- 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
- This product is designed and manufactured for use in General Purpose Industrial Equipment and it is not intended to be used in equipment or system that may cause personal injury or death.
- · All servicing such as installation, wiring, operation, maintenance and etc., should be performed by qualified personnel only.
- · Tighten mounting screws with an adequate torque by taking into consideration strength of the screws and the characteristics of material to which the product will be mounted. Over tightening can damage the screw and/or material; under tightening can result in loosening.
- \*Example: apply 2.7 N·m 3.3 N·m torque when tightening steel screw (M5) to steel surface.
- · Install safety equipment to prevent serious accidents or loss that is expected in case of failure of this product.
- · Consult us before using this product under such special conditions and environments as nuclear energy control, aerospace, transportation, medical equipment, various safety equipments or equipments which require a lesser air contamination.
- · We have been making the best effort to ensure the highest quality of our products, however, some applications with exceptionally large external noise disturbance and static electricity, or failure in input power, wiring and components may result in unexpected action. It is highly recommended that you make a fail-safe design and secure the safety in the operative range.
- · If the motor shaft is not electrically grounded, it may cause an electrolytic corrosion to the bearing, depending on the condition of the machine and its mounting environment, and may result in the bearing noise. Checking and verification by customer is required.
- Failure of this product depending on its content may generate smoke of about one cigarette. Take this into consideration when the application of the machine is clean room related.
- · Please be careful when using the product in an environment with high concentrations of sulfur or sulfuric gases, as sulfuration can lead to disconnection from the chip resistor or a poor contact connection.
- Do not input a supply voltage which significantly exceeds the rated range to the power supply of this product. Failure to heed this caution may lead to damage of the internal parts, causing smoke and/or fire and other troubles.
- The user is responsible for matching between machine and components in terms of configuration, dimensions, life expectancy, characteristics, when installing the machine or changing specification of the machine. The user is also responsible for complying with applicable laws and regulations.
- Manufacturer's warranty will be invalid if the product has been used outside its stated specifications.
- · Component parts are subject to minor change to improve performance.
- Read and observe the instruction manual to ensure correct use of the product.

Repair

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

URL

Electric data of this product (Instruction Manual, CAD data) can be download from the following web site; http://industrial.panasonic.com/ww/products/motors-compressors/fa-motors

Contact to



ISO9001 Certificate division

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

1-1 Morofuku 7-chome, Daito, Osaka 574-0044, Japan Fax: +81-72-870-3151

14001

ISO14001

Certificate

division

The contents of this catalog apply to the products as of April 2015.

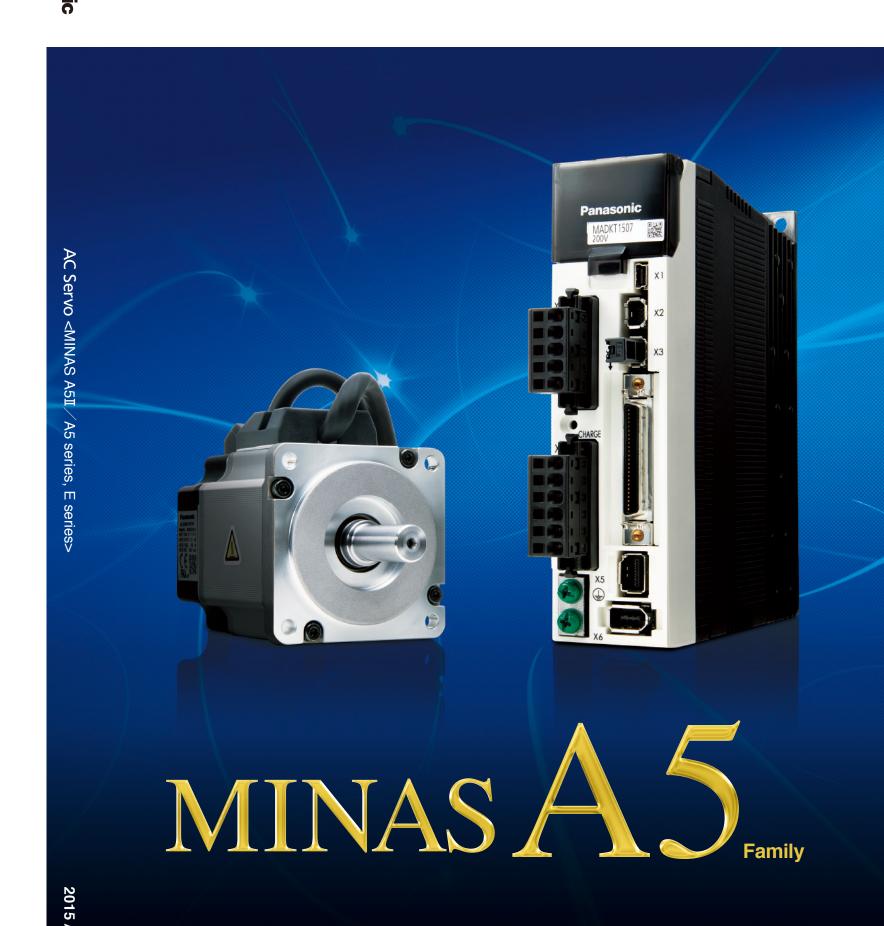
This product is for industrial equipment. Don't use this product at general household.

· Printed colors may be slightly different from the actual products.

Specifications and design of the products are subject to change without notice for the product improvement.

