19	OZ+	Pink (Red 2)
2	SRV-ON	Orange (Black 1)	11	BRK-OFF	Orange (Red 2)	20	OZ-	Pink (Black 2)
3	A-CLR	Gray (Red 1)	12	WARN	Orange (Black 2)	21	CZ	Orange (Red 3)
4	CL/INTSPD2	Gray (Black 1)	13	COM-	Gray (Red 2)	22	PULS1	Gray (Red 3)
5	GAIN/ZEROSPD	White (Red 1)	14	GND	Gray (Black 2)	23	PULS2	Gray (Black 3)
6	DIV/INTSPD1	White (Black 1)	15	OA+	White (Red 2)	24	SIGN1	White (Red 3)
7	CWL	Yellow (Red 1)	16	OA-	White (Black 2)	25	SIGN2	White (Black 3)
8	CCWL	Yellow (Black 1)	17	OB+	Yellow (Red 2)	26	FG	Orange (Black 3)
9	ALM	Pink (Red 1)	18	OB-	Yellow (Black 2)			

#### <Notes>

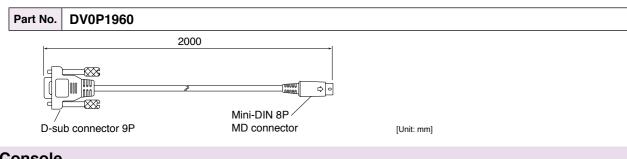
e. g. of Pin No. designation : Pin No. 1 ..... Wire color is orange, and one red dot.

Pin No. 12 ... Wire color is orange, and two black dot.

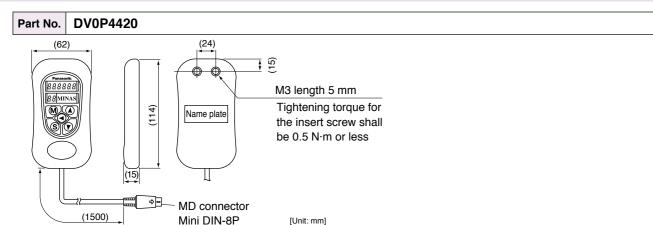
#### <Remarks>

Pin No.26 (FG) is connected to the shell (housing) of the connector, but the braided wire of this cable is not connected to the shell (housing) of the connector. When connecting the shield to FG or GND on the driver side, please use the interface connector Kit DV0P0770.

#### Communication Cable (For Connection with PC)

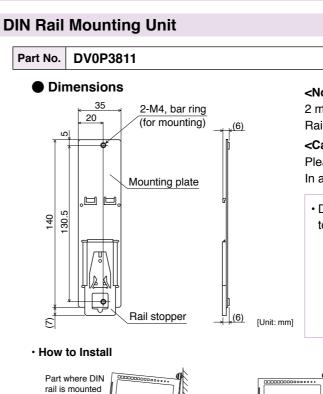


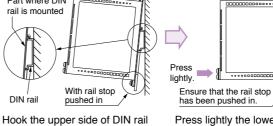
#### Console



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# **DIN Rail Mounting Unit/ External Regenerative Resistor**





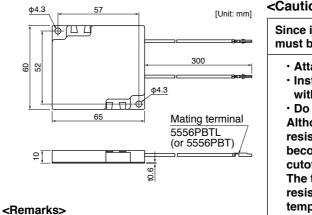
mounting part on the DIN rail.

Press lightly the lower part of the main body of driver.

#### **External Regenerative Resistor**

			ę
Part No.	Manufacturer's Part No.	Resistance	Rat pov
		Ω	V
DV0P2890	45M03	50	1
DV0P2891	45M03	100	1

#### Dimensions



Thermal fuse is installed for safety.

The thermal fuse may blow due to heat dissipating condition, working temperature, supply voltage or load fluctuation. Make it sure that the surface temperature of the resistor may not exceed 100 °C at the worst running conditions with the machine, which brings large regeneration (such case as high supply voltage, load inertia is large or deceleration time is short) Please carry out air cooling if needed.

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Options

**E** Serie

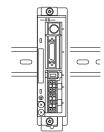
#### <Notes>

2 mounting screws (M4 X L8, Pan head) are attached. Rail stopper can be extended to max. 10 mm.

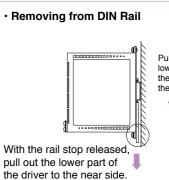
#### <Cautions>

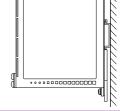
Please read carefully operation manual before using this product. In addition, please do not apply excessive stress to the product.

 Driver mounted to DIN rail

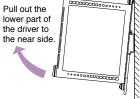








By lifting the driver, you can remove it from the DIN rail



Specifications Note ted Activation temperature of built-in fuse wer (Input Power of drive) N °C 0 137<sup>+3</sup> Single phase, 100 V 0 137<sup>+3</sup> Single/3-phase, 200 V

Manufactured by Iwaki Musen Kenkyuusho Co., Ltd.

#### <Caution of when using external regeneration resistor>

Since it becomes high temperature, external regeneration resistor must be installed according to the contents shown below.

- · Attach to incombustibles, such as metal.
- · Install in the place which cannot touch directly by covering with incombustibles etc.
- · Do not install near the combustibles.

Although the thermal cutoff is built in external regeneration resistor, the skin temperature of regeneration resistor may become high exceeding the operating temperature of thermal cutoff by the time the thermal cutoff operates in driver failure. The thermal cutoff is for preventing ignition of the regeneration resistor in driver failure, and is not for controlling the skin temperature of resistor.

#### **Reactor/ Surge Absorber for Motor Brake**

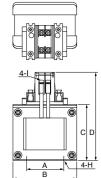
Fig.2

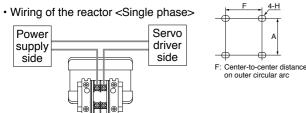
#### Reactor

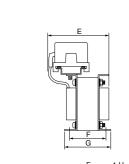
Fig.1

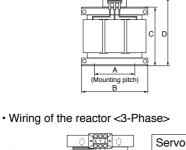
Frame symbol of driver	Power supply specifications	Rated output	Part No.	Fig.
	Single phase, 100 V	50 W to 100 W	DV0P227	1
MKDE	Single phase, 200 V	50 W to 100 W	DV0P220	2
	3-phase, 200 V	50 W to 200 W	DV0F220	2
	Single phase, 100 V	200 W	DV0P228	1
MLDE	Single phase, 200 V	200 W to 400 W	D\/0D000	
	3-phase, 200 V	400 W	DV0P220	2

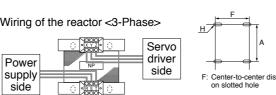
**Options** 











												[Unit: mm]
	Part No.	Α	В	с	D	E(Max)	F	G	н	I	Inductance (mH)	Rated current (A)
	DV0P227	55±0.7	80±1	66.5±1	110 Max	90	41±2	55±2	4-5φ×10	M4	4.02	5
Fig.1	DV0P228	55±0.7	80±1	66.5±1	110 Max	95	46±2	60±2	4-5φ×10	M4	2	8
Fig.2	DV0P220	65±1	125±1	(93)	136 Max	155	70+3/-0	85±2	4-7φ×12	M4	6.81	3

side

#### Harmonic restraint

Harmonic restraint measures are not common to all countries. Therefore, prepare the measures that meet the requirements of the destination country.

When installing a product for Japan, refer to the instruction manual available on our website.

[Panasonic Corporation, Motor Business Unit web site]

industrial.panasonic.com/ac/e/

#### <Remarks>

When using a reactor, be sure to install one reactor to one servo driver.

#### Recommended components

#### Surge Absorber for Motor Brake

Motor	Surge absorber for motor brake				
MOLOF	Part No. (Manufacturer's)	Manufacturer			
MUMA 50 W to 400 W	Z15D151	SEMITEC Corporation			

### List of Peripheral Components

### List of Peripheral Components

Manufacturer	Tel No. / Home Page	Peripheral components
Panasonic Corporation Eco Solutions Company	http://panasonic.net/es/	Circuit breaker
Panasonic Corporation Automotive & Industrial Systems Company	http://panasonic.net/id/	Surge absorber Switch, Relay
Iwaki Musen Kenkyusho Co., Ltd.	+81-44-833-4311 http://www.iwakimusen.co.jp/	Regenerative resistor
SEMITEC Corporation	+81-3-3621-2703 http://www.semitec.co.jp/english2/	Surge absorber for motor brake
TDK Corporation	+81-3-5201-7229 http://www.global.tdk.com/	Ferrite core
Okaya Electric Industries Co. Ltd.	+81-3-4544-7040 http://www.okayaelec.co.jp/english/index.html	Surge absorber Noise filter
Sumitomo 3M	+81-3-5716-7290 http:/solutions.3m.com/wps/portal/3M/ja_JP/ WW2/Country/	
Tyco Electronics Japan G.K.	+81-44-844-8052 http://www.te.com/ja/home.html	Connector
Japan Molex Inc.	+81-462-65-2313 http://www.molex.co.jp	
DYDEN CORPORATION	+81-3-5805-5880 http://www.dyden.co.jp/english/index.htm	Cable

\* The above list is for reference only. We may change the manufacturer without notice.

**Options** 

**E** Serie

Imformation

E Series

A6 Series

A6N Series

A6B Series Special Order Product

MEMO

# Information

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#### **EU Directives**

The EU Directives apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products.

However, our AC servos meet the relevant EU Directives for Low Voltage Equipment so that the machine or equipment comprising our AC servos can meet EU Directives.

#### **EMC Directives**

MINAS Servo System conforms to relevant standard under EMC Directives setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EMC Directives, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

#### **Conformity to UL Standards**

Observe the following conditions of (1) and (2) to make the system conform to UL508C (E164620).

- (1) Use the driver in an environment of Pollution Degree 2 or 1 prescribed in IEC60664-1.
- (e.g. Install in the control box with IP54 enclosure.)

Conformance to

(2) Make sure to install a circuit breaker or fuse which are UL recognized (Listed (h) marked) between the power supply and the noise filter.

For rated current of circuit breaker and fuse, refer to P.27 "Driver and List of Applicable Peripheral Equipments".

Use a copper cable with temperature rating of 75 °C or higher.

(3) Over-load protection level

Over-load protective function will be activated when the effective current exceeds 115 % or more than the rated current based on the time characteristics (see the graph). Confirm that the effective current of the driver does not exceed the rated current.

Set up the peak permissible current with Pr0.13 (Setup of 1st torque limit) and Pr5.22 (Setup 2nd torque limit).

Time [s]

1000

100

10-

50 W. 100 W

115 125

Motor type: 80 mm sq. or less MHMF

During the rotation or the servo lock

150

200 W During the servo lock

200

750 W During the servo lock

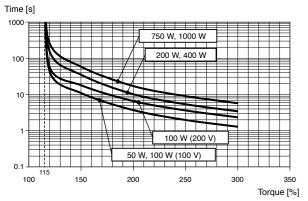
200 W, 400 W During the rotation 400 W During the servo lock 50 W, 1000 W During the rotation

000 W During the servo lock

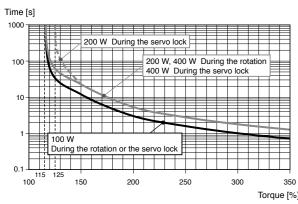
Torque [%]

#### Overload protection time characteristics

#### Motor type: 80 mm sq. or less MSMF



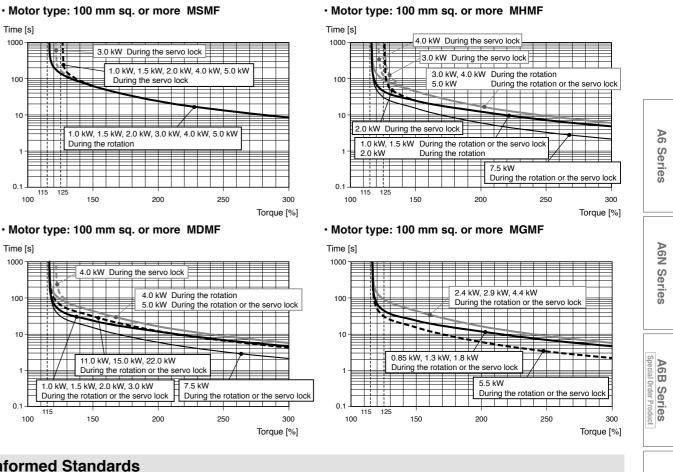
#### Motor type: 80 mm sq. or less MQMF

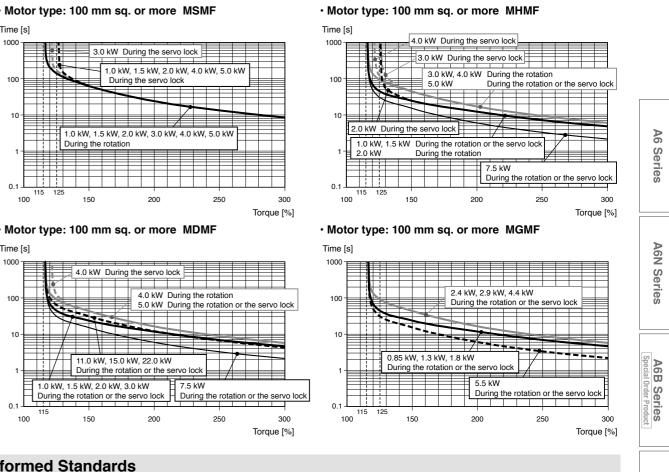


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## -409-







#### **Conformed Standards**

		Driver		Motor
	EMC Directives	EN55011 EN61000-6-2 EN61000-6-4 EN61800-3		_
EU Directives	Low-Voltage Directives	EN61800-5-1 EN50178		EN60034-1 EN60034-5
	Machinery Directives Functional safety <sup>™</sup>	ISO13849-1(PL e, Cat.3) EN62061(SILCL 3) EN61800-5-2(SIL3, STO) IEC60204-1	EN61508(SIL3) IEC61326-3-1	_
UL Standards		UL508C (E164620)		UL1004-1, UL1004-6 (E327868)
CSA Standards		C22.2 No.14		C22.2 No.100
Radio Waves A (South Korea)		KN11 KN61000-4-2,3,4,5,6,8,11		_
			Durquant to the d	iroctive 2004/108/EC article 9(2)

IEC : International Electrotechnical Commission

FN : Europaischen Normen

EMC : Electromagnetic Compatibility UL : Underwriters Laboratories

CSA : Canadian Standards Association

- When export this product, follow statutory provisions of the destination country.
- \*1 A6SE, A6SG, A6NE, A6BE series doesn't correspond to the safety standard.
- \*2 Information related to the Korea Radio Law This servo driver is a Class A commercial broadcasting radi generator not designed for home use. The user and dealer aware of this fact.

Panasonic Corporation Electromechanical Control Business Division industrial.panasonic.com/ac/e/ -410Pursuant 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

e functional	A 급 기기 (업무용 방송통신기자재)
	이 기기는 업무용(A 급) 전자파적합기기로서 판매자
	또는 사용자는 이 점을 주의하시기 바라며, 가정외의
lio wave <sup>·</sup> should be	지역에서 사용하는 것을 목적으로 합니다.
Should be	(대상기종 : Servo Driver )

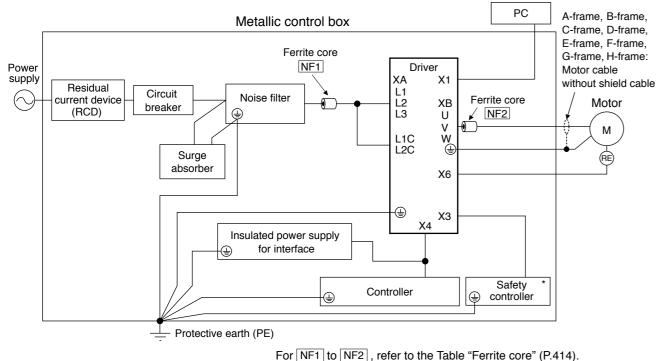
Ш Series

Imformation

#### Installation Environment

Conformance to

Use the servo driver in the environment of Pollution Degree 1 or 2 prescribed in IEC-60664-1 (e.g. Install the driver in control panel with IP54 protection structure.)



\* A6SE, A6SG, A6NE, A6BE is not provided with X3 terminal.

#### <Caution>

Use options correctly after reading Operating Instructions of the options to better understand the precautions. Take care not to apply excessive stress to each optional part.

#### **Power Supply**

100 V type (A-frame to C-frame)	Single phase, 100 V $^{+10}_{-15}$ % to 120 V $^{+10}_{-15}$ %	50 Hz/60 Hz
200 V type (A-frame to D-frame)	Single/3-phase, 200 V $^{+10\%}_{-15\%}$ to 240 V $^{+10\%}_{-15\%}$	50 Hz/60 Hz
200 V type (E-frame to H-frame)	3-phase, 200 V $^{+10\%}_{-15\%}$ to 240 V $^{+10\%}_{-15\%}$	50 Hz/60 Hz

(1) This product is designed to be used in over-voltage category (installation category) II of EN 61800-5-1:2007. (2) Use an insulated power supply of DC12 V to 24 V which has CE marking or complies with EN60950.