**Panasonic** 

AC Servo MINAS A5 II / A5 series



# Servo motor that brings out potential of the machine. MINAS A





# Two-degree-of-freedom control system

# All-in-one type

# Rated output: 50 W to 15.0 kW

- 20 bit incremental encoder.
- 17 bit absolute/ incremental encoder All-in-one: Speed, Position, Torque<sup>\*1</sup>
- \*1 Not applicable to two-degree-of-freedom control system

Full-closed\*1 control type

# All-in-one type

# Rated output: 50 W to 15.0 kW

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

# Two-degree-of-freedom control system

# Position control type

# Rated output: 50 W to 5.0 kW

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

# **Position control type**

# Rated output: 50 W to 5.0 kW

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

# Slim design and position control type





# Rated output: 50 W to 400 W

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

# High-speed communication "Realtime Express" support model

# Ultra high-speed Network type



# Rated output:

# 50 W to 15.0 kW

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

# Linear motor and DD motor control type



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

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

# DC 24 V type



## Rated output:

# 10 W. 20 W. 30 W

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

# Linear motor control, DC 24 V type



Capacity of applying Linear motor:

# Compatible with 30 W rotary AC servo motor

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

# **EtherCAT** communication driver type

**Linear motor and DD motor control type** 



Capacity of applying Linear motor:

# Compatible with 15.0 kW rotary AC servo motor

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



Rated output:

# 50 W to 15.0 kW

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

Α	5II Series Features ·····	;
A	5 Family Features ······otor Line-up ······	······
IVI	otor Line-upodel Designation	··· ]; 1/
O	verall Wiring	1'
	river and List of	•
	pplicable Peripheral Equipments	··· 19
Ta	able of Part Numbers and Options	··· 2
	Driver Specifications	
	A5II, A5 series (All-in-one type) ·····	2
	A5IE, A5E series (Position control type)	3
	Wiring Diagram	
	Wiring to the Connector	_
ě	XA, XB, XC, XD and terminal block.	3
Driver	Safety Function Wiring to the Connector X3	0
	Control Circuit Diagram	ال
	Wiring to the Connector X4 ·······	3
	Wiring to the Connector X5	3
	Wiring to the Connector X6	40
	Dimensions of Driver ·····	4
	Motor Specifications	4
	Dimensions (IP67 motor) ·····	.13
L	Motors with Gear Reducer ·····	-14
矣	Special Order Product	
ĭ	Model Designation	
	Table of Part Numbers and Options  Motor Specifications	15
	Motor Specifications, Description	
H	Cable part No. Designation	
	Specifications of Motor connector ····	
	Encoder Cable	. 18
	Motor Cable	-19
S	Brake Cable	. 19
Options	Interface Cable ······	· 19
Ħ	Connector Kit	19
0	Battery for Absolute Encoder  Mounting Bracket	-20
	Reactor	. 200
	External Regenerative Resister	.21
	Surge Absorber for Motor Brake	.21
	List of Peripheral Equipments ······	21
E	series	
In	formation	
	Index	-28
	Sales Office ·····	.30

Contents

# General-purpose RS485 communication AE-LINK support type

# series



# Rated output:

# 50 W to 5.0 kW

- Positioning is possible by built-in NC function
- Can connect up to 31 axes
- Standard Ethernet cable<sup>12</sup> using Two-degree-of-freedom control system
- · AE-LINK is a registered trade mark of Asahi Engineering

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

# Quicker, Wiser and Friendlier $\,A5I$ series

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

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







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





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

A5IE series

3

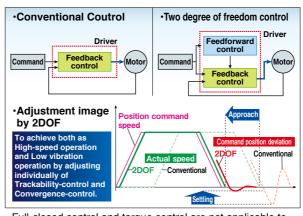


# Realizes guick and accurate movement. Fast response & High-precision positioning

# Adopted New Algorithm

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

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



 Full-closed control and torque control are not applicable to 2DOF control system. feedback control, mutual adjustment was required.

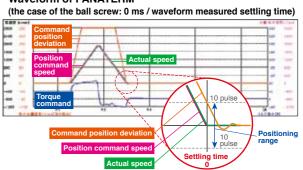
In 2DOF adopted A5II series, feedforward and feedback controls are adjusted separately, meaning "Approach" reaction to the given command, and the "Settling" can be adjusted separately.

Realized low vibration and reduction of settling time.

Realizes tact speed of the electronic component mounts.

Realized low vibration and reduction of settling time.
Realizes tact speed of the electronic component mounting machines, improves the accuracy of surface treatment of metal processing machines, allows for smooth operation and High speed industrial robots.

# Waveform of PANATERM



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

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

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

# · Adjustment is completed in only 3 processes

Condition setting measurement dete

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

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

# Fit gain adjustment window

# The control of the co

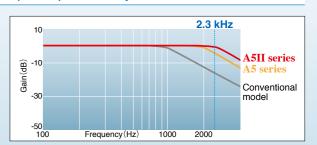
# Automatically proposes various settings

Recom	nerdation setting M	onuel petti	19		
Theore	resultiecomes no to	flows Pier	nie choose reco	onerctation	
Adv	strest objectse: Full	read, fie	espone pielere	otisky, Midde	
Select	Recommendation	Pigidity	Command response[ms]	Stabilization (irre[rec]	
2.	Winnum stabilizati.	22	32	83	
F	Designeda overeth	22	34	10	
BL 10	Designeta stecila.	19	15	95	
	MUST FORTY SHEET	22	34	1.0	
	Meson sating				

# Realized 2.3 kHz frequency response to improve productivity

# Comparison\* 1.15 times faster than conventional

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



Companion was conventional product to conce.

<sup>\*</sup> Comparison with conventional product A5-series.

# **Features**

MINAS A5 Family

) UiC

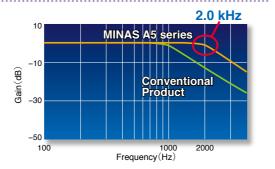


# 2.0 kHz Frequency Response

Example application Semiconductor production equipment, packaging, etc

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

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





# 20 bits/revolution, 1.04 million pulses (At incremental ty

<At incremental type>

Example application Machine tools, textile machinery, etc.

# **Ensures smoother operation and reduced vibration** at stopping.

# Ensures accurate positioning in a short time.

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

Conventional A4 Series 2500 p/r

5II. A5 Series 1048576 p/r [1.04 million pulses]



# Low Cogging Torque (Excluding MSMD, MHMD, MDME 11.0 kW. 15.0 kW) A5II A5 A5IIE

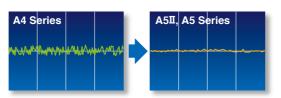




Example application Semiconductor production equipment, textile machinery, etc.

# For the industry's most stable speed and lowest cogging

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



Vibration reduced to only 1/8



# The Input/Output Pulse 4 Mpps

Example application Semiconductor production equipment, machine tools, etc.

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

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





# Smart



# Highly Functional Real-time Auto-Gain Tuning A5II A5 A5IIE A5E

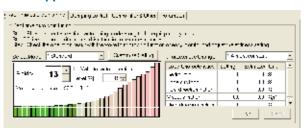
Example application Semiconductor production equipment, food processing machinery, etc.

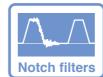
# High-performance real-time auto-gain tuning featuring simple setup.

After installation, tuning will be completed automatically after several operations. When the response is adjusted, simple tuning is supported with a change of one parameter value. Use of the gain adjustment mode in the setup support software contributes to optimum adjustment. The built-in auto vibration suppression

function reduces equipment damage. Appropriate modes are provided for various machines such as vertical axis machines and high friction machines with belts.

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





# **Manual/Auto Notch Filters**

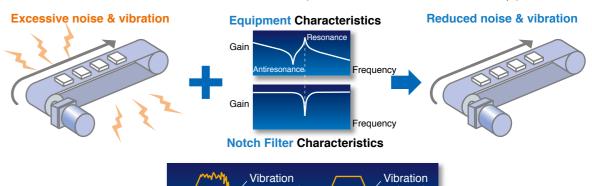
A5II

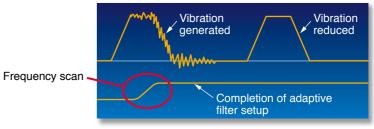
Example application Semiconductor production equipment, food processing machinery, etc.

# Equipped with auto-setting notch filters for greater convenience.

Now there is no need to measure troublesome vibration frequencies. Our notch filters automatically detect vibration and provide simple auto-setting. These notch filters greatly reduce noise and vibration caused by equipment resonance and respond quickly

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





# **Damping filter**

# Manual/Auto Damping Filter

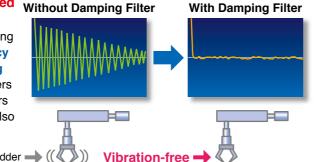
**Example application** 

MINAS A 5 Family

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

# Equipped with a damping filter featuring simplified Without Damping Filter automatic setup.

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



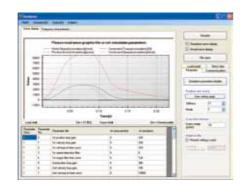
# **Simulation**

# **Motion Simulation**

Example application General production machinery, etc.

# Equipped with a simplified machine simulation function.

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



Light



# New Structure/ Innovative Core/ Innovative Encoder A5II A5

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



# novative enco

# Featuring significantly reduced weight and a more compact motor

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



	[Examples for MSM or MDM]									
	Series	<b>A</b> 4	A5II A5	Weight Reduction						
۱	MSM 1 kW	4.5 kg	3.5 kg	<b>▲</b> 1 kg						
	MSM 2 kW	6.5 kg	5.3 kg	▲1.2 kg						
	MDM 1 kW	6.8 kg	5.2 kg	<b>▲</b> 1.6 kg						
	MDM 2 kW	10.6 kg	8.0 kg	<b>▲</b> 2.6 kg						

# Safe

# Safe torque off

# **Complies with European Safety Standards.**

**Example application** Semiconductor and LCD production equipment, etc.

# Compliance with EU safety standards.

Features non-software-based independent redundant circuitry for motor power isolation. independent redundant circuitry for motor power isolation. This obviates the need for magnetic contactors to isolate

the required motor in order to accommodate low-voltage machinery commands. (The final safety compliance must be applied as machine.)



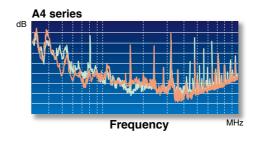
# Low noise

Example application

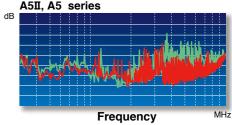
Semiconductor and LCD production equipment, etc. general production machinery for export to the European market

# **Complies with the European EMC Directive**

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







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

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

# IP67 enclosure rating for increased environmental resistance

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



# **IP67**

- Protection against water Protection against

temporary immersion in water Protection against dust

- Protected against dust penetration when in full contact
- · Motors of MSMD and MHMD series and 0.9 kW or higher standard stock items have IP65 rating.
- · Motors of IP67 have smaller encoder connector that requires cable compatible with IP67 motor.
- \* IP67 motor is build to order items.