#### **Circuit Breaker**

Install a circuit breaker which complies with IEC Standards and UL recognized (Listed and marked) between power supply and noise filter.

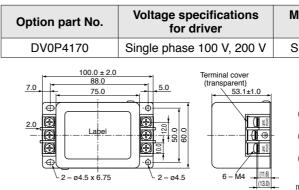
The short-circuit protection circuit on the product is not for protection of branch circuit.

The branch circuit should be protected in accordance with NEC and the applicable local regulations in your area.

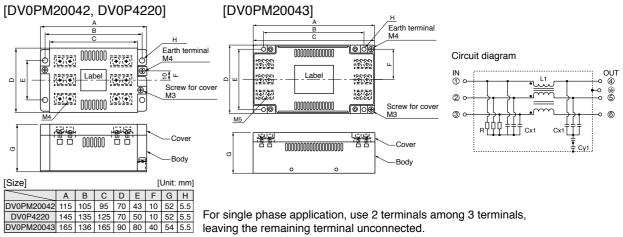
#### Noise Filter

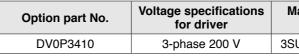
the noise filter. If noise margin is required, connect 2 filters in series to emphasize effectiveness.

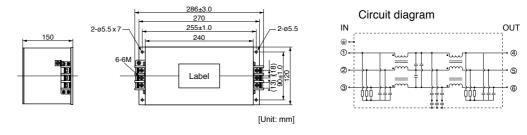
#### Options



Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
	3-phase 200 V		A-frame and B-frame	
DV0PM20042	Single phase 100 V, 200 V 3-phase 200 V	3SUP-HU10-ER-6	C-frame	Okaya Electric Ind.
DV0P4220	Single/3-phase 200 V	3SUP-HU30-ER-6	D-frame	
DV0PM20043	3-phase 200 V	3SUP-HU50-ER-6	E-frame	







#### <Remarks>

· Select a noise filter of capacity that exceeds the capacity of the power source (also check for load condition). · For detailed specification of the filter, contact the manufacturer.

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# When you install one noise filter at the power supply for multi-axes application, contact the manufacturer of

lanufacturer's part No.	Applicable driver (frame)	Manufacturer	Þ
SUP-EK5-ER-6	A-frame and B-frame	Okaya Electric Ind.	A6 S
IN Circuit diagram			Series

lanufacturer's part No.	Applicable driver (frame)	Manufacturer
UP-HL50-ER-6B	F-frame	Okaya Electric Ind.



A6N Series

#### **Noise Filter**

#### Recommended components

Part No.	Voltage specifications for driver	Rated current (A)	Applicable driver (frame)	Manufacturer
HF3080C-SZA	3-phase 200 V	80	G	SOSHIN ELECTRIC CO.,LTD.
HF3100C-SZA	3-priase 200 V	100	Н	SOOTIN ELECTRIC CO.,ETD.
	2 3 0000000000000000000000000000000000			172±5 (196) 210±5
· • •	© 000000000000000000000000000000000000	00000000 100000000 100000000	rcuit diagram	

#### <Remarks>

· Select a noise filter of capacity that exceeds the capacity of the power source (also check for load condition).

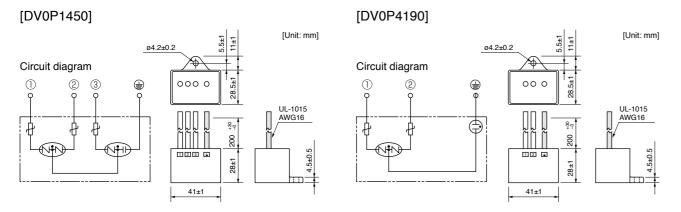
· For detailed specification of the filter, contact the manufacturer.

· When you install one noise filter at the power supply for multi-axes application, contact the manufacturer of the noise filter.

#### Surge Absorber

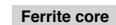
Provide a surge absorber for the primary side of noise filter.

Option part No.	Option part No. Voltage specifications for driver		Manufacturer	
DV0P1450	3-phase 200 V	R·A·V-781BXZ-4	Okava Electric Ind	
DV0P4190	Single phase 100 V, 200 V	R·A·V-781BWZ-4	Okaya Electric Ind.	



#### <Remarks>

Remove this surge absorber when you perform dielectric test on the machine, or surge absorber might be damaged.



#### Install ferrite core to power cable and motor ca

Symbol <sup>*1</sup>	Cable Name	Applicable driver (frame)	Option part No.	Manufacturer's part No.	Manufacturer	Required number												
		A, B, E	DV0P1460	ZCAT3035-1330	TDK Corp.	1												
NF1 Power cab	Power cable	G, H	DV0F1400	ZCA13035-1330	TDK Colp.	3												
				В, П	—	RJ8095	Konno Kogyosho Co.Ltd	1										
	NF2 Motor cable													A, B, C, D, E				1
NF2 Motor		F	DV0P1460	ZCAT3035-1330	TDK Corp.	2												
						3												
		G, H	_	T400-61D	MICROMETALS	1												

\*1 For symbols, refer to the Block Diagram "Installation Environment" (P.411).

• The number of turns is all 1.

• NF1 is not required for C frame, D frame, F frame.

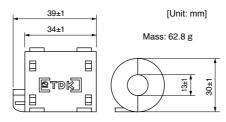
#### <Remarks>

To connect the ferrite core to the connector XB connection cable, adjust the sheath length at the tip of the cable, as required.

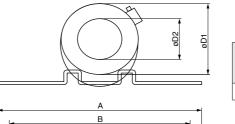
#### <Caution>

Fix the ferrite core in order to prevent excessive stress to the cables.

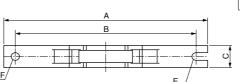
Fig.1: DV0P1460 (Option) 4 pieces



#### Fig.2: RJ8095 (Recommended components) 1 pieces



Manufacti part No



#### **Residual Current Device**

Install a type B Residual current device (RCD) at primary side of the power supply. Type B: Residual current device which detects a direct-current ingredient.

#### Grounding

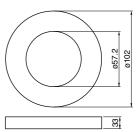
- trol box without fail to prevent electrical shocks.
- tive earth.

#### <Note>

For driver and applicable peripheral equipments, refer to P.27 "Driver and List of Applicable Peripheral Equipments".

b	le	

Fig.3: T400-61D (Recommended components) 1 pieces



[Unit: mm]

anufacturer's	Current	100 kHz				Size [	[Unit: r	nm]		
part No.	value	(µH)	А	в	С	D1	D2	Core thickness	Е	F
RJ8095	95 A	7.9±3	200	180	34	130	107	35	R3.5	7

(1) Connect the protective earth terminal ( $(\underline{\pm})$ ) of the driver and the protective earth terminal (PE) of the con-

(2) Do not make a joint connection to the protective earth terminals ( $(\pm)$ ). 2 terminals are provided for protec-

A6N Series

A6 Series



ш Series

Imformation

# Compliance to EU and EMC Directives

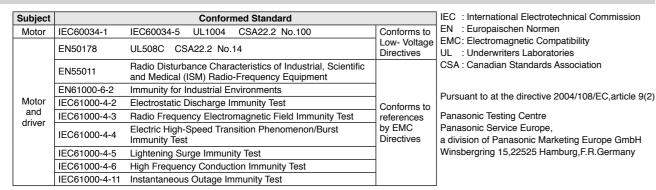
#### **EU Directives**

The EU Directives apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products. MINAS AC Servos conforms to the EU Directives for Low Voltage Equipment so that the machine incorporating our servos has an easy access to the conformity to relevant EU Directives for the machine.

#### **EMC Directives**

MINAS Servo System conform to relevant standard under EMC Directives setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EMC Directives, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

#### **Conformed Standards**



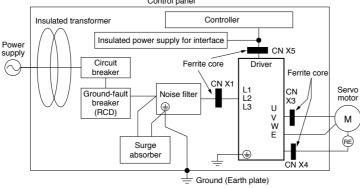
# Composition of Peripheral Components

#### <Precautions in using options>

Use options correctly after reading operation manuals of the options to better understand the precautions. Take care not to apply excessive stress to each optional part. Control panel

#### Installation Environment

Use Minas driver in environment of Pollution Degree 1 or 2 prescribed in IEC-60664-1 (e.g. Install the driver in control panel with IP54 protection structure.)



#### Power Supply

100 V system	Single phase, 100 V $^{+10\%}_{-15\%}$ to 115 V $^{+10\%}_{-15\%}$	50 Hz/60 Hz
200 V system	Single phase, 200 V $^{+10\%}_{-15\%}$ to 240 V $^{+10\%}_{-15\%}$	50 Hz/60 Hz
200 V system	3-phase, 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ %	50 Hz/60 Hz

(1) Use the power supply under an environment of Overvoltage Category II specified in IEC60664-1.

(2) For a interface power supply, use the insulated one with 12 VDC to 24 VDC which conforms to CE Marking or EN Standards (EN60950).

#### **Circuit Breaker**

Connect a circuit breaker which conforms to IEC standards and is UL recognized (UL Listed, (1) marked), between the power supply and the noise filter.

#### **Composition of Peripheral Components Conformity to UL Standards**

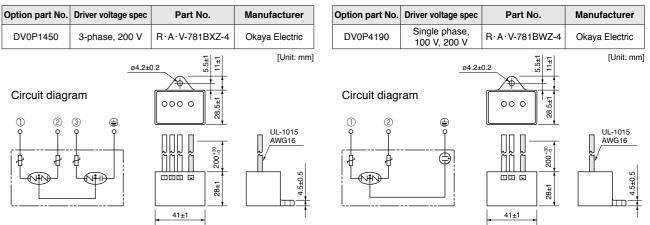
#### **Noise Filter**

When you install one noise filter in the power supply for multi axis application, consult with the manufacture of the filter.

Option part No.	Part No.	Manufact
DV0P4160	3SUP-HU10-ER-6	Okaya Electric Inc

#### Surge Absorber

Install a surge absorber at primary side of the noise filter.



#### <Remarks>

Remove this surge absorber when you perform dielectric test on the machine, or surge absorber might be damaged.

#### Ferrite core

Install ferrite core to all cables (Power line, motor cable, encoder cable, interface cable)

#### <Caution>

- Please fix a ferrite core to avoid excessive stress to the cable. · When using multiple axes, noise generated from each driver
- might influence driver and peripheral equipment and result to malfunction.

Please insert a ferrite core between driver and motor wires (U, V, W but grounding).

(Please refer to P.415 "Composition of Peripheral Components".)

#### Grounding

fail to prevent electrical shocks.

(2) Do not co-clamp to the ground terminals ((1)). Two ground terminals are provided.

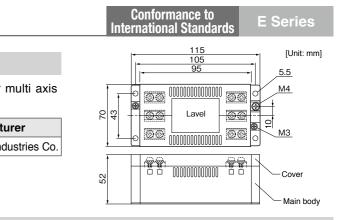
#### Ground-Fault Breaker

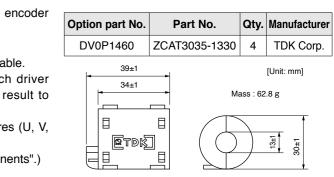
Install a ground fault curcuit braker (RCD) to the primary side of the power supply. Please use B-type (DC sensitive) ground fault circuit breakers defined in IEC60947-2, JISC8201-2-2.

# Conformity to UL Standards

Observe the following conditions of (1) and (2) to make the system conform to UL508C (File No. E164620). (1) Use the driver in an environment of Pollution Degree 2 or 1 prescribed in IEC60664-1. (e.g. Install in the control box

- with IP54 enclosure.)
- noise filter without fail.





(1) Connect the protective earth terminal of the driver  $((\underline{\perp}))$  and protective earth terminal of the control panel (PE) without

(2) Install a circuit breaker or fuse which are UL recognized (LISTED (1) marked) between the power supply and the

Series

Ш

A6

Series

A6N Series

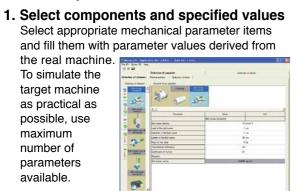
A6B

Series

### AC Servo Motor Capacity Selection Software

We have prepared PC software "M-SELECT" for AC servo motor capacity selection. Consult our sales representative or authorized distributor.

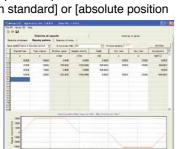
#### Three-step selection



#### 2. Enter operation pattern

Input the planned operation pattern that will contain [speed and rotation standard] or [absolute position

standard] with optional settings such as S-acceleration/de celeration.



#### 3. Select the motor

When the data required in step 1 and 2 above have been input, the software lists the motors,

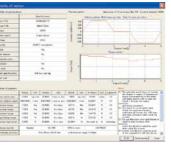
which will be appropriate to use with your machine. Select the motor that is best suitable for your machine application.



#### Details of motor

Once the motor is selected, specifications of the motor and driver, and details of reason for

determination are displayed and may be printed out.



#### **Option Selection Software for AC Servo Motor**

We have prepared PC software to enable fast, easy, and correct option selection, a complicated job without the software.

Two procedures for option selection		References and a rest		<b>8</b> 5
1. Selection according to driver series and motor type Suitable option can be selected by selecting driver series, motor type and motor specification through pulldown menu.	Driver series - Motor type -	Labore of years (and Versenty of Remove Constructions of the second Constructions of the second Co	Decise of pairs	Constitution of the second sec
	Motor specification -	Renard Fare		den (Riv 2) 2 det an halos (Han, edig 2) 3 Geneter 2 objectuationer 2 Frank - Sonance de datas mits
2. Entry of model number If you know the model number based on the servo motor and driver currently used, enter the model number.	Tab ——	Cardward Australia (Dr. 2001) Cardward Market D D D D D D D D D D D D D D D D D D D	national parts - - - - - - - - - - - - -	Descriptional of State States of Sta
Result of selection Tab sheet specific to each of option model numbers is used for easier identification of the desired option		Cale span (in 2) Cale or unaversation (in 2) Cale and (in 2) Cale and (in 2) Rest and (in 2) Rest and (in 2) Rest and (in 2) Rest and (in 2) Company (in 2)	Gausty   Gausty   Gausty	
* When you are using the motor capacity selection software, simply press [Option Selection] tab and		fetrate   10748	Generity [	2

Please download from our web site and use after install to the PC. https://industrial.panasonic.com/ww/products/motors-compressors/fa-motors/ac-servo-motors/minas-a5-panaterm

### Organization of the System of Units

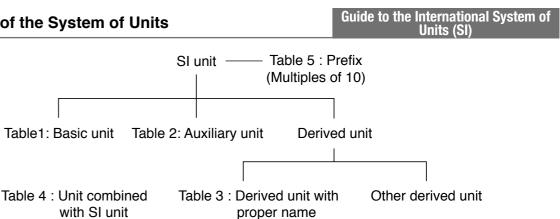


Table 4 : Unit combined with SI unit

### Table1: Basic unit

					-	
Quantity	Name of unit	Symbol of unit		Quantity	Name of unit	Symbol of unit
Length	meter	m		Plane angle	radian	rad
Weight	kilogram	kg		ialle allyle	Taulan	Tau
Time	second	s		Solid angle	steradian	sr
Current	ampere	A				
Thermodynamic temperature	kelvin	K				
Amount of substance	mol	mol				
Luminous intensity	candela	cd	]			

### Table 3: Major derived unit with proper name

Quantity	Name	Symbol of unit	Derivation from basic unit, auxiliary unit or other derived unit
Frequency	hertz	Hz	1 Hz = 1 s <sup>-1</sup>
Force	newton	N	1 N = 1 kg·m/s <sup>2</sup>
Pressure, Stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>
Energy, Work, Amount of heat	joule	J	1 J = 1 N⋅m
Amount of work, Work efficiency, Power, Electric power	watt	W	1 W = 1 J/s
Electric charge, Amount of electricity	coulomb	С	1 C = 1 A·s
Electric potential, Potential difference, Voltage, Electromotive force	volt	V	1 V = 1 J/C
Electrostatic capacity, Capacitance	farad	F	1 F = 1 C/V
Electric resistance	ohm	Ω	1 Ω = 1 V/A
Electric conductance	siemens	S	1 S = 1 Ω <sup>-1</sup>
Magnetic flux	weber	Wb	1 Wb = 1 V·s
Magnetic flux density, Magnetic induction	tesla	Т	1 T = 1 Wb/m <sup>2</sup>
Inductance	henry	Н	1 H = 1 Wb/A
Degree centigrade (Celsius)	degree centigrade (Celsius) / degree	°C	t °C = (t+273.15) K
Luminous flux	lumen	lm	1 lm = 1 cd·sr
Illuminance	lux	lx	1 lx = 1 lm/m <sup>2</sup>