# MINAS A5 Family





**Features** 





# **PANATERM Set-up Support Software**

A5II A5 A5IIE

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

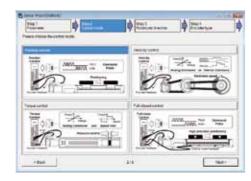
The PANATERM assists users in setting parameters, monitoring control conditions, setup support, and analyzing mechanical operation data on the PC screen, when installed in a commercially available personal computer, and connected to the MINAS A5 Family through the USB interface.

# Localized in 4 languages

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

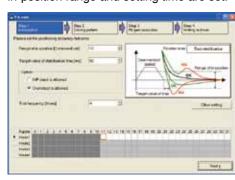
# **Setup Wizard**

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



# Fit gain

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



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

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



# **Service Life Prediction**

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



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

# **Encoder Temperature Monitor**

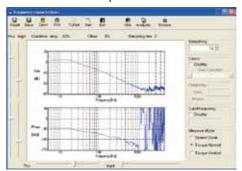
The Encoder Temperature Monitor is a new function capable of real-time measurement of the interior temperature of the encoder, something that has been difficult to achieve in the past. It is valuable for monitoring the motor and can be used as a diagnostic in the event of a malfunction (provided with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

# **Other New Function**

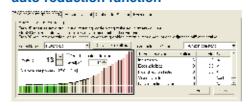
The software offers a wide range of convenient features including motor and driver data such as load factor, voltage, and driver temperature. Moreover, the logging function records the interface history. As well, a non-rotating contributing factor display function.

# **Frequency characteristics** measurement function

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

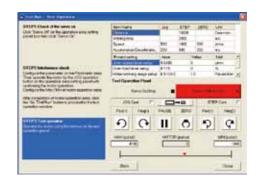


# Added New screen for gain adjustment, equipped with stiffness oscillation auto-reduction function

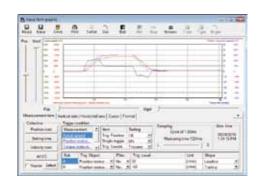


# Trial run

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



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



# <CAUTION>

This software is applicable only to A5II, A5, A5IIE, A5E series. To apply this software to conventional product (A, AII, E or A4 series), consult our distributors.

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

Please download from our web site and use after install to the PC. http://industrial.panasonic.com/ww/products/motors-compressors/fa-motors

# MINAS A 5 Family

# **Features**



# Command Control Mode A5II A5

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

# Full-closed Control

A5II A5

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

# SEMI F47



- Includes a function in compliance with the SEMI F47 standard for voltage sag immunity under no load or light load.
- · Ideal for the semiconductor and LCD industries. Notes:
- 1) Excluding the single-phase 100-V type.
- 2) Please verify the actual compliance with your machine checking the F47 standard for voltage sag immunity.

# **Inrush Current Preventive Function**

A5II A5 A5IIE A5E





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

# **Regenerative Energy** Discharge

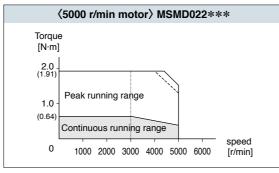


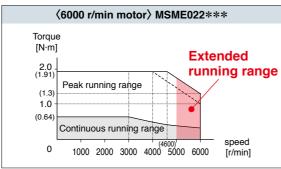
- A regenerative resistor is used to discharge regenerative energy, which is the energy generated when stopping a load with a large moment of inertia or when using this unit in vertical operation. This energy is returned to the driver from the motor.
- · Frame A, B, G and frame H model drivers do not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

## 6000-rpm capability A5II A5 A5IIE A5E

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

[Comparison of new and conventional 200 W]





## Gear head

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

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

MSME → 6000 r/min

MSMD → 5000 r/min MHMD

## Dynamic Braking A5II A5 A5I

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

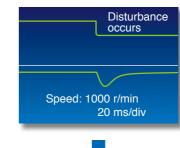
# Parameter Initialization A5II A5 A5IIE

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

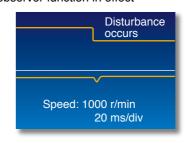
# Disturbance Observer A5II A5 A5IIE A5E

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

Disturbance observer function not in effect



Disturbance observer function in effect



Torque Feed Forward A5II A5 A5IIE

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

## **Friction Torque** A5II A5 A5IIE Compensation

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

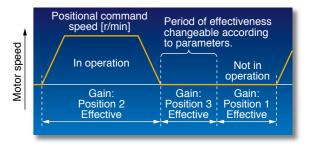
## 3-Step Gain A5II A5

A 3-step gain switch is available in addition to the normal gain switch.

This chooses appropriate gain tunings at both stopping and running.

The 3-step gain switch gives you choices of 3 different tunings for normal running, stopping for faster positioning and at stopping.

The right gaining tunings achieve lower vibration and quicker positioning time of your application.



# Inertia Ratio Conversion A5II A5 A5IIE

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

When you have significant load inertia changes, it can adjust unbalanced speed and position gain turning

It ends up quicker response of your system.

## Input/Output A5II A5 Signal Assignment

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



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

# MINAS A5 Family **Features**

# Applicable international safety standards













|--|

			(A5II, A5 series) (A5IIE, A5E series)
		Driver	Motor
	EMC Directives	EN55011 EN61000-6-2 IEC61800-3	_
EC Directives	Low-Voltage Directives	EN61800-5-1	EN60034-1 EN60034-5
	Machinery Directives Functional safety *1	ISO13849-1(PL d) (Cat. 3) EN61508(SIL2) EN62061(SILCL 2) EN61800-5-2(STO) IEC61326-3-1	_
UL Standards		UL508C (E164620)	UL1004-1, UL1004-6 (E327868)
CSA Standards		C22.2 No.14	C22.2 No.100
Radio Waves Act (South Korea) (KC) *2		KN11 KN61000-4-2, 3, 4, 5, 6, 8, 11	_

IEC: International Electrotechnical Commission EN: Europaischen Normen

EMC : Electromagnetic Compatibility UL: Underwriters Laboratories

CSA: Canadian Standards Association

Pursuant to the directive 2004/108/EC, article 9(2)

Panasonic Testing Centre

Panasonic Service Europe, a division of Panasonic Marketing Europe GmbH

Winsbergring 15, 22525 Hamburg, F.R. Germany

This servo driver is a Class A commercial broadcasting radio wave generator not designed for home use. The user and dealer should be aware of this fact.

A 급 기기 (업무용 방송통신기자재)

이 기기는 업무용(A 급) 전자파적합기기로서 판매자

또는 사용자는 이 점을 주의하시기 바라며, 가정외의

지역에서 사용하는 것을 목적으로 합니다.

(대상기종 : Servo Driver)

This product is not an object of China Compulsory Certification (CCC).

# **Applicable External Scales**

A5II A5

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

<sup>\*3</sup> The maximum speed is a characteristic of the driver. It is limited by the configuration of the machine and the system.

<sup>•</sup> When export this product, follow statutory provisions of the destination country.

<sup>\*1</sup> A5IIE and A5E series doesn't correspond to the functional safety standard.

<sup>\*2</sup> Information related to the Korea Radio Law

<sup>\*4</sup> It changes by the setting.

<sup>\*5</sup> At 0.1 µm resolution.

# Matarlin

**Motor Line-up** 

MINAS A5 Family

MSMD	Mo	otor Line	-up								
MSMD							Rotary	encoder			
NSMD   200 V   0.75   3000   (4500)     1P65		Мо	tor	Voltage		speed (Max. speed)				Features	Applications
100 v   0.05   0.1   0.05   0.05   0.1   0.05		MSMD					0	0	IP65	<ul><li>Small capacity</li><li>Suitable for high</li></ul>	
Name   100 V   0.2   0.4   3000   1965   1967   1967   1967   1967   1967   1967   1967   1968   1				200 V	0.75					<ul> <li>Suitable for all</li> </ul>	Semiconductor production
MSME   400 V   0.75   3000 (5000)   1.5   3000 (5000)   1.5   3000 (4500)   1.6   50	Low ine						0	0	IP67	<ul> <li>Suitable for high speed application</li> </ul>	<ul> <li>Packing machines</li> </ul>
Note   1.0   1.5   3000   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965***   1965	ertia	MeME		200 V	0.75						
MDME		MSME		400 V			(5000)		ID65(*2)	Suitable for the machines directly	machines • Food machines
MDME   1.0   1.5   2000   2.0   3.0   (3000)     15.0   (2000)     15.0   (2000)     15.0   (2000)     15.0   (2000)     15.0   (2000)     15.0   (2000)     15.0   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)   16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)     16.5   (2000)   16.5   (2000)     16.5   (2000)   1								O	IF03	stiffness and high repetitive applica-	production equipment
MDME   2.0   3.0   (3000)   4.0   5.0     1500   (3000)     11.0   (300)     15.0   (2000)     11.0   (300)     15.0   (2000)   (2000)				400 V	0.4 0.6	(4500)					
MFME (Flat type)   200 V   4.5   2000   2000)   1000   1001   1		MDME		200 V	2.0 3.0		0	0	IP65 <sup>(*2)</sup>	<ul> <li>Suitable for low</li> </ul>	<ul><li>Robots</li><li>Machine</li></ul>
15.0 (2) (2000)   15.0 (2) (2000)   15.0 (2) (2000)   15.0 (2) (2000)   15.0 (2) (2000)   16.5 (12) (2000)   16.5 (12) (2000)   16.5 (2000)   16.5 (2000											
MGME   Low speed/High torque   200 V	Middl										
MGME   Low speed/High torque   Widdle capacity   Suitable for low speed and high torque application   Hobots   Textile machines etc	e inertia	(Flat type)			2.5		0	0	IP67	Flat type and suitable for machines with	<ul> <li>Food machines</li> </ul>
MHMD  200 V  0.4  (5000)  1P65  Small capacity Suitable for low stiffness machines with belt driven  1P65  MHME  200 V  200 V  200 V  4.0  5.0  1P65  Leadwire type Small capacity Suitable for low stiffness machines with belt driven  Suitable for low stiffness machines with belt driven, and large load moment of inertia  1P65  MHME  1P65  Leadwire type Small capacity Suitable for low stiffness machines with belt driven, and large load moment of inertia  1P65  Conveyors Robots LCD manufacturing equipment  1500					3.0 4.5 (*3)		0	0	IP65 <sup>(*2)</sup>	<ul> <li>Suitable for low speed and high</li> </ul>	Robots     Textile     machines
MHME  200 V  0.75  3000 (4500)  1.0  1.5  200 V  400 V  400 V  200 V  400 V  1500  1500  165(*2)  175(*3)  1500  175(*3)  1500  175(*3)  1500  175(*3)  1500  175(*3)  1500  175(*3)  1500  175(*3)  1500  175(*3)		MHMD					0	0	IP65	<ul> <li>Small capacity</li> </ul>	
MHME 200 V 400 V 4.0 5.0 (3000)  1P65 <sup>(*2)</sup> IP65 <sup>(*2)</sup> Stiffable for low stiffness machines with belt driven, and large load moment of inertia equipment	High			200 V	0.75					stiffness machines	
75 (*3) 1500 moment of inertia	inertia	МНМЕ			2.0 3.0	(3000)	0	0	IP65 <sup>(*2)</sup>	<ul> <li>Suitable for low stiffness machines with belt driven,</li> </ul>	<ul><li>Robots</li><li>LCD manufacturing</li></ul>
					7.5						