### Table 4: Unit combined with SI unit

Quantity	Name	Name Symbol of unit		Prefix	
Quantity		-	Multiples powered to unit	Name	Symbol
	minute	min	10 <sup>18</sup>	exa	E
Time	hour	h	10 <sup>15</sup>	peta	Р
TITLE	noui		10 <sup>12</sup>	tera	Т
	day	d	10 <sup>°</sup>	giga	G
		•	10 <sup>6</sup>	mega	М
	degree	0	10 <sup>3</sup>	kilo	k
Diana angla	minuto		10 <sup>2</sup>	hecto	h
Plane angle minute		10	deca da	da	
	second	"	10 <sup>-1</sup>	deci	d
	0000114		10 <sup>-2</sup>	centi	С
Volume	liter	I, L	10 <sup>-3</sup>	milli	m
NA /	1	<u> </u>	10 <sup>-6</sup>	micro	μ
Weight	ton	t t	10 <sup>-9</sup>	nano	n
			10 <sup>-12</sup>	pico	р
			10 <sup>-15</sup>	femto	f
			10 <sup>-18</sup>	atto	а

### Table 2: Auxiliary unit

### Table 5: Prefix

A6B Series Special Order Product Ш

Series

A6 Series

A6N Series

Imformation

# Guide to the International System of Units (SI) Major Compatible Unit

Quantity	Symbol of conventional unit	Symbol of SI unit and compatible unit	Conversion value
Length	μ (micron)	μm	1 μ = 1 μm (micrometer)
Acceleration	Gal	m/s <sup>2</sup>	1 Gal = $10^{-2}$ m/s <sup>2</sup>
	G	m/s <sup>2</sup>	1 G = 9.80665 m/s <sup>2</sup>
Frequency	c/s, c	Hz	1 c/s = Hz
Revolving speed, Number of revolutions	rpm	s <sup>-1</sup> or min <sup>-1</sup> , r/min	1 rpm = 1 min <sup>-1</sup>
Weight	kgf	_	
Mass	_	kg	Same value
Weight flow rate	kgf/s	_	
Mass flow rate	_	kg/s	Same value
Specific weight	kgf/m <sup>3</sup>	_	
Density	_	kg/m <sup>3</sup>	Same value
Specific volume	m <sup>3</sup> /kgf	m <sup>3</sup> /kg	Same value
Load	kgf	N	1 kgf = 9.80665 N
Force	kgf	Ν	1 kgf = 9.80665 N
	dyn	Ν	1 dyn = 10 <sup>-5</sup> N
Moment of force	kgf∙m	N∙m	1 kgf⋅m = 9.806 N⋅m
Pressure	kgf/cm <sup>2</sup>	Pa, bar <sup>(1)</sup> or kgf/cm <sup>2</sup>	1 kgf/cm <sup>2</sup> = 9.80665 x 10 <sup>4</sup> Pa = 0.980665 bar
	at (Engineering atmospheric pressure)	Pa	1 at = 9.80665 x 10 <sup>4</sup> Pa
	atm (Atmospheric pressure)	Pa	1 atm = 1.01325 x 10 <sup>5</sup> Pa
	mH <sub>2</sub> O, mAq	Pa	1 mH <sub>2</sub> O = 9.80665 x 10 <sup>3</sup> Pa
	mmHg	Pa or mmHg (2)	1 mmHg = 133.322 Pa
	Torr	Pa	
Stress	kgf/mm <sup>2</sup>	Pa or N/m <sup>2</sup>	1 kgf/mm <sup>2</sup> = 9.80665 x 10 <sup>6</sup> Pa =9.80665 x 10 <sup>6</sup> N/m <sup>2</sup>
	kgf/cm <sup>2</sup>	Pa or N/m <sup>2</sup>	$1 \text{ kgf/cm}^2 = 9.80665 \text{ x } 10^4 \text{ Pa}$ $= 9.80665 \text{ x } 10^4 \text{ N/m}^2$
Elastic modulus	kgf/m <sup>2</sup>	Pa or N/m <sup>2</sup>	1 kgf/m <sup>2</sup> = 9.80665 Pa = 9.80665 N/m <sup>2</sup> 1 kgf/cm <sup>2</sup> = 9.80665 x 10 <sup>4</sup> N/m <sup>2</sup>
Energy, Work	kgf∙m	J (joule)	1 kgf⋅m = 9.80665 J
	erg	J	1 erg = 10 <sup>-7</sup> J
Work efficiency, Power	kgf∙m/s	W (watt)	1 kgf⋅m/s = 9.80665 W
	PS	W	1 PS = 0.7355 kW
Viscosity	PP	Pa∙s	1 P = 0.1 Pa·s
Kinetic viscosity	St	mm²/s	$10^{-2}$ St = 1 mm <sup>2</sup> /s
Thermodynamic temperature	К	K (kelvin)	1 K = 1 K
Temperature interval	deg	K <sup>(3)</sup>	1 deg = 1 K
Amount of heat	cal	J	1 cal = 4.18605 J
Heat capacity	cal/°C	J/K <sup>(3)</sup>	1 cal/°C = 4.18605 J/K
Specific heat, Specific heat capacity	cal/ (kgf⋅°C)	cal/ (kgf·K) <sup>(3)</sup>	1 cal/ (kgf⋅°C) = 4.18605 J/ (kg⋅K)
Entropy	cal/K	J/K	1 cal/K = 4.18605 J/K
Specific entropy	cal/ (kgf⋅K)	J/(kg·K)	1 cal/ (kgf·K) = 4.18605 J/ (kg·K)
Internal energy (Enthalpy)	cal	J	1 cal = 4.18605 J
Specific internal energy (Specific enthalpy)	cal/kgf	J/kg	1 cal/kgf = 4.18605 J/kg
Heat flux	cal/h	W	1 kcal/h = 1.16279 W
Heat flux density	cal/ (h·m²)	W/m <sup>2</sup>	1 kcal/ (h⋅m²) = 1.16279 W/m²
Thermal conductivity	cal/ (h⋅m⋅°C)	W/ (m·K) <sup>(3)</sup>	1 kcal/ (h⋅m⋅°C) = 1.16279 W/ (m⋅K)
Coefficient of thermal conductivity	cal/ (h⋅m²⋅°C)	W/ (m <sup>2</sup> ·K) <sup>(3)</sup>	1 kcal/ (h⋅m²⋅°C) = 1.16279 W/ (m²⋅K)
Intensity of magnetic field	Oe	A/m	1 Oe = 10 <sup>3</sup> / (4π) A/m
Magnetic flux	Mx	Wb (weber)	$1 \text{ Mx} = 10^{-8} \text{ Wb}$
Magnetic flux density	Gs,G	T (tesla)	1 Gs = 10 <sup>-4</sup> T

#### Note

(1) Applicable to liquid pressure. Also applicable to atmospheric pressure of meteorological data, when "bar" is used in international standard. (2) Applicable to scale or indication of blood pressure manometers.

(3) "°C" can be substituted for "K".

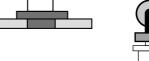
#### Flow of Motor Selection

#### Flow of Motor Selection

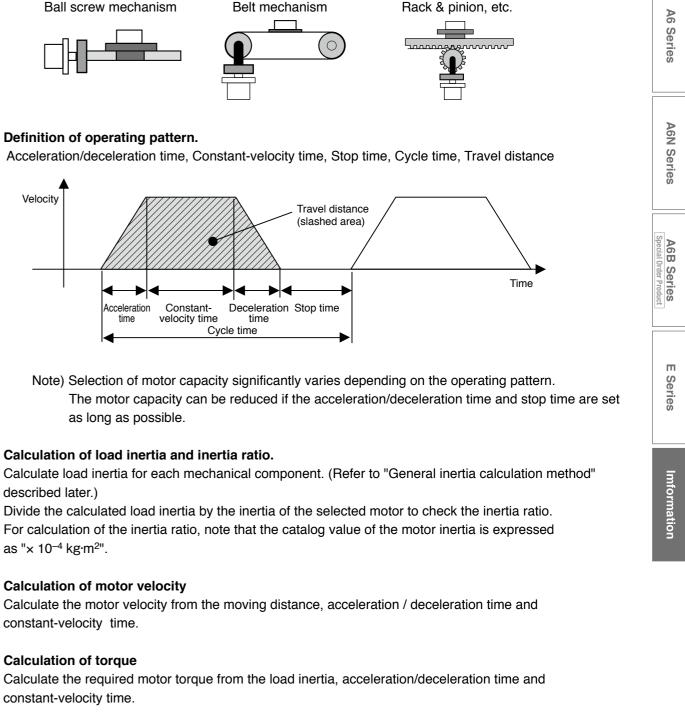
1. Definition of mechanism to be driven by motor.

#### <Typical mechanism>





#### 2. Definition of operating pattern.



#### 3. Calculation of load inertia and inertia ratio.

described later.)

as "× 10<sup>-4</sup> kg·m<sup>2</sup>".

#### 4. Calculation of motor velocity

constant-velocity time.

#### 5. Calculation of torque

constant-velocity time.

#### 6. Calculation of motor

Select a motor that meets the above 3 to 5 requirements.

### **Selecting Motor Capacity**

Define details of individual mechanical components (ball screw length, lead and pulley diameters, etc.)

#### **Description on the Items Related to Motor Selection**

#### 1. Torque

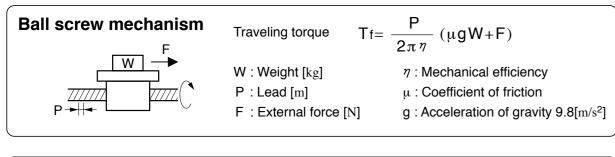
#### (1) Peak torque

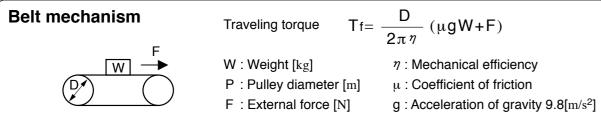
Indicate the maximum torque that the motor requires during operation (mainly in acceleration and deceleration steps). The reference value is 80% or less of the maximum motor torgue. If the torgue is a negative value, a regenerative discharge resistor may be required.

#### (2) Traveling torque, Stop holding torque

Indicates the torque that the motor requires for a long time. The reference value is 80% or less of the rated motor torque. If the torque is a negative value, a regenerative discharge resistor may be required.

### Traveling torque calculation formula for each mechanism





#### (3) Effective torque

Indicates a root-mean-square value of the total torque required for running and stopping the motor per unit time. The reference value is approx. 80% or less of the rated motor torque.

$$Trms = \sqrt{\frac{Ta^2 x ta + Tf^2 x tb + Td^2 x td}{tc}}$$

- Ta: Acceleration torque [N·m]
- Tf : Traveling torque [N·m]
- Td : Deceleration torque [N·m]
- ta: Acceleration time [s] tb: Constant-velocity time [s] td: Deceleration time [s]

tc : Cycle time [s] (Run time + Stop time)

#### 2. Motor velocity

#### Maximum velocity

Maximum velocity of motor in operation: The reference value is the rated velocity or lower value. When the motor runs at the maximum velocity, you must pay attention to the motor torgue and temperature rise. For actual calculation of motor velocity, see "Example of motor selection" described later.

#### 3. Inertia and inertia ratio

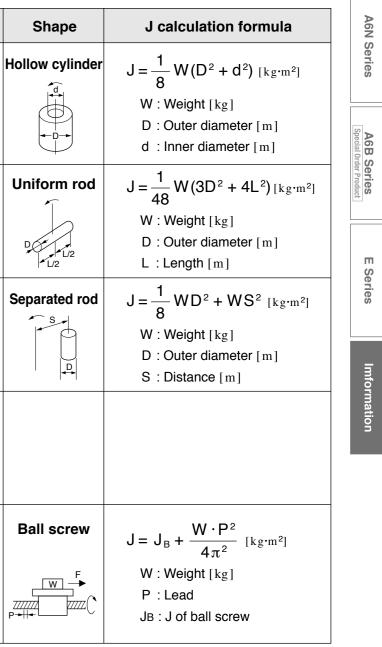
Inertia is like the force to retain the current moving condition. Inertia ratio is calculated by dividing load inertia by rotor inertia. Generally, for motors with 750 W or lower capacity, the inertia ratio should be "20" or less. For motors with 1000 W or higher capacity, the inertia ratio should be "10" or less. If you need quicker response, a lower inertia ratio is required. For example, when the motor takes several seconds in acceleration step, the inertia ratio can be further \increased.

#### General inertia calculation method

Shape	J calculation formula
Disk	$J = \frac{1}{8} WD^2 [kg \cdot m^2]$
	W : Weight [kg]
	D : Outer diameter [m]
Prism	$J = \frac{1}{12} W (a^2 + b^2) [kg \cdot m^2]$
	W : Weight [kg]
ab	a, b, c : Side length [m]
Straight rod	$J = \frac{1}{3} WL^2 [kg \cdot m^2]$
	W : Weight [kg]
	L : Length [m]
Reduction gear	Inertia on shaft "a"
	$J = J_1 + (\frac{n_2}{n_1})^2 J_{2[kg \cdot m^2]}$
$ \begin{array}{c c} J 1 & n_1 \\ \hline  & n_2 & J_2 \\ \hline  & b & J_2 \end{array} $	$n_1$ : A rotational speed of a shaft [r/min] $n_2$ : A rotational speed of b shaft [r/min]
Conveyor	$J = \frac{1}{4} WD^2 [kg \cdot m^2]$
	W : Workpiece weight on conveyor $[kg]$
	D : Drum diameter [m]
	* Excluding drum J

If weight (W [kg]) is unknown, calculate it with the following formula: Weight W[kg]=Density p [kg/m<sup>3</sup>] x Volume V[m<sup>3</sup>] Density of each material Iron  $\rho = 7.9 \times 10^3 \, [\text{kg/m}^3]$ Brass  $\rho = 8.5 \times 10^3 \, [\text{kg/m}^3]$ 

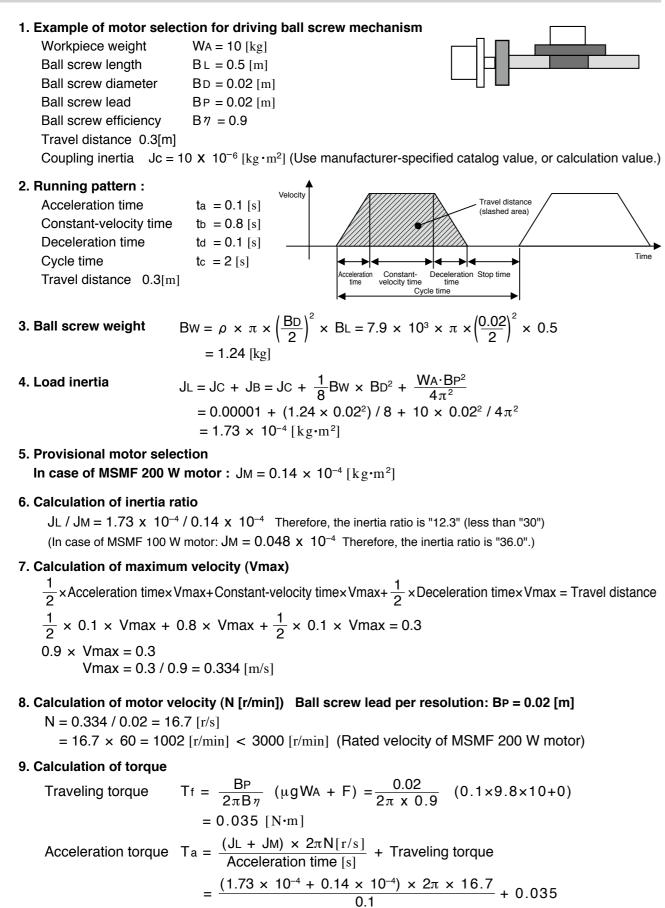
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A6 Series

Aluminum  $\rho$  =2.8 x 10<sup>3</sup> [kg/m<sup>3</sup>]

#### **To Drive Ball Screw Mechanism**



= 0.196 + 0.035 = 0.231 [N·m]

Deceleration torque 
$$T_d = \frac{(J_L + J_M) \times 2\pi}{Deceleration tim}$$
  
=  $\frac{(1.73 \times 10^{-4} + 10^{-4})}{1000}$ 

#### 10. Verification of maximum torque

#### 11. Verification of effective torque

$$Trms = \sqrt{\frac{Ta^{2} \times ta + Tf^{2} \times tb + Td^{2} \times td}{tc}}$$
$$= \sqrt{\frac{0.231^{2} \times 0.1 + 0.035^{2} \times 0.8}{2}}$$

12. Judging from the inertia ratio calculated above, selection of 200 W motor is preferable, although the torgue margin is significantly large.