<sup>(\*1)</sup> Except for output shaft, and connector. (\*2) IP67 motor is also available. (\*3) Only IP67 motor is avilable.

15

# **Model Designation**

# **Servo Motor**

	M S	M	Ε	5	Α	Z	G	1	S	* *				
Symbol	Туре								Moto	r specific		ecial spe	cificatio	ons
MSMD	Low inertia (50 W to 750	W)								E(50 W to			MSME	) ME
MSME	Low inertia (50 W to 5.0	kW)									Shaft		Holding	
MDME	Middle inertia (400 W to	15.0 k	W)						Symb	ol				
MFME	Middle inertia (1.5 kW to	4.5 kV	V)						Cyllid	Round	D-cut	Key-way, center tap	without	with
MGME	Middle inertia (0.9 kW to	6.0 kV	V)						Α	•			•	

# Motor rated output

Symbol	Rated output	Symbol	Rated output
5A	50 W	25	2.5 kW
01	100 W	30	3.0 kW
02	200 W	40	4.0 kW
04	400 W	45	4.5 kW
06	600 W	50	5.0 kW
80	750 W	60	6.0 kW
09	0.9 kW	75	7.5 kW
10	1.0 kW	C1	11.0 kW
15	1.5 kW	C5	15.0 kW
20	2.0 kW		

MHMD High inertia (200 W to 750 W) MHME High inertia (1.0 kW to 7.5 kW)

# Voltage specifications

voltage specifications						
Symbol	Specifications					
1	100 V					
2	200 V					
4	400 V					
	100 V/200 V					
Z	common (50 W only)					
	(00 11 01)	1				

# **Rotary encoder specifications**

Symbol	Format	Pulse counts	Resolution	Wires
G	Incremental	20-bit	1048576	5
S	Absolute	17-bit	131072	7

<sup>\*</sup> S: can be used in incremental.

# W [200 V]), MSMD, MHMD Holding brake Oil seal t Key-way, center tap without with without with D N Q R

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

# MSME(750 W [400 V], 1.0 kW to 15.0 kW), MDME, MFME, MGME, MHME

Cumbo	Sh	aft	Holding	g brake	Oil seal		
Symbo	Round	Key-way	without	with	without	with	
С	•		•			•	
D	•					•	
G		•	•			•	
Н		•		•		•	

## Design order

•	
Symbol	Specifications
С	IP65 motor
1	IP67 motor (MSMD, MHMD: IP65)

# Motor with reduction gear

# M S M E 0 1 1 G 3 1 N Motor rated output

Symbol	Type
MSMD	Low inertia (100 W to 750 W)
MSME	Low inertia (100 W to 750 W)
MHMD	High inertia (200 W to 750 W)

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

Voltage specifications					
Symbol	Specifications				
1	100 V				
2	200 V				

Rotary encoder specifications							
Symbol	Format	Pulse counts	Resolution	Wires			
G	Incremental	20-bit	1048576	5			
S	Absolute	17-bit	131072	7			

A5E series

# Gear ratio, gear type

C. makal	Gear	Mo	otor ou	Gear		
Symbol	reduction ratio 100 200 40		400	750	type	
1N	1/5	•	•	•	•	
2N	1/9	•	•	•	•	For high
3N	1/15	•	•	•	•	accuracy
4N	1/25	•	•	•	•	

# \* MHMD 100 W is not prepared.

# **Motor structure**

Cymbol	Shaft	Holding brake				
Symbol	Key-way	without	with			
3	•	•				
4	•		•			

**Servo Driver** 

Speed, Position, Torque, Full-closed type	M	Α	D	K	T	1	5	0	5	*	*	*	———— Special specification
Position control type	M	Α	D	K	T	1	5	0	5	E	*	*	Special specification

# Frame symbol \*-Symbol Frame Symbol Frame

	MAD	Frame A	MED	Frame E			
	MBD	Frame B	MFD	Frame F			
	MCD	Frame C	MGD	Frame G			
	MDD	Frame D	MHD	Frame H			
* A5IIE, A5E series is up to F-frame.							
Series —							

Series		
Symbol	Velocity, Position, Torque, Full-Closed type	Position cor type

A5I series

A5 series

curren	t rating			
Symbol	Current rating			
T1	10 A			voltage
T2	15 A	S	pecifi	cations
T3	30 A	5	Symbol	Specifications
T4	35 A		1	Single phase, 100
T5	50 A		3	3-phase, 200 V
T7	75 A		4	3-phase, 400 V
TA	100 A		5	Single/3-phase, 20
TB	150 A			
TC	300 A			

Power device Max.