#### Example of Motor Selection

#### Example of motor selection for timing belt mechanism

1.Mechanism	Workpiece weight	WA = 2[kg]
	Pulley diameter	PD = 0.05[
	Pulley weight	WP= 0.5[k
	Mechanical efficiency	$B\eta = 0.8$
	Coupling inertia	Jc = 0 (Dir
	Belt mechanism inertia	JB
	Pullev inertia	JP

#### 2. Running pattern

•••		
Acceleration time	ta = 0.1[s]	Velocity
Constant-velocity time	tb = 0.8[s]	
Deceleration time	td = 0.1[s]	
Cycle time	tc = 2[s]	
Travel distance 1[m]		

#### 3. Load inertia JL = JC + JB + JP

$$= JC + \frac{1}{4}WA \times PD^{2} + \frac{1}{8}WP \times PD^{2} \times 2$$
$$= 0 + \frac{1}{4} \times 2 \times 0.05^{2} + \frac{1}{8} \times 0.5 \times 0.05^{2}$$
$$= 0.00156 = 15.6 \times 10^{-4} [kg \cdot m^{2}]$$

4. Provisional motor selection In case of MSMF 750 W motor :  $J_M = 0.96 \times 10^{-4} [kg \cdot m^2]$ 

#### 5. Calculation of inertia ratio

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**Selecting Motor Capacity** 

A6

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A6B Series Special Order Produc

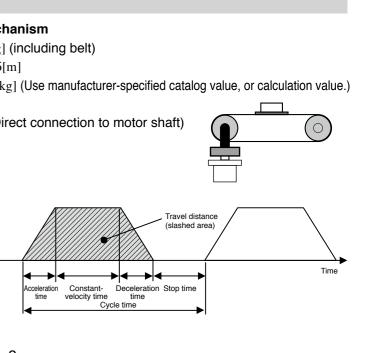
Series

 $\frac{\pi N[r/s]}{\pi N[r/s]}$  – Traveling torque  $\frac{0.14 \times 10^{-4} \times 2\pi \times 16.7}{0.1} - 0.035$  $= 0.196 - 0.035 = 0.161 [N \cdot m]$ 

Acceleration torque =  $T_a = 0.231 [N \cdot m] < 1.91 [N \cdot m]$  (Maximum torque of MSMF 200 W motor)

 $+ 0.161^2 \times 0.1$ 

=  $0.067 [N \cdot m] < 0.64 [N \cdot m]$  (Rated torque of MSMF 200 W motor)



 $05^2 \times 2$ 

JL / JM =  $15.6 \times 10^{-4}$  /  $0.96 \times 10^{-4}$  Therefore, the inertia ratio is "16.3" (less than "20")

	Reque	st for m	notor select			
1. Driven mechanism and running data						
	el distance of the work load ne cycle	<i>ℓ</i> 1:	mm			
2) Cycle	e time	to:	S			
(Fill i	n items 3) and 4) if required.	)				
3) Acce	leration time	ta:	S			
4) Dece	leration time	td:	S			
5) Stop	ping time	ts:	S			
6) Max.	velocity	V:	mm/s			
7) Exter	nal force	F:	Ν			
8) Posit work	ioning accuracy of the load	±	mm			
	weight of the work load he table	W <sub>A</sub> :	kg			
10) Powe	er supply voltage		V			
11) Diam	eter of the ball screw		mm			
12) Total	length of the ball		mm			
13) Lead	of the ball screw		mm			

#### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

#### 6. Calculation of maximum velocity (Vmax)

-	$\frac{1}{2} \times \text{Deceleration time} \times \text{Vmax} + \frac{1}{2} \times \text{Deceleration time} \times \text{Vmax} = \text{Travel distance}$ 0.8 × Vmax + $\frac{1}{2}$ × 0.1 × Vmax = 1
0.9 × Vmax = 1 Vmax = 1 / 0.9	= 1.111[m/s]
N = 1.111 / 0.157 = 7.0	$y: \pi \times PD = 0.157[m]$
8. Calculation of torque	
Traveling torque	$Tf = \frac{PD}{2\eta} (\mu gWA + F) = \frac{0.05}{2 \times 0.8} (0.1 \times 9.8 \times 3 + 0)$
	= 0.061[N·m]
Acceleration torque	$T_{a} = \frac{(J_{L} + J_{M}) \times 2\pi N[r/s]}{\text{Acceleration time}[s]} + \text{Traveling torque}$ $= \frac{(15.6 \times 10^{-4} + 0.96 \times 10^{-4}) \times 2\pi \times 7.08}{0.4} + 0.061$

$$= \frac{(10.6 \times 10^{-1} + 0.06 \times 10^{-1}) \times 2\pi \times 1.00}{0.1} + 0.061$$
  
= 0.736 + 0.061 = 0.797[N·m]  
Deceleration torque  
$$= \frac{(JL + JM) \times 2\pi N[r/s]}{Deceleration time[s]} - Traveling torque$$
$$= \frac{(15.6 \times 10^{-4} + 0.96 \times 10^{-4}) \times 2\pi \times 7.08}{0.000} - 0.061$$

 $= 0.736 - 0.061 = 0.675[N \cdot m]$ 

#### 9. Verification of maximum torque

 $Ta = 0.797[N \cdot m] < 7.1[N \cdot m]$  (Maximum torque of MSMF 750 W motor) Acceleration torque

0.1

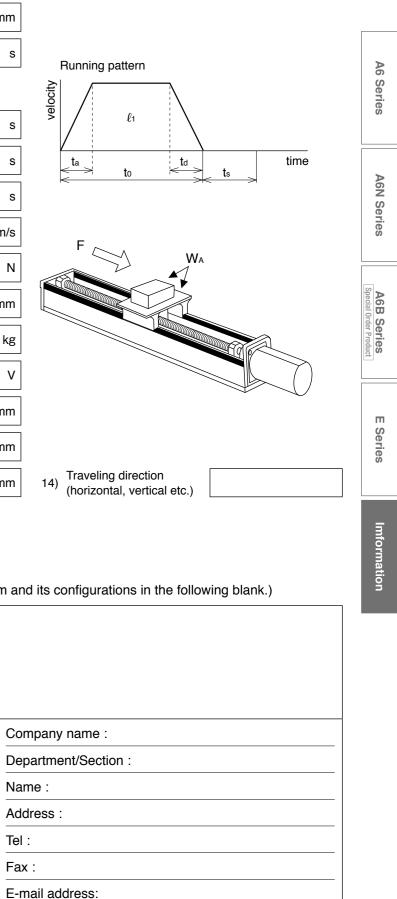
#### 10. Verification of effective torque

Trms = 
$$\sqrt{\frac{Ta^2 \times ta + Tf^2 \times tb + Td^2 \times td}{tc}}$$
  
=  $\sqrt{\frac{0.797^2 \times 0.1 + 0.061^2 \times 0.8 + 0.675^2 \times 0.1}{2}}$   
= 0.237 [N·m] < 2.4 [N·m] (Rated torque of MSMF 750 W motor)

11. Judging from the above calculation result, selection of MSMF 750W motor is acceptable.

# **Request Sheet for Motor Selection**

### ction I : Ball screw drive



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# **Request Sheet for Motor Selection**

### Request for motor selection II : Timing pulley + Ball screw drive

1. I	Driven mechanism and	I running data		Motor side	Ball screw side
1)	Travel distance of the work load per one cycle	ℓ <sub>1</sub> : mm	15) Diameter of the pulley	D <sub>1</sub> : mm	D <sub>2</sub> : mm
2)	Cycle time	to: s	16) Weight of the pulley	W <sub>1</sub> : kg	W <sub>2</sub> : kg
(Fill in items 3) and 4) if required.)		(or item 17) and 18))			
3)	Acceleration time	ta: S	17) Width of the pulley	L1:	mm
4)	Deceleration time	td: s	18) Material of the pulley		
5)	Stopping time	ts: S	19) Weight of the belt	W <sub>M</sub> :	kg
6)	Max. velocity	V: mm/s	Running pattern		
7)	External force	F: N		$\backslash$	
8)	Positioning accuracy of the work load	± mm	√elocity	$\backslash$	
9)	Total weight of the work load and the table	W <sub>A</sub> : kg	ta to	td ts	time
10)	Power supply voltage	V	F	WA	
11)	Diameter of the ball screw	mm			
12)	Total length of the ball screw	mm			
13)	Lead of the ball screw	mm			D2(W2)
14)	Traveling direction (horizontal, vertical etc.)		Lı	D1(W1)	Ŵм
			- /		

#### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

#### 1. Driven mechanism and running data Travel distance of the work load 1) $\ell_1$ : per one cycle 2) Cycle time to: (Fill in items 3) and 4) if required.) 3) Acceleration time ta: 4) Deceleration time td: 5) Stopping time ts: V: 6) Max. velocity F: 7) External force Positioning accuracy of the 8) ± work load W<sub>A</sub>: 9) Total weight of the work load 10) Power supply voltage W<sub>M</sub>: 11) Weight of the belt 12) Diameter of the driving pulley D<sub>1</sub>:

13) Total weight of the pulley

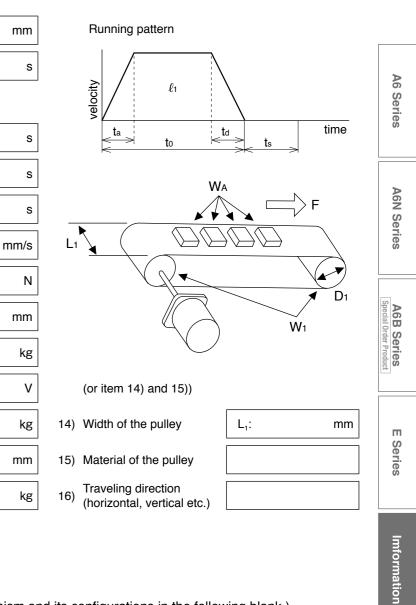
W<sub>1</sub>:

Company r	name :	
Departmen	t/Section :	
Name :		
Address :		
Tel :		
Fax :		
E-mail add	ress:	

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Request for motor selection III : Belt drive

# **Request Sheet for Motor Selection**



#### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

## **Request Sheet for Motor Selection**

#### Request for motor selection $\mathbb{N}$ : Timing pulley + Belt drive

#### 1. Driven mechanism and running data Motor side Belt side 1) Travel distance of the work load per one cycle mm | D₄: $\ell_1$ : 16) Diameter of the pulley D<sub>3</sub>: mm 2) Cycle time to: 17) Weight of the pulley W<sub>3</sub>: kg W<sub>4</sub>: s (Fill in items 3) and 4) if required.) (or item 18) and 19)) 18) Width of the pulley L2: 3) Acceleration time ta: mm s 4) Deceleration time td: 19) Material of the pulley s $W_L$ : 20) Weight of the belt 5) Stopping time ts: kg s Traveling direction V: 6) Max. velocity mm/s 21) (horizontal, vertical etc.) Running pattern 7) External force F: Ν Positioning accuracy of the 8) ± mm work load ocity 9) Total weight of the work load W<sub>A</sub>: kg td ta time V 10) Power supply voltage W<sub>M</sub>: 11) Weight of motor side belt kg Motor side Belt side 12) Diameter of the W D<sub>1</sub>: mm D<sub>2</sub>: mm pulley D2(W2) Weight of the D4(W4) W<sub>1</sub>: 13) kg W<sub>2</sub>: kg pullev ۱۸/ (or item 14) and 15)) D3(W3) 14) Width of the belt L1: mm 15) Material of the pulley D1(W1)

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

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mm

kg

#### 1. Driven mechanism and running data

1)

2)

3)

4)

5)

6)

7)

8)

9)

10)

11)

12)

13)

Travel distance of the work load per one cycle	d <sub>1</sub> :	deg
Cycle time	to:	S
(Fill in items 3) and 4) if requi	red.)	
Acceleration time	ta:	S
Deceleration time	td:	S
Stopping time	ts:	S
Max. rotational speed of the table	v:	deg/s
(or)	<b>V</b> :	r/s
Positioning accuracy of the work load	±	deg
Weight of one work load	W <sub>A</sub> :	kg
Driving radius of the center of gravity of the work	R <sub>1</sub> :	mm
Diameter of the table	D <sub>1</sub> :	mm
Mass of the table	<b>W</b> <sub>1</sub> :	kg
Diameter of the table support	<b>T</b> <sub>1</sub> :	mm
Power supply voltage		V

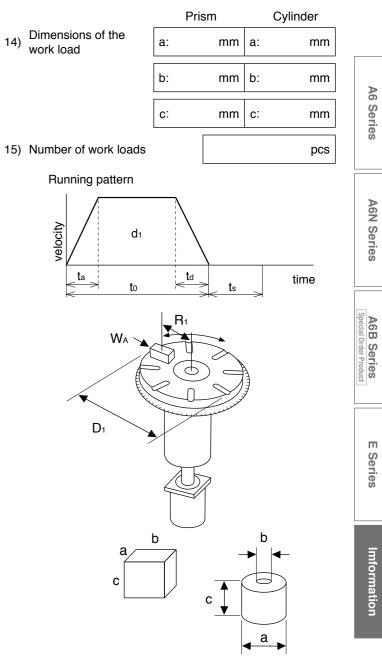
2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :	
Department/Section :	
Name :	
Address :	
Tel :	
Fax :	
E-mail address:	

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## **Request Sheet for Motor Selection**

## Request for motor selection V : Turntable drive



# **Request Sheet for Motor Selection**

### Request for motor selection VI : Timing pulley + Turntable drive

#### 1. Driven mechanism and running data

1. [	Driven mechanism an	id rur	nning data			Moto	r side	Turn	table side
1)	Travel distance of the work load per one cycle	d <sub>1</sub> :	deg	16)	Diameter of the pulley	D <sub>2</sub> :	mm	D <sub>3</sub> :	mm
2)	Cycle time	to:	S	17)	Weight of the pulley	W <sub>2</sub> :	kg	W <sub>3</sub> :	kg
	(Fill in items 3) and 4) if requi	red.)			(or item 18) and 19))				
3)	Acceleration time	ta:	S	18)	Width of the pulley		L1:		mm
4)	Deceleration time	td:	S	19)	Material of the pulley				
5)	Stopping time	ts:	S	20)	Weight of the belt		W <sub>M</sub> :		kg
6)	Max. rotational speed of the table	v:	deg/s		Running pattern				
	(or)	V:	r/s						
7)	Positioning accuracy of the work load	±	deg		d1		$\backslash$		
8)	Weight of one work load	W <sub>A</sub> :	kg	]	ta to	< td	≥ ts	_>	time
9)	Driving radius of the center of gravity of the work	R <sub>1</sub> :	mm				<b>R</b> 1		
10)	Diameter of the table	D <sub>1</sub> :	mm		V	NA			
11)	Mass of the table	<b>W</b> <sub>1</sub> :	kg	]	Υ.	D1		$\sum$	
12)	Diameter of the table support	T <sub>1</sub> :	mm						
13)	Power supply voltage		V		D2(W2)		H		
	(Prisr	n)	(Cylinder)		L1				D3(W3)
14)	Dimension of the work load	mm	a: mm			٦v	Vм		b
	b:	mm	b: mm	]	a /	b	_	<b>→</b>	
	<b>c</b> :	mm	c: mm		c		a		
15)	Number of work loads		pcs					-	C

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

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#### 1. Driven mechanism and running data

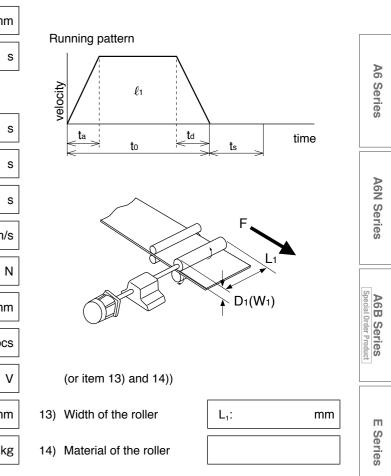
		U	
1)	Travel distance of the work load per one cycle	ℓ <sub>1</sub> :	mn
2)	Cycle time	to:	:
	(Fill in items 3) and 4) if required.)		
3)	Acceleration time	ta:	:
4)	Deceleration time	td:	:
5)	Stopping time	ts:	:
6)	Max. velocity	<b>v</b> :	mm/s
7)	External pulling force	F:	١
8)	Positioning accuracy of the work load	±	mn
9)	Number of rollers		pc
10)	Power supply voltage		١
11)	Diameter of the roller	D <sub>1</sub> :	mn
12)	Mass of the roller	W <sub>1</sub> :	k

#### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:
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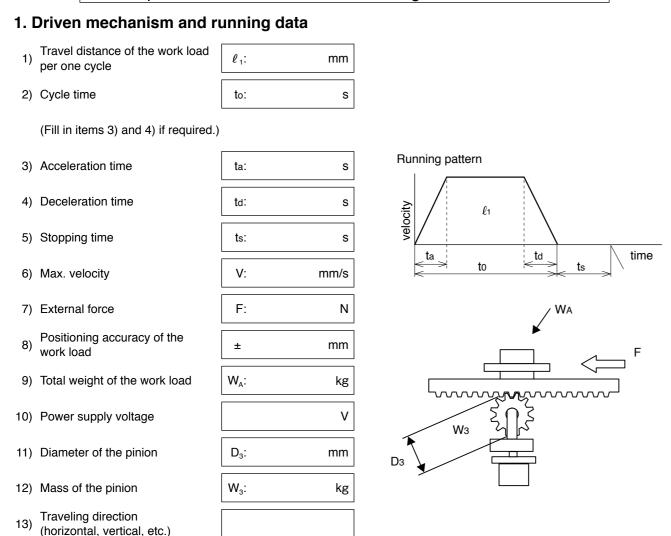
# **Request Sheet for Motor Selection**

# Request for motor selection VII : Roller feed drive



# **Request Sheet for Motor Selection**

#### Request for motor selection VII: Driving with Rack & Pinion



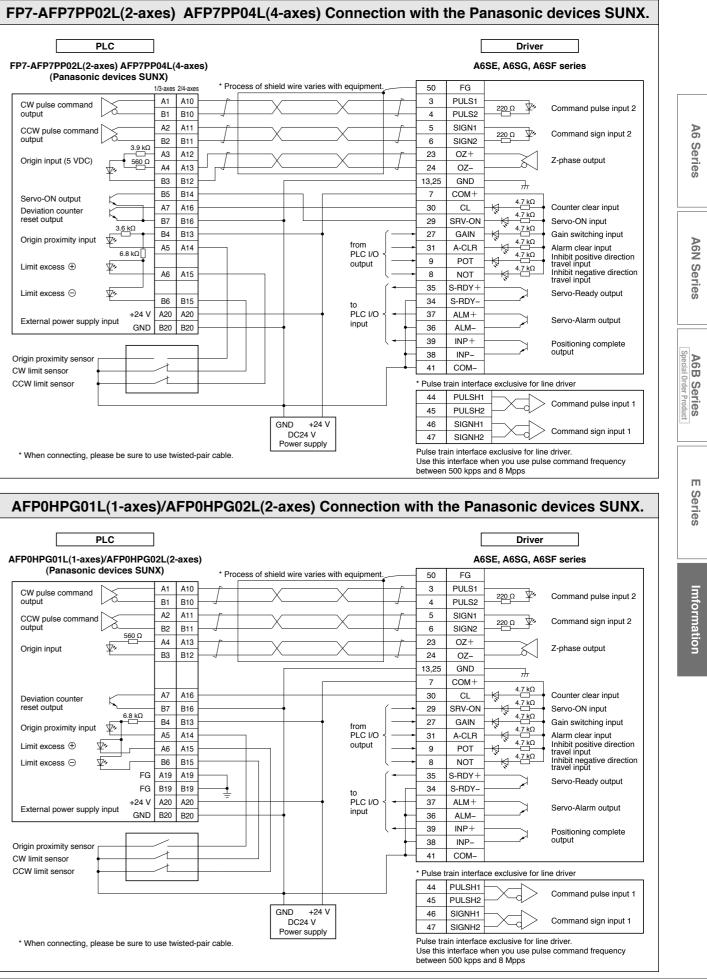
#### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

ſ	
	Company name :
	Department/Section :
	Name :
	Address :
	Tel :
	Fax :
	E-mail address:

# PLC

1/3-axes A1 | A10 CW pulse command B1 B10 A2 A11 CCW pulse comman output B2 B11 3.9 kΩ A3 A12 Origin input (5 VDC) • 560 Ω A4 A13 B3 B12 B5 B14 Servo-ON output A7 A16 Deviation counter reset output B7 B16 3.6 kΩ B4 B13 Origin proximity input A5 A14 6.8 kΩ Limit excess (+) A6 A15 Limit excess  $\bigcirc$ \$ B6 B15 +24 V A20 A20 External power supply input GND | B20 | B20 Origin proximity sensor CW limit sensor CCW limit sensor DC24 V

**Connection Between Driver and Controller** 



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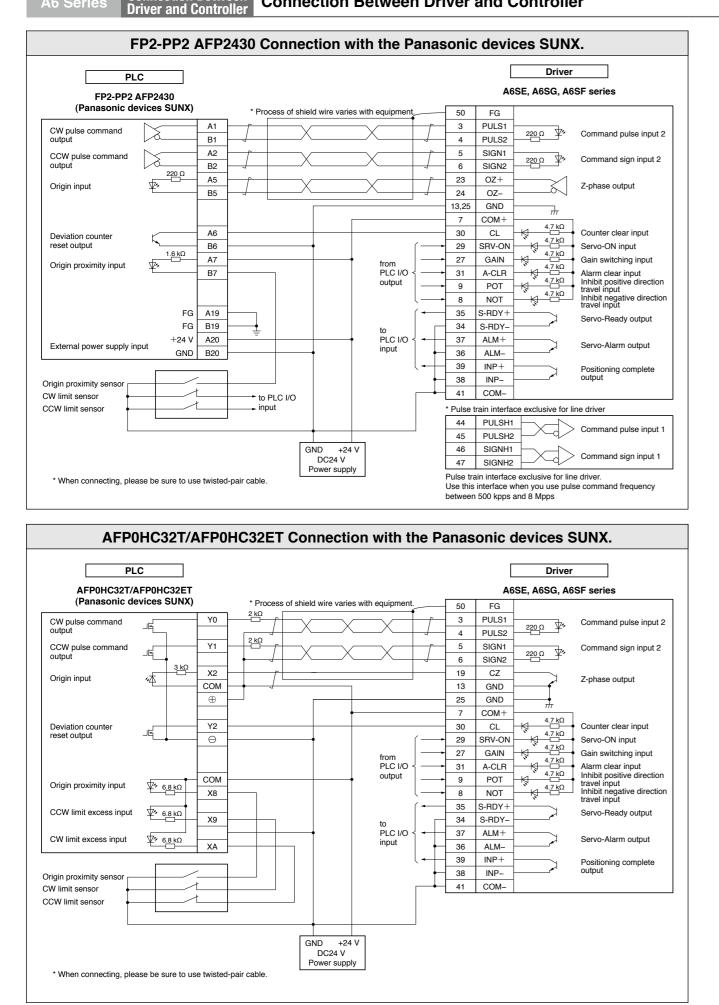
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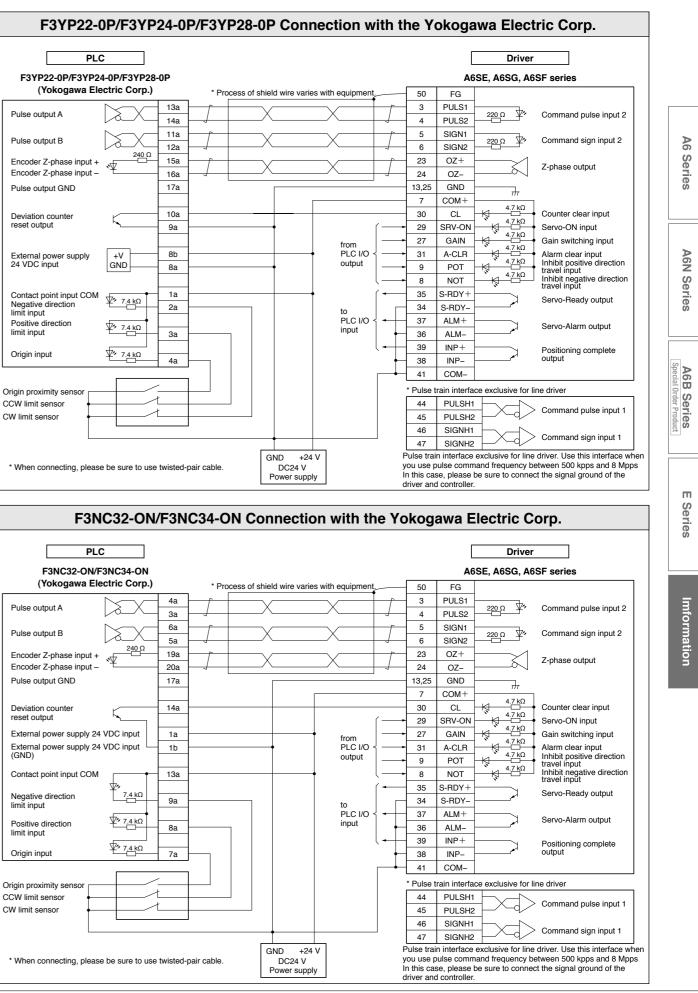
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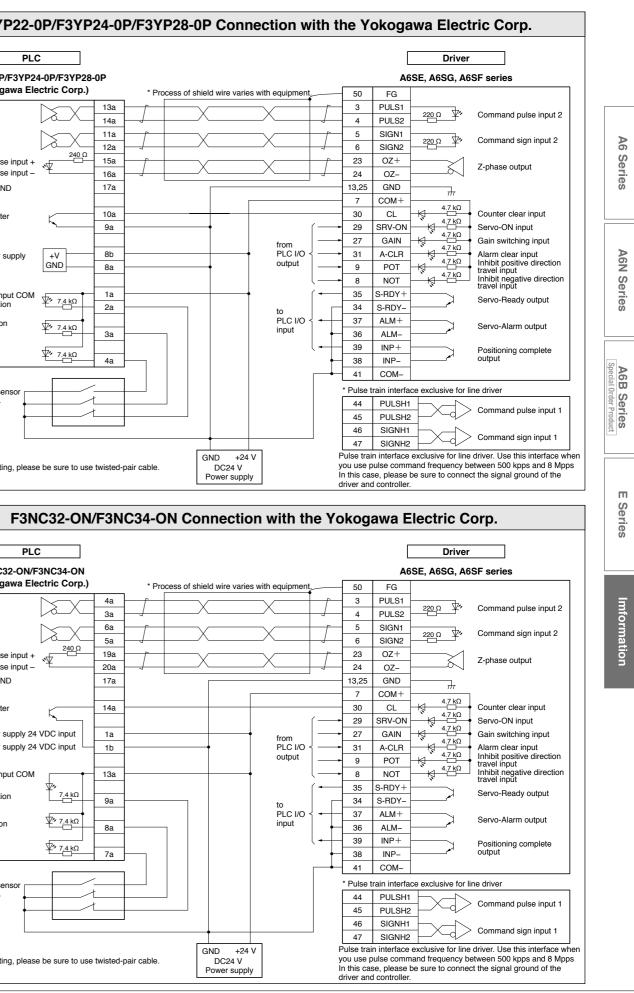
# Connection Between Driver and Controller

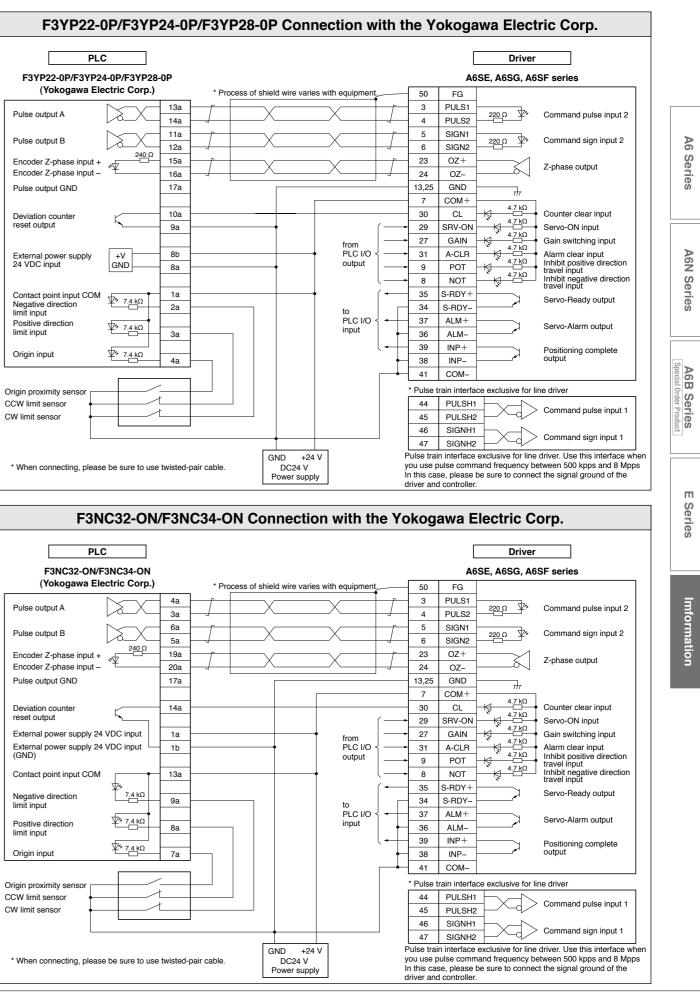
A6 Series

A6 Series

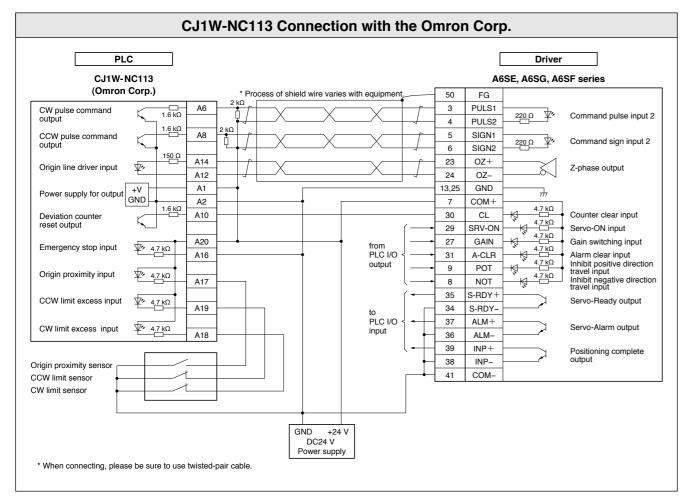


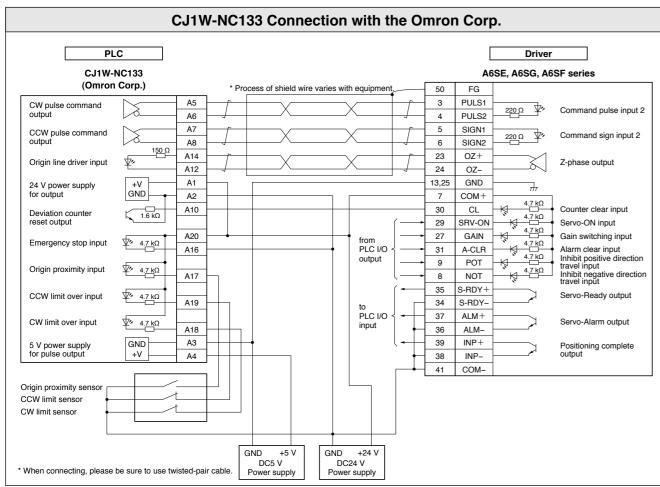


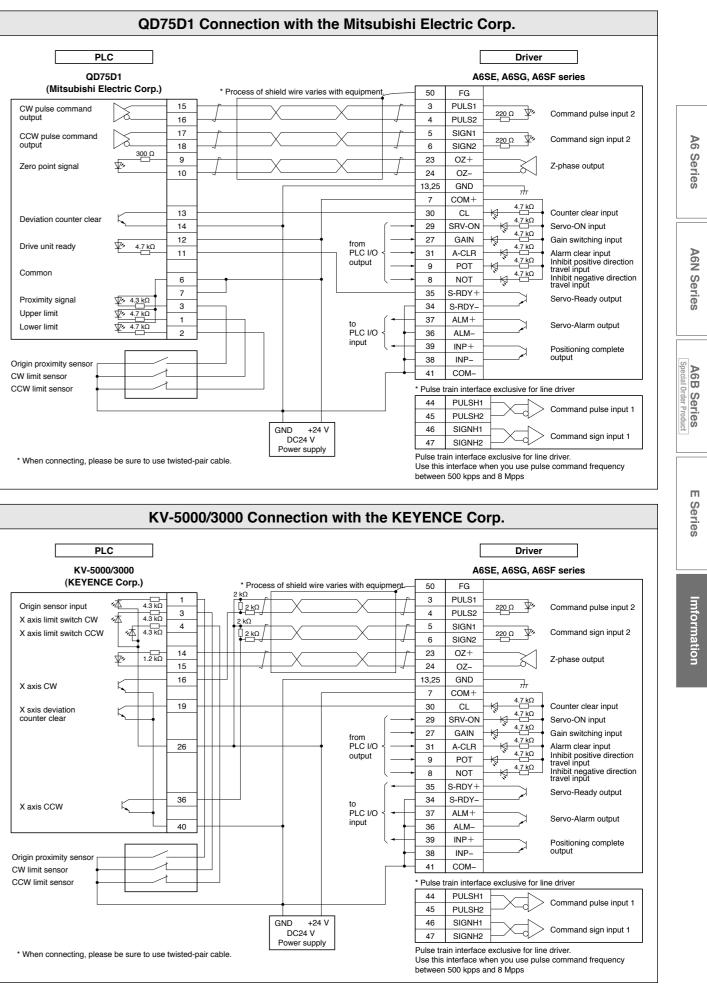


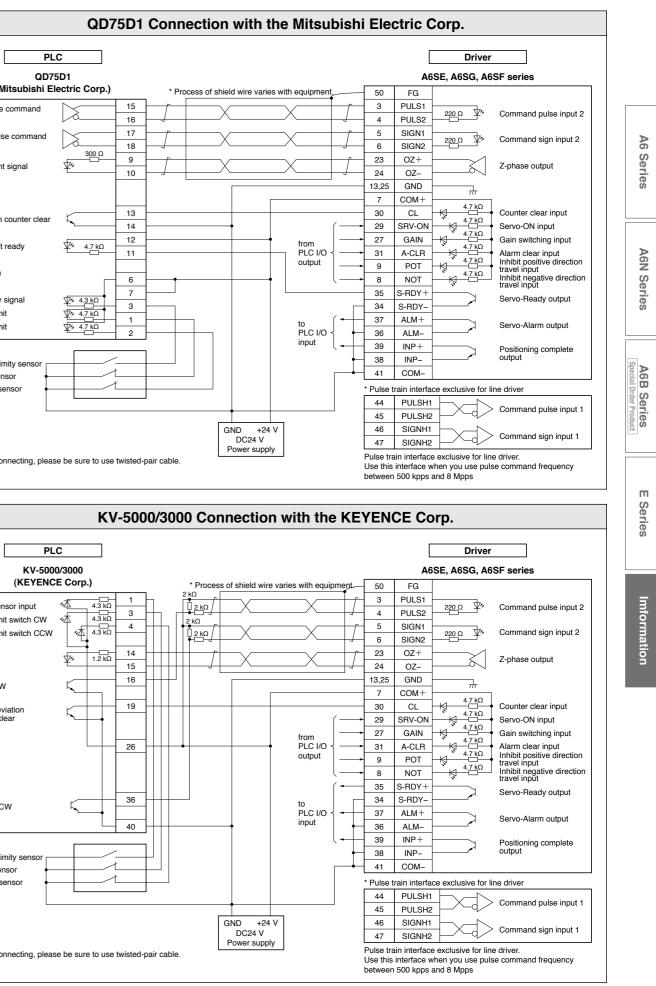


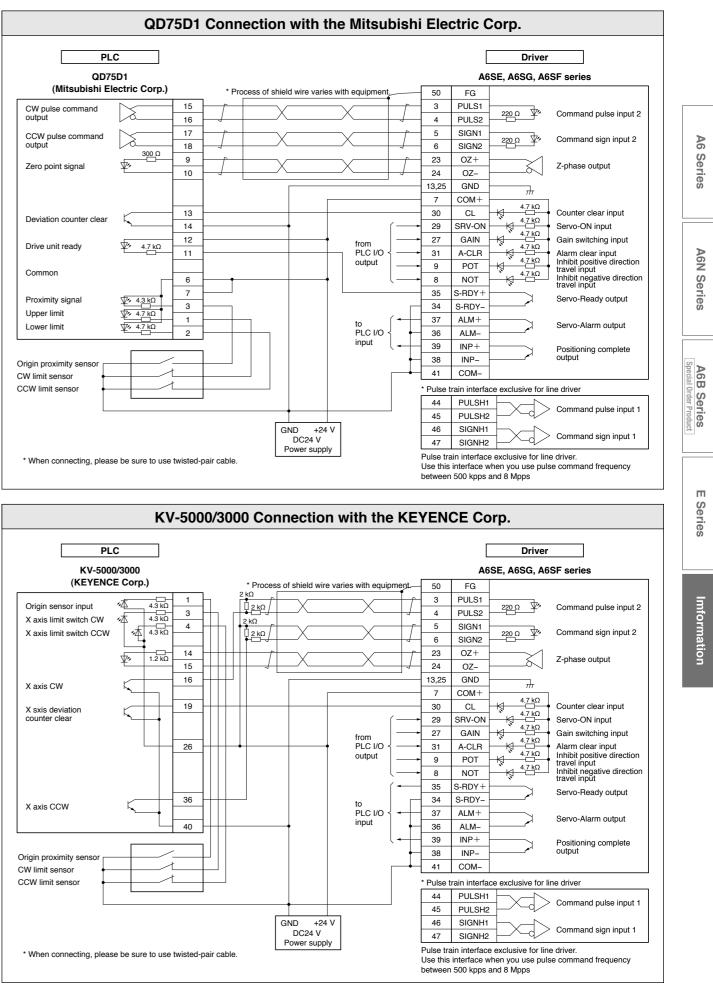
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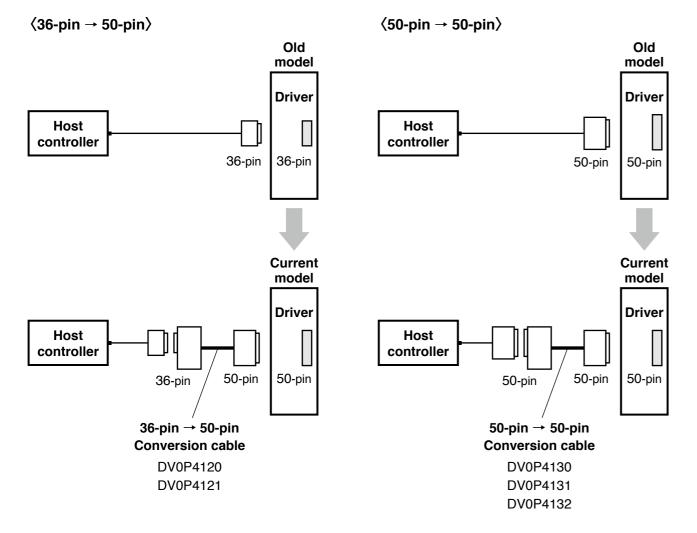
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A6 Series

For easier replacement of old driver (MINAS X/XX/V series) with A6 series, use the interface conversion connector.



When selecting the cable, refer to the table below because the part number of the cable is specific to the control mode of the old model.

Old model	Old model Control mode		Conversion wiring table
X series XX series	Position/velocity control	DV0P4120	P.440
(36-pin)	Torque control	DV0P4121	r.440
	Position control	DV0P4130	P.441
V series (50-pin)	Velocity control	DV0P4131	r.441
	Torque control	DV0P4132	P.442

\* For external dimensions, refer to P.322.

#### **Conversion Wiring Table**

	DV0P4120				DV0P4121			
Pin No. on Old Model	Pin No. on Current Model	Signal Name	Symbol	Pin No. on Current Model	Signal Name	Symbol		
1	23	Z-phase output	OZ+	23	Z-phase output	OZ+		
2	24	Z-phase output	OZ-	24	Z-phase output	OZ-		
3	13	Signal ground	GND	13	Signal ground	GND		
4	19	Z-phase output	CZ	19	Z-phase output	CZ		
5	4	Command pulse input 2	PULS2	4	Command pulse input 2	PULS2		
6	3	Command pulse input 2	PULS1	3	Command pulse input 2	PULS1		
7	6	Command pulse sign input 2	SIGN2	6	Command pulse sign input 2	SIGN2		
8	5	Command pulse sign input 2	SIGN1	5	Command pulse sign input 2	SIGN1		
9	33	Command pulse inhibition input	INH	33	Command pulse inhibition input	INH		
10	26	Speed zero clamp input	ZEROSPD	26	Speed zero clamp input	ZEROSPD		
11	7	Power supply for control signal (+)	COM+	7	Power supply for control signal (+)	COM+		
12	29	Servo-ON input	SRV-ON	29	Servo-ON input	SRV-ON		
13	30	Deviation counter clear input	CL	30	Deviation counter clear input	CL		
14	14	Speed command input	SPR	NC				
15	15	Signal ground	GND	15	Signal ground	GND		
16	43	Speed monitor output	SP	43	Speed monitor output	SP		
17	25	Signal ground	GND	25	Signal ground	GND		
18	50	Frame ground	FG	50	Frame ground	FG		
19	21	A-phase output	OA+	21	A-phase output	OA+		
20	22	A-phase output	OA-	22	A-phase output	OA-		
21	48	B-phase output	OB+	48	B-phase output	OB+		
22	49	B-phase output	OB-	49	B-phase output	OB-		
23	NC			NC				
24	NC			NC				
25	39	Positioning complete output Speed arrival output	COIN+ AT-SPEED+	39	Positioning complete output Speed arrival output	COIN+ AT-SPEED		
26	37	Servo-Alarm output	ALM+	37	Servo-Alarm output	ALM+		
27	35	Servo-Ready output	S-RDY+	35	Servo-Ready output	S-RDY+		
	34	Positioning complete output (-) Speed arrival output (-)	COIN- AT-SPEED-	34	Positioning complete output (-) Speed arrival output (-)	COIN– AT-SPEED		
28	36	Servo-Alarm output (-)	ALM-	36	Servo-Alarm output (-)	ALM–		
	38	Servo-Ready output (-)	S-RDY-	38	Servo-Ready output (-)	S-RDY-		
	41	Power supply for control signal (-)	COM-	41	Power supply for control signal (-)	COM-		
29	8	CW over-travel inhibit input	CWL	8	CW over-travel inhibit input	CWL		
30	9	CCW over-travel inhibit input	CCWL	9	CCW over-travel inhibit input	CCWL		
31	31	Alarm clear input	A-CLR	31	Alarm clear input	A-CLR		
32	32	Control mode switching input	C-MODE	32	Control mode switching input	C-MODE		
33	18	CW direction torque limit input	CWTL	18	CW direction torque limit input	CWTL		
34	16	CCW direction torque limit input	CCWTL	14	Torque command input	TRQR		
35	17	Signal ground	GND	17	Signal ground	GND		
36	42	Torque monitor output	IM	42	Torque monitor output	IM		

\* "NC" is no connect.

A6 Series A6N Series A6B Series Special Order Product

E Series

A6 Series

```
Connection Between
Driver and Controller
```

## Replacing Old Model Servo Driver with MINAS A6 series

in No.	Di	DV0P4130			DV0P4131			
n Old Model	Pin No. on Current Model	Signal Name	Symbol	Pin No. on Current Model	Signal Name	Symbol		
1	8	CW over-travel inhibit input	CWL	8	CW over-travel inhibit input	CWL		
2	9	CCW over-travel inhibit input	CCWL	9	CCW over-travel inhibit input	CCWL		
3	3	Command pulse input 2	PULS1	NC				
4	4	Command pulse input 2	PULS2	NC				
5	5	Command pulse sign input 2	SIGN1	NC				
6	6	Command pulse sign input 2	SIGN2	NC				
7	7	Power supply for control signal (+)	COM+	7	Power supply for control signal (+)	COM+		
8	NC			NC				
9	NC			NC				
10	NC			NC				
11	11	External brake release signal	BRK-OFF+	11	External brake release signal	BRK-OFF+		
12	12	Zero-speed detection output signal	ZSP	12	Zero-speed detection output signal	ZSP		
13	13	Torque in-limit signal output	TLC	13	Torque in-limit signal output	TLC		
14	NC			14	Speed command input	SPR		
15	15	Signal ground	GND	15	Signal ground	GND		
16	16	CCW direction torque limit input	CCWTL	16	CCW direction torque limit input	CCWTL		
17	17		GND	17	Signal ground	GND		
		Signal ground		_				
18	18	CW direction torque limit input	CWTL	18	CW direction torque limit input	CWTL		
19	19	Z-phase output	CZ	19	Z-phase output	CZ		
20	NC			NC				
21	21	A-phase output	OA+	21	A-phase output	OA+		
22	22	A-phase output	OA-	22	A-phase output	OA-		
23	23	Z-phase output	OZ+	23	Z-phase output	OZ+		
24	24	Z-phase output	OZ-	24	Z-phase output	OZ-		
25	50	Frame ground	FG	50	Frame ground	FG		
26	26	Speed zero clamp input	ZEROSPD	26	Speed zero clamp input	ZEROSPD		
27	27	Gain switching input	GAIN	27	Gain switching input	GAIN		
28	NC			33	Selection 1 input of internal command speed	INTSPD1		
29	29	Servo-ON input	SRV-ON	29	Servo-ON input	SRV-ON		
30	30	Deviation counter clear input	CL	NC				
31	31	Alarm clear input	A-CLR	31	Alarm clear input	A-CLR		
32	32	Control mode switching input	C-MODE	32	Control mode switching input	C-MODE		
33	33	Command pulse inhibition input	INH	NC				
34	NC			NC				
35	35	Servo-Ready output	S-RDY+	35	Servo-Ready output	S-RDY+		
36	NC		011211	NC				
37	37	Sonio Alarm autaut	ALM+	37	Sonio Alorm output	ALM+		
		Servo-Alarm output	ALIVI+		Servo-Alarm output	ALIVI+		
38	NC	Desitioning complete systems	0000	NC	One of arrival autout			
39	39	Positioning complete output	COIN+	39	Speed arrival output	AT-SPEED-		
40	40	Torque in-limit signal output	TLC	40	Torque in-limit signal output	TLC		
	10	External brake release signal (-)	BRK-OFF-	10	External brake release signal (-)	BRK-OFF-		
	34	Positioning complete output (–)	COIN-	34	Speed arrival output (-)	AT-SPEED-		
41	36	Servo-Alarm output (-)	ALM-	36	Servo-Alarm output (-)	ALM-		
	38	Servo-Ready output (-)	S-RDY-	38	Servo-Ready output (-)	S-RDY-		
	41	Power supply for control signal (-)	COM-	41	Power supply for control signal (-)	COM-		
42	42	Torque monitor output	IM	42	Torque monitor output	IM		
43	43	Speed monitor output	SP	43	Speed monitor output	SP		
44	25	Signal ground	GND	25	Signal ground	GND		
45	25	Signal ground	GND	25	Signal ground	GND		
46	25	Signal ground	GND	25	Signal ground	GND		
47	NC			NC				
48	48	B-phase output	OB+	48	B-phase output	OB+		
		B-phase output	OB-	49	B-phase output	OB-		
49	49							

Pin No.	Pin	DV0P4132	
on Old Model	Pin No. on Current Model	Signal Name	Symbol
1	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL
3	NC		
4	NC		
5	NC		
6	NC		
7	7	Power supply for control signal (+)	COM+
8	NC		
9	NC		
10	NC		
11	11	External brake release signal	BRK-OFF+
12	12	Zero-speed detection output signal	ZSP
13	13	Torque in-limit signal output	TLC
14	NC		01/2
15	15	Signal ground	GND
16	16	Torque command input	TRQR
17	17	Signal ground	GND
18	18	CW direction torque limit input	CWTL
19	19 NC	Z-phase output	CZ
20	-	A phase output	OA+
21 22	21 22	A-phase output	OA+
22	22	A-phase output	OA-
23	23	Z-phase output	0Z+
24	50	Z-phase output Frame ground	FG
26	26	Speed zero clamp input	ZEROSPD
27	20	Gain switching input	GAIN
28	NC		
29	29	Servo-ON input	SRV-ON
30	NC		
31	31	Alarm clear input	A-CLR
32	32	Control mode switching input	C-MODE
33	NC		
34	NC		
35	35	Servo-Ready output	S-RDY+
36	NC		
37	37	Servo-Alarm output	ALM+
38	NC		
39	39	Speed arrival output	AT-SPEED+
40	40	Torque in-limit signal output	TLC
	10	External brake release signal (-)	BRK-OFF-
	34	Speed arrival output (-)	AT-SPEED-
41	36	Servo-Alarm output (-)	ALM-
	38	Servo-Ready output (-)	S-RDY-
	41	Power supply for control signal (-)	COM-
42	42	Torque monitor output	IM
43	43	Speed monitor output	SP
44	25	Signal ground	GND
45	25	Signal ground	GND
46	25	Signal ground	GND
47	NC		
48	48	B-phase output	OB+
49	49	B-phase output	OB-
50	50	Frame ground	FG

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	Symbol
	CWL
	CCWL
_	
	COM+
_	
	BRK-OFF+
	ZSP
	TLC
	GND
	TRQR
	GND
	CWTL
_	CZ
	041
	OA+
	0A-
	OZ+
	OZ-
	FG
	ZEROSPD
	GAIN
	0014011
	SRV-ON
	A-CLR
	C-MODE
	S-RDY+
	ALM+
	AT-SPEED+
	TLC
	BRK-OFF-
	AT-SPEED-
	ALM-
	S-RDY-
	COM-
	IM
	SP
	GND
	GND
	GND
	OB+
-	OB-