Offig	position com	101	
		Current detector	current rating

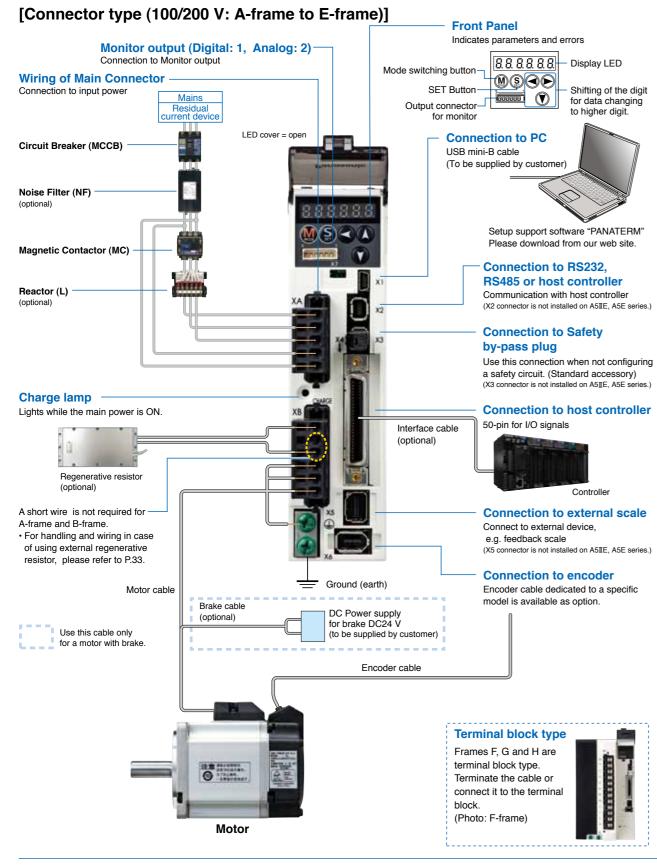
	Symbol	Specifications	Ш	Symbol	Specifications	
	05	5 A		40	40 A	
	07	7.5 A		64	64 A	
	10	10 A	I	90	90 A	
;	12	12 A		A2	120 A	
) V	20	20 A		B4	240 A	
	30	30 A	ľ			

۲	to F-frame.		T4	35 A	1	Single phase, 100 V
		_	T5	50 A	3	3-phase, 200 V
	Danitian control		T7	75 A	4	3-phase, 400 V
	Position control type		TA	100 A	5	Single/3-phase, 200 V
	914		TB	150 A		
	A5IIE series		TC	300 V		

<sup>\*</sup> See the P.21 to P.28, driver and motor combination.

<sup>\*</sup> S: can be used in incremental.

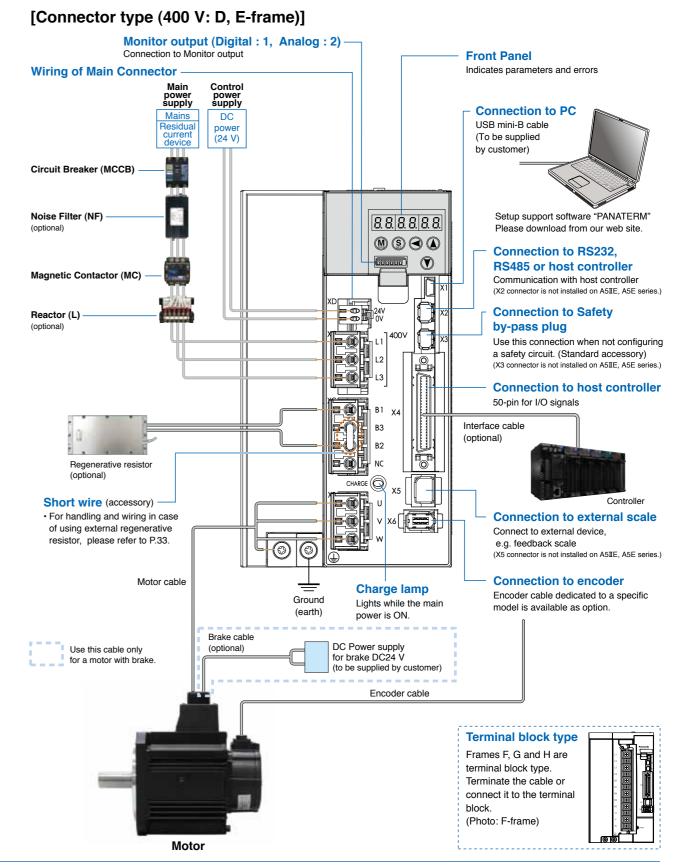




# <Caution>

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

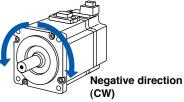
Example) Steel screw (M5) into steel section: 2.7 N·m to 3.3 N·m.