A6 Series

A6N Series

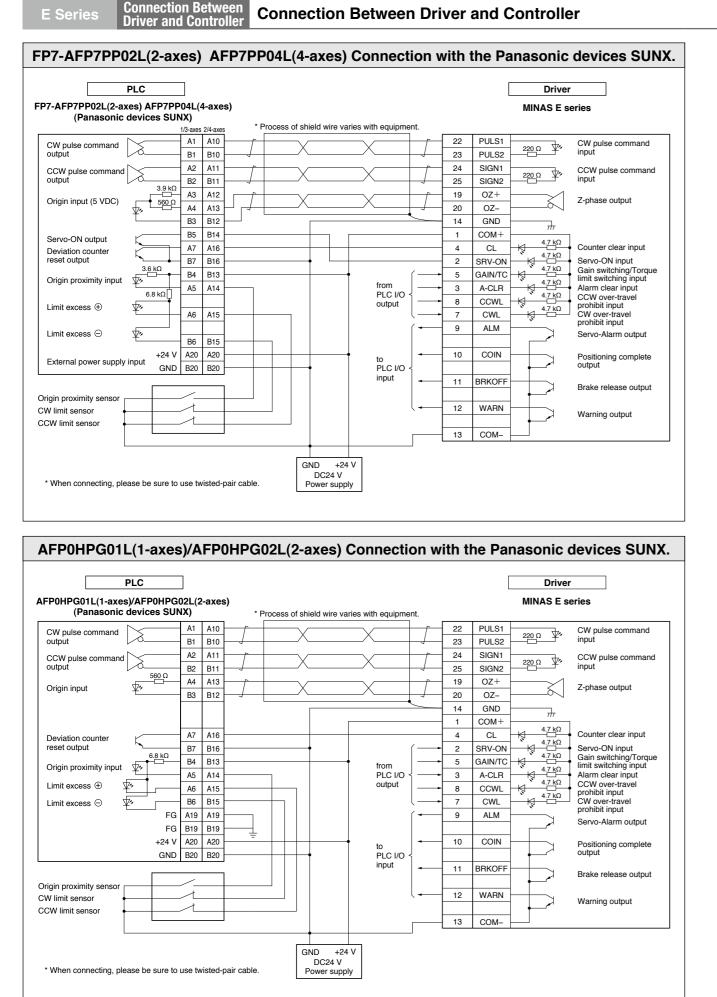
A6B Series Special Order Product

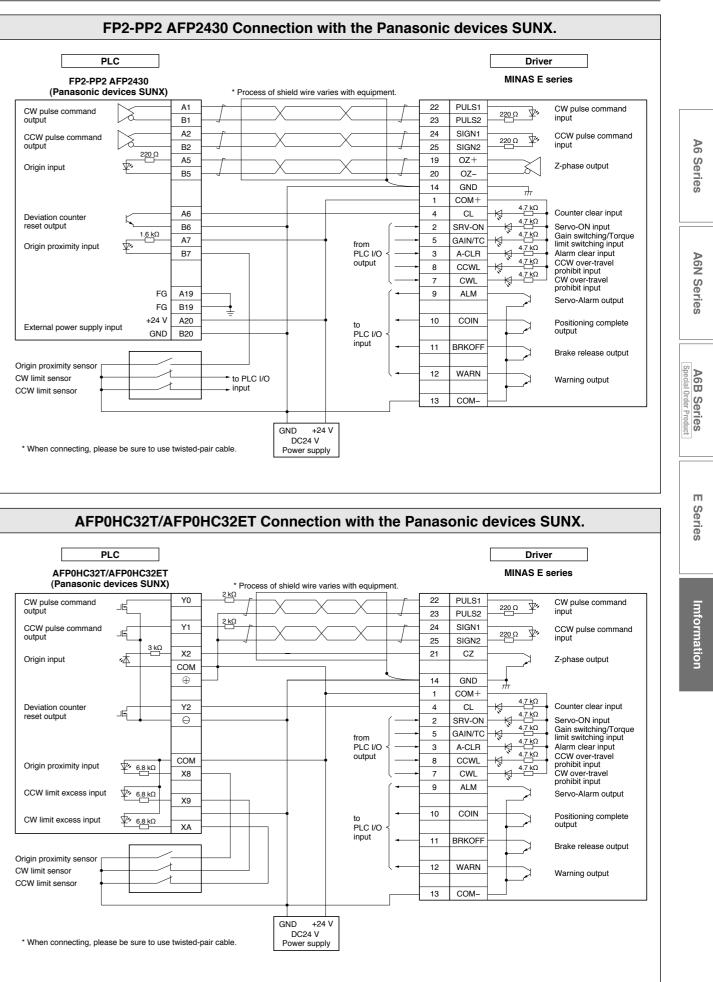
E Series

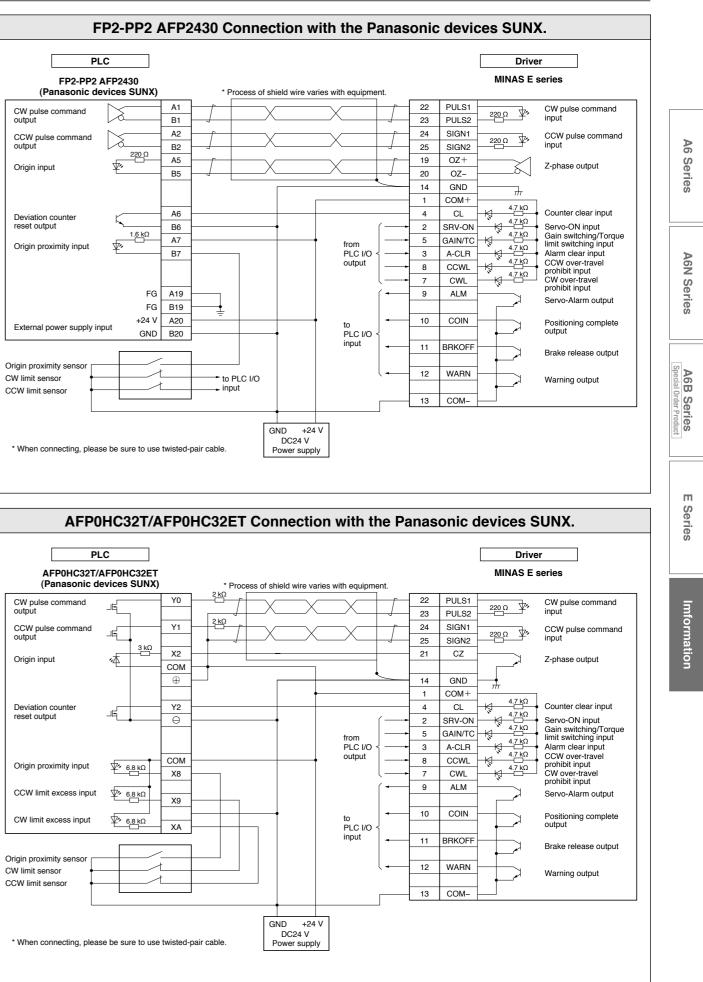
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E Series







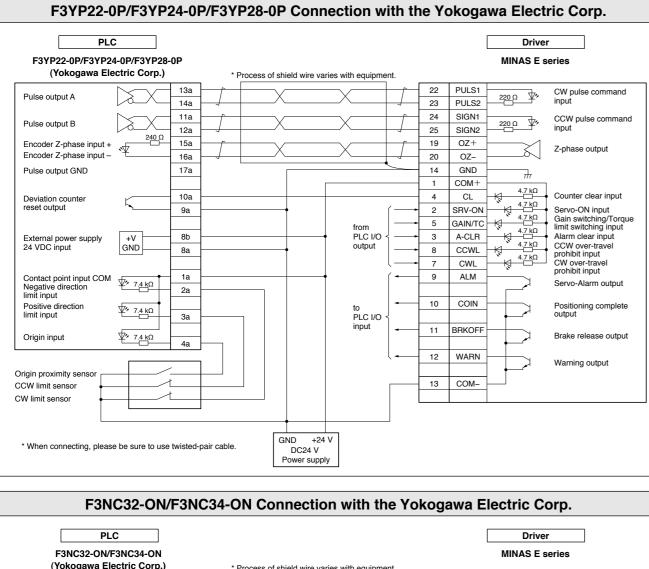
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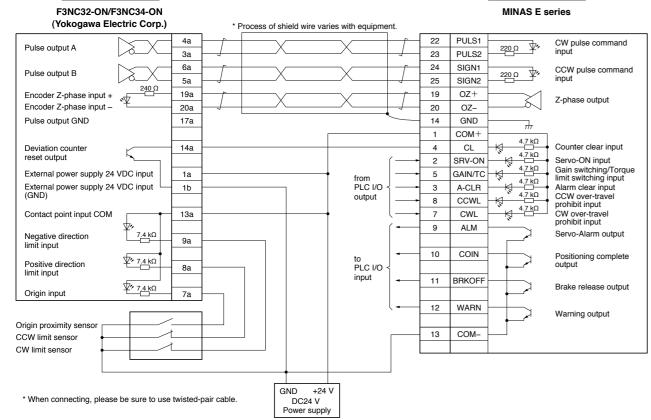
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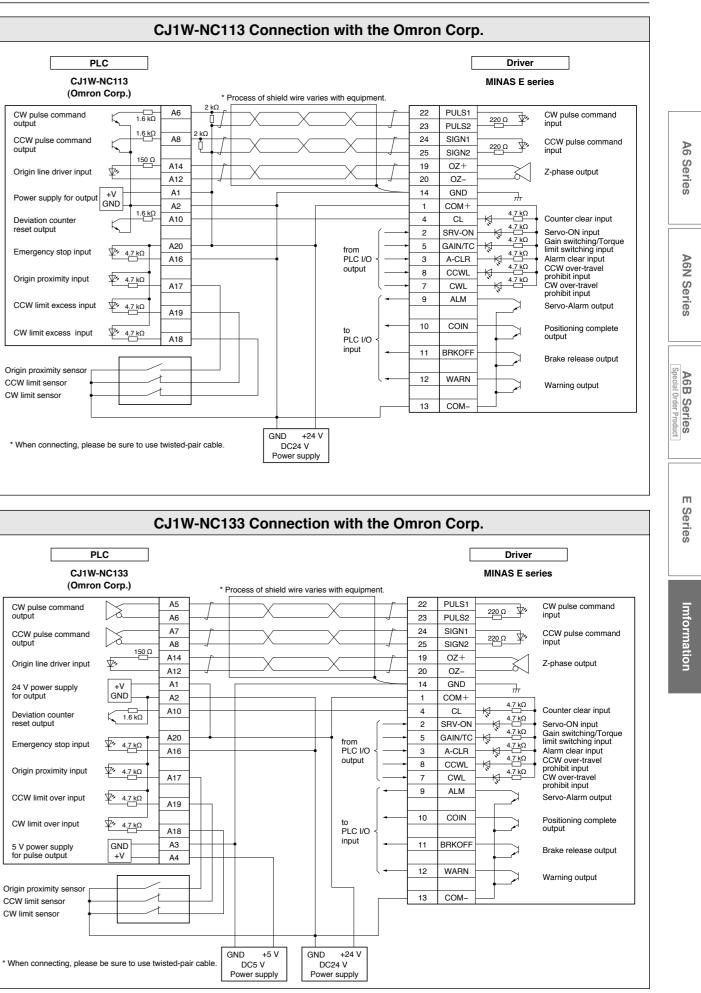
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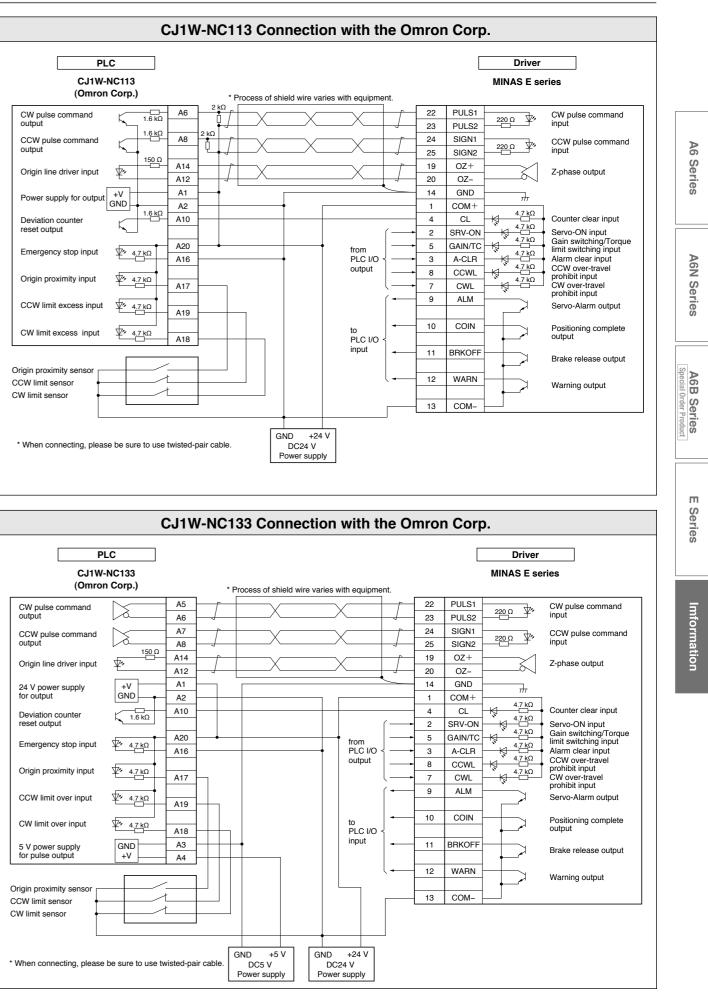
E Series





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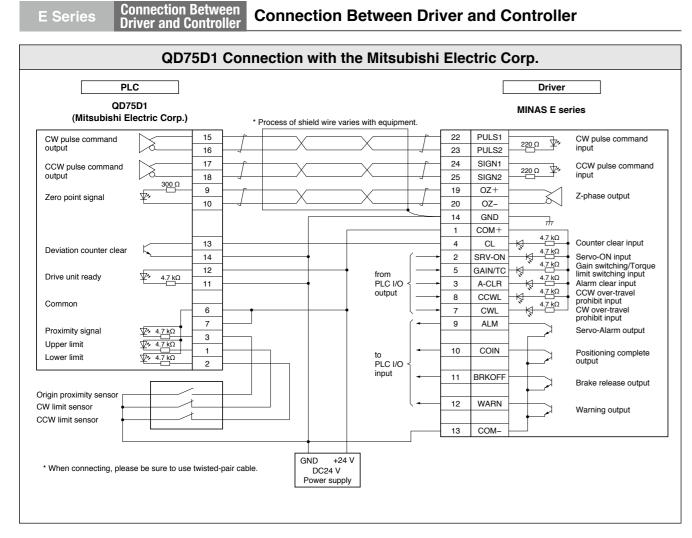


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**E** Series



DV0P0770Connector kit for external peripheral equipmentDV0P0800Interface cableDV0P1450Surge absorber (3-phase)DV0P1460Ferrite coreDV0P1960Communication cableDV0P200ReactorDV0P221ReactorDV0P222ReactorDV0P223ReactorDV0P224ReactorDV0P225ReactorDV0P226ReactorDV0P277ReactorDV0P288ReactorDV0P2890External regenerative resistorDV0P2891External regenerative resistorDV0P2891External regenerative resistorDV0P2870Connector kit for motor/encoder connectionDV0P2890Battery for absolute encoderDV0P2801Cable set (3 m)DV0P3700Cable set (5 m)DV0P3811DIN rail mounting unitDV0P39200Cable set (5 m)DV0P4120Interface conversion cableDV0P4131Interface conversion cableDV0P4132Interface conversion cableDV0P4130Noise filterDV0P4130Noise filterDV0P4130Noise filterDV0P4130Noise filterDV0P4130Noise filterDV0P4130Noise filterDV0P4130Noise filterDV0P4130Noise filterDV0P4200Noise filterDV0P4200Noise filterDV0P4200Noise filterDV0P4200Noise filterDV0P4200Noise filterDV0P4200Noise filter </th <th>Page           368,402           368,403           413,416           403           342,405           342           401           403           401           403           401           403           438           439           439           439           439           416           413,416  </th>	Page           368,402           368,403           413,416           403           342,405           342           401           403           401           403           401           403           438           439           439           439           439           416           413,416
DV0P0770Connector kit for external peripheral equipment3DV0P0800Interface cable3DV0P1450Surge absorber (3-phase)4DV0P1460Ferrite core5DV0P1960Communication cable5DV0P220Reactor3DV0P221Reactor3DV0P222Reactor5DV0P223Reactor5DV0P244Reactor5DV0P225Reactor3DV0P226Reactor3DV0P277Reactor3DV0P288Reactor3DV0P280External regenerative resistor7DV0P280External regenerative resistor7DV0P280Battery for absolute encoder7DV0P2801External regenerative resistor7DV0P28020Cable set (3 m)7DV0P37000Cable set (3 m)7DV0P3811DIN rail mounting unit7DV0P4120Interface conversion cable7DV0P4131Interface conversion cable7DV0P4132Interface conversion cable7DV0P4160Noise filter7DV0P4170Noise filter7DV0P4180Surge absorber (Single phase)4DV0P4280External regenerative resistor: 50 Ω 25 W4	368,402 368,403 368,403 413,416 410 403 342,405 342 342 342 342 342 342 342 342
DV0P1450Surge absorber (3-phase)4DV0P1460Ferrite coreIDV0P1960Communication cableIDV0P220Reactor3DV0P221ReactorIDV0P222ReactorIDV0P223ReactorIDV0P244ReactorIDV0P255Reactor3DV0P227Reactor3DV0P288Reactor3DV0P2890External regenerative resistorIDV0P2891External regenerative resistorIDV0P2900Battery for absolute encoderIDV0P2811Dill rail mounting unitIDV0P3700Cable set (3 m)IDV0P3811DIN rail mounting unitIDV0P4120Interface conversion cableIDV0P4130Interface conversion cableIDV0P4131Interface conversion cableIDV0P4132Interface conversion cableIDV0P4130Noise filterIDV0P4130Noise filterIDV0P4130Interface conversion cableIDV0P4130Noise filterIDV0P4130Noise filterIDV0P4130Noise filterIDV0P4130Noise filterIDV0P4130Noise filterIDV0P4200Noise filterIDV0P4200Noise filterIDV0P4200Noise filterIDV0P4200Noise filterIDV0P4200Noise filter </td <td>413,416 413,416 403 342,405 342 342 342 342 342 342 342 342</td>	413,416 413,416 403 342,405 342 342 342 342 342 342 342 342
DV0P1460Ferrite coreDV0P1960Communication cableDV0P220ReactorDV0P221ReactorDV0P222ReactorDV0P223ReactorDV0P224ReactorDV0P225ReactorDV0P226ReactorDV0P227ReactorDV0P288ReactorDV0P2890External regenerative resistorDV0P2891External regenerative resistorDV0P2892Battery for absolute encoderDV0P2891Connector kit for motor/encoder connectionDV0P2891External regenerative resistorDV0P2891External regenerative resistorDV0P2891DifferDV0P3811DIN rail mounting unitDV0P3700Cable set (3 m)DV0P3811DIN rail mounting unitDV0P4120Interface conversion cableDV0P4130Interface conversion cableDV0P4131Interface conversion cableDV0P4132Interface conversion cableDV0P4160Noise filterDV0P4170Noise filterDV0P4180Surge absorber (Single phase)ADV0P4280External regenerative resistor: 50 Ω 25 W	416 403 342,405 342 342 342 342 342 342 342 342,405 342,405 342,405 401 404 404 404 404 404 404 404 400 404 400 439 439 439 439 439 439 416 412
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MHMF152L1C6	MHMF 1.5 kW 200 V Motor	96	MHMF402L1C6	MHMF 4.0 kW 200	
	MHMF 1.5 kW 200 V Motor	233	MHMF402L1C6M		
MHMF152L1C0W	MHMF 1.5 kW 200 V Motor	96		MHMF 4.0 kW 200	
			MHMF402L1C7		
MHMF152L1C8	MHMF 1.5 kW 200 V Motor	96	MHMF402L1C8	MHMF 4.0 kW 200	
MHMF152L1C8M	MHMF 1.5 kW 200 V Motor	233	MHMF402L1C8M	MHMF 4.0 kW 200	
MHMF152L1D5	MHMF 1.5 kW 200 V Motor	96	MHMF402L1D5	MHMF 4.0 kW 200	
MHMF152L1D6	MHMF 1.5 kW 200 V Motor	96	MHMF402L1D6	MHMF 4.0 kW 200	
MHMF152L1D6M	MHMF 1.5 kW 200 V Motor	233	MHMF402L1D6M	MHMF 4.0 kW 200	
MHMF152L1D7	MHMF 1.5 kW 200 V Motor	96	MHMF402L1D7	MHMF 4.0 kW 200	
MHMF152L1D8	MHMF 1.5 kW 200 V Motor	96	MHMF402L1D8	MHMF 4.0 kW 200	
MHMF152L1D8M	MHMF 1.5 kW 200 V Motor	233	MHMF402L1D8M	MHMF 4.0 kW 200	
MHMF152L1G5	MHMF 1.5 kW 200 V Motor	96	MHMF402L1G5	MHMF 4.0 kW 200	V
MHMF152L1G6	MHMF 1.5 kW 200 V Motor	96	MHMF402L1G6	MHMF 4.0 kW 200	V
MHMF152L1G6M	MHMF 1.5 kW 200 V Motor	233	MHMF402L1G6M	MHMF 4.0 kW 200	VI
MHMF152L1G7	MHMF 1.5 kW 200 V Motor	96	MHMF402L1G7	MHMF 4.0 kW 200	۷I
MHMF152L1G8	MHMF 1.5 kW 200 V Motor	96	MHMF402L1G8	MHMF 4.0 kW 200	
MHMF152L1G8M	MHMF 1.5 kW 200 V Motor	233	MHMF402L1G8M	MHMF 4.0 kW 200	_
MHMF152L1H5	MHMF 1.5 kW 200 V Motor	96	MHMF402L1H5	MHMF 4.0 kW 200	
MHMF152L1H6	MHMF 1.5 kW 200 V Motor	96	MHMF402L1H6	MHMF 4.0 kW 200	_
MHMF152L1H6M	MHMF 1.5 kW 200 V Motor	233	MHMF402L1H6M	MHMF 4.0 kW 200	
		96			
MHMF152L1H7	MHMF 1.5 kW 200 V Motor		MHMF402L1H7	MHMF 4.0 kW 200	
MHMF152L1H8	MHMF 1.5 kW 200 V Motor	96	MHMF402L1H8	MHMF 4.0 kW 200	_
MHMF152L1H8M	MHMF 1.5 kW 200 V Motor	233	MHMF402L1H8M	MHMF 4.0 kW 200	
MHMF202L1C5	MHMF 2.0 kW 200 V Motor	97	MHMF502L1C5	MHMF 5.0 kW 200	
MHMF202L1C6	MHMF 2.0 kW 200 V Motor	97	MHMF502L1C6	MHMF 5.0 kW 200	
MHMF202L1C6M	MHMF 2.0 kW 200 V Motor	234	MHMF502L1C6M	MHMF 5.0 kW 200	
MHMF202L1C7	MHMF 2.0 kW 200 V Motor	97	MHMF502L1C7	MHMF 5.0 kW 200	V
MHMF202L1C8	MHMF 2.0 kW 200 V Motor	97	MHMF502L1C8	MHMF 5.0 kW 200	VI
MHMF202L1C8M	MHMF 2.0 kW 200 V Motor	234	MHMF502L1C8M	MHMF 5.0 kW 200	۷I
	MHMF 2.0 kW 200 V Motor	97	MHMF502L1D5	MHMF 5.0 kW 200	
MHMF202L1D5		1 01			
MHMF202L1D5 MHMF202L1D6	MHMF 2.0 kW 200 V Motor	97	MHMF502L1D6	MHMF 5.0 kW 200	V

MHMF 5.0 kW 200 V Motor MHMF 7.5 kW Motor MHMF 5.0 W 100 V/200 V common Motor MHMF 50 W 100 V/200 V common Motor	100           100           237           100           237           101           238           101           238           101           238           101           238           101           238           101           238           101           238           101           238           101           238           101           238
MHMF 5.0 kW 200 V Motor MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor	237 100 237 101 238 101 238 101 101 238 101 101 238 101 101 238 101
MHMF 5.0 kW 200 V Motor MHMF 5.0 kW 200 V Motor MHMF 5.0 kW 200 V Motor MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor	100           100           237           101           238           101           238           101           238           101           238           101           101           238           101           101           101
MHMF 5.0 kW 200 V Motor MHMF 5.0 kW 200 V Motor MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor	100           237           101           238           101           238           101           238           101           238           101           101           103           101           101           101           101           101           101           101           101
MHMF 5.0 kW 200 V Motor MHMF 5.0 kW 200 V Motor MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor	100           237           101           238           101           238           101           238           101           238           101           101           103           101           101           101           101           101           101           101           101
MHMF 5.0 kW 200 V Motor MHMF 7.5 kW Motor MHMF 5.0 W 100 V/200 V common Motor	237 101 238 101 238 101 238 101 238 101 238 101 101
MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor	101 101 238 101 238 101 101 238 101 238 101 101
MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor MHMF 50 W 100 V/200 V common Motor	101           238           101           238           101           238           101           238           101           238           101           238           101
MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor	238 101 238 101 101 238 101 101 101
MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor MHMF 50 W 100 V/200 V common Motor	101           101           238           101           238           101           238           101           101           101           101
MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor MHMF 50 W 100 V/200 V common Motor	101 238 101 101 238 101 101
MHMF 7.5 kW Motor MHMF 50 W 100 V/200 V common Motor MHMF 50 W 100 V/200 V common Motor	238 101 101 238 101 101
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MHMF 50 W 100 V/200 V common Motor	85,86
MHMF 50 W 100 V/200 V common Motor	85,86
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	MHMF 50 W 100 V/200 V common Motor           MHMF 50 W 100 V/200 V common Motor<

MHMF (High inertia)

Part No.

MHMF502L1D7

Title

MHMF 5.0 kW 200 V Motor

MHMF502L1D8 MHMF 5.0 kW 200 V Motor

MHMF502L1D8M MHMF 5.0 kW 200 V Motor

MHMF502L1G5 MHMF 5.0 kW 200 V Motor

MHMF502L1G6 MHMF 5.0 kW 200 V Motor

MHMF502L1G6M MHMF 5.0 kW 200 V Motor

MHMF502L1G7 MHMF 5.0 kW 200 V Motor

MHMF502L1G8 MHMF 5.0 kW 200 V Motor

MHMF502L1G8M MHMF 5.0 kW 200 V Motor

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MHMF011L81N	MHMF with reduction gear 100 W 100 V Motor	294,301
MHMF011L82N	MHMF with reduction gear 100 W 100 V Motor	294,301
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MHMF012L81N	MHMF with reduction gear 100 W 200 V Motor	294,301
MHMF012L82N	MHMF with reduction gear 100 W 200 V Motor	294,301
MHMF012L83N	MHMF with reduction gear 100 W 200 V Motor	294,301
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MHMF021L44N	MHMF with reduction gear 200 W 100 V Motor	294,302
MHMF021L71N	MHMF with reduction gear 200 W 100 V Motor	294,301
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MHMF021L73N	MHMF with reduction gear 200 W 100 V Motor	294,301
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MHMF041L71N MHMF041L72N MHMF041L73N MHMF041L81N	MHMF with reduction gear 400 W100 V MotorMHMF with reduction gear 400 W100 V MotorMHMF with reduction gear 400 W100 V MotorMHMF with reduction gear 400 W100 V Motor	294,301 294,301 294,301 294,301
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MHMF041L71N MHMF041L72N MHMF041L73N MHMF041L81N MHMF041L82N MHMF041L83N MHMF042L31N MHMF042L32N	MHMF with reduction gear 400 W100 V MotorMHMF with reduction gear 400 W200 V MotorMHMF with reduction gear 400 W200 V MotorMHMF with reduction gear 400 W200 V Motor	294,301 294,301 294,301 294,301 294,301 294,301 294,302 294,302
MHMF041L71N MHMF041L72N MHMF041L73N MHMF041L81N MHMF041L82N MHMF041L83N MHMF042L31N MHMF042L32N MHMF042L33N	MHMF with reduction gear 400 W100 V MotorMHMF with reduction gear 400 W200 V Motor	294,301 294,301 294,301 294,301 294,301 294,301 294,302 294,302 294,302
MHMF041L71N MHMF041L72N MHMF041L73N MHMF041L81N MHMF041L82N MHMF041L83N MHMF042L31N MHMF042L32N MHMF042L33N MHMF042L41N	MHMF with reduction gear 400 W100 V MotorMHMF with reduction gear 400 W200 V Motor	294,301 294,301 294,301 294,301 294,301 294,302 294,302 294,302 294,302
MHMF041L71N MHMF041L72N MHMF041L73N MHMF041L81N MHMF041L82N MHMF041L83N MHMF042L31N MHMF042L32N MHMF042L33N MHMF042L41N MHMF042L42N	MHMF with reduction gear 400 W100 V MotorMHMF with reduction gear 400 W200 V Motor	294,301 294,301 294,301 294,301 294,301 294,302 294,302 294,302 294,302 294,302
MHMF041L71N MHMF041L72N MHMF041L73N MHMF041L81N MHMF041L82N MHMF041L83N MHMF042L31N MHMF042L33N MHMF042L33N MHMF042L41N MHMF042L42N MHMF042L43N	MHMF with reduction gear 400 W100 V MotorMHMF with reduction gear 400 W200 V Motor	294,301 294,301 294,301 294,301 294,301 294,302 294,302 294,302 294,302 294,302 294,302
MHMF041L71N MHMF041L72N MHMF041L73N MHMF041L81N MHMF041L82N MHMF041L83N MHMF042L31N MHMF042L33N MHMF042L33N MHMF042L41N MHMF042L43N MHMF042L71N	MHMF with reduction gear 400 W100 V MotorMHMF with reduction gear 400 W200 V Motor	294,301 294,301 294,301 294,301 294,301 294,302 294,302 294,302 294,302 294,302 294,302 294,302 294,302
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A6N Series

A6 Series

ш Series

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MHMF082L32N	MHMF with reduction gear 750 W 200 V Motor	294,302
MHMF082L33N	MHMF with reduction gear 750 W 200 V Motor	294,302
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MQMF011L1C3         MQMF 100 W 100 V Motor         79           MQMF011L1C4         MQMF 100 W 100 V Motor         79           MQMF011L1D1         MQMF 100 W 100 V Motor         79           MQMF011L1D2         MQMF 100 W 100 V Motor         79           MQMF011L1D3         MQMF 100 W 100 V Motor         79           MQMF011L1D4         MQMF 100 W 100 V Motor         79           MQMF011L1S1         MQMF 100 W 100 V Motor         79           MQMF011L1S1         MQMF 100 W 100 V Motor         79           MQMF011L1S2         MQMF 100 W 100 V Motor         79           MQMF011L1T1         MQMF 100 W 100 V Motor         79
MQMF011L1C4         MQMF 100 W 100 V Motor         79           MQMF011L1D1         MQMF 100 W 100 V Motor         79           MQMF011L1D2         MQMF 100 W 100 V Motor         79           MQMF011L1D3         MQMF 100 W 100 V Motor         79           MQMF011L1D4         MQMF 100 W 100 V Motor         79           MQMF011L1S1         MQMF 100 W 100 V Motor         79           MQMF011L1S1         MQMF 100 W 100 V Motor         79           MQMF011L1S2         MQMF 100 W 100 V Motor         79           MQMF011L1T1         MQMF 100 W 100 V Motor         79
MQMF011L1D1         MQMF 100 W 100 V Motor         79           MQMF011L1D2         MQMF 100 W 100 V Motor         79           MQMF011L1D3         MQMF 100 W 100 V Motor         79           MQMF011L1D4         MQMF 100 W 100 V Motor         79           MQMF011L1S1         MQMF 100 W 100 V Motor         79           MQMF011L1S1         MQMF 100 W 100 V Motor         79           MQMF011L1S2         MQMF 100 W 100 V Motor         79           MQMF011L1T1         MQMF 100 W 100 V Motor         79
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MQMF011L41N	MQMF with reduction gear 100 W 100 V Motor	294,300
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E Series

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MQMF041L73N	MQMF with reduction gear 400 W 100 V Motor		MSMF021L1D2	MSMF 200 W 100 V
MQMF041L74N	MQMF with reduction gear 400 W 100 V Motor		MSMF021L1S1	MSMF 200 W 100 V
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MQMF041L81N	MQMF with reduction gear 400 W 100 V Motor		MSMF021L1S2	MSMF 200 W 100 V
MQMF041L82N	MQMF with reduction gear 400 W 100 V Motor		MSMF021L1T1	MSMF 200 W 100 V
MQMF041L83N	MQMF with reduction gear 400 W 100 V Motor	294,299	MSMF021L1T2	MSMF 200 W 100 V
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	[Distributors]		e-mail	info@ghv.de	
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(March.01.2019)

A6N Series

A6 Series

E Series

A6B Series Special Order Product

# Sales Office

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Imformation

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