## <Note:

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

Positive direction (CCW)



# **Driver and List of Applicable Peripheral Equipments**

MINAS A5 Family

Driver	Applicable motor	Voltage *1	Rated output	Required Power (at the (rated load)	Circuit breaker (rated (current)	Noise filter (Single phase 3-phase	Surge absorber (Single phase) 3-phase	Noise filter for signal	Rated operating current of magnetic contactor Contact configuration *2	Diameter and withstand voltage of main circuit cable	Crimp terminal for main circuit terminal block *4	Diameter and withstand voltage of control power supply cable	Crimp terminal for control power supply terminal block	Diameter and withstand voltage of motor cable *5	Diameter and withstand voltage of brake cable
MADH	MSME MSMD	Single phase, 100 V	50 W to 100 W	approx. 0.4 kVA		DV0P4170	DV0P4190								
MADK	MHMD	Single/ 3-phase, 200 V	50 W to 200 W	approx. 0.5 kVA	40.4	DV0P4170 DV0PM20042	DV0P4190 DV0P1450			0.75 mm²/				0.752/	0.28 mm <sup>2</sup> to 0.75 mm <sup>2</sup> /
MBDH MBDK	MSME MSMD	Single 100 V Single/	200 W	approx. 0.5 kVA	10 A	DV0P4170 DV0P4170	DV0P4190 DV0P4190		20 A (3P+1a)	AWG18 600 VAC				0.75 mm²/ AWG18 600 VAC	AWG22 to AWG18
INIDUK	MHMD	3-phase, 200 V Single	400 W	approx. 0.9 kVA approx.		DV0PM20042	DV0P1450			or more		0.75 mm²/		or more	100 VAC or more
MCDH MCDK	MSME MSMD	100 V Single/	400 W	0.9 kVA approx.		DV0PM20042	DV0P4190					AWG18 600 VAC			
WODK	MHMD	3-phase, 200 V	750 W	1.3 kVA	15 A							or more			
	MHME MGME		1.0 kW 0.9 kW	1.8 kVA approx.			DV0P4190				δ		δ		
	MSME	Single/ 3-phase,	1.0 kW	1.8 kVA approx. 1.8 kVA		DV0P4220	DV0P1450	DV0P1460	30 A (3P+1a)		Connection to		onnecti		
	MHME	200 V	1.5 kW	approx.	20 A				(0 )		ion to		on to e		
MDDH	MFME MSME MDME		400 W	2.3 kVA approx. 0.9 kVA							exclusive		Connection to exclusive connector		
MDDK	W.D.W.E		600 W	approx. 1.2 kVA approx.							connecto		conne		
	MSME MSME	2 phase	750 W	1.6 kVA		FN258L-16-07			20 A	2.0 mm²/ AWG14	ctor	0.52 mm²/ AWG20	ctor	2.0 mm²/ AWG14	
	MDME MHME MGME	3-phase, 400 V	1.0 kW 0.9 kW	approx. 1.8 kVA	10 A	(Recommended) component	DV0PM20050		(3P+1a)	600V VAC or more		100 VAC or more		600V VAC or more	
	MSME MDME MFME		1.5 kW	approx. 2.3 kVA											
	MHME MDME MSME MHME	3-phase,	2.0 kW	approx. 3.3 kVA	30 A	DV0PM20043	DV0P1450	DV0P1460 RJ8035 (Recommended)	60 A			0.75 mm²/ AWG18			
MEDH	MFME	200 V	2.5 kW	approx. 3.8 kVA				component *6	(3P+1a)			600 VAC or more			
MEDK	MSME MDME MHME	3-phase,	2.0 kW	approx. 3.3 kVA	15 A	FN258L-16-07 (Recommended)	DV0PM20050	DV0P1460	30 A			0.52 mm²/ AWG20			
	MFME	400 V	2.5 kW	approx. 3.8 kVA		(component)	D 70. III.2000	2 701 1 100	(3P+1a)			100 VAC or more			
	MGME MDME		2.0 kW	approx. 3.8 kVA					60 A						
	MHME MSME MGME MDME		3.0 kW	approx. 4.5 kVA				DV0P1460	(3P+1a)		11 mm or smaller	0.75 mm²/	11 mm or smaller		
	MHME MSME	3-phase, 200 V	4.0 kW	approx. 6.0 kVA	50 A	DV0P3410	DV0P1450	RJ8035 (Recommended component			<u>φ5.3</u>	AWG18 600 VAC or more	/ <u>Ц</u> ф5.3 Тегтіпа		0.75 mm²/
	MFME MGME		4.5 kW	approx. 6.8 kVA				*6	100 A (3P+1a)		Terminal block M5	or more	block M5		AWG18 100 VAC or more
MEDH	MDME MHME MSME		5.0 kW	approx. 7.5 kVA						3.5 mm²/ AWG12				3.5 mm²/ AWG12	00.0
MFDK	MGME		2.0 kW	approx. 3.8 kVA						600 VAC or more				600 VAC or more	
	MSME MDME MGME MHME		3.0 kW	approx. 4.5 kVA							10 mm or smaller	0.75 mm2/	7 mm or smaller		
	MSME MDME MHME	3-phase, 400 V	4.0 kW	approx. 6.0 kVA	30 A	FN258L-30-07 (Recommended) component	DV0PM20050	DV0P1460	60 A (3P+1a)		φ4.3	0.75 mm²/ AWG18 100 VAC	(O) <u>\$\partial\$</u>		
	MFME		4.5 kW	approx. 6.8 kVA							Terminal block	or more	Terminal block		
	MGME MSME MDME		5.0 kW	approx. 7.5 kVA							M4		M3		
	MHME		7.5 kW	approx. 11 kVA		F05550 55 5					11 mm or	0.75 mm²/	10 mm or		
	MGME	3-phase, 200 V	6.0 kW	approx. 9.0 kVA approx.	60 A	(Recommended component)	DV0P1450		100 A (3P+1a)	5.3 mm²/	smaller	AWG18 600 VAC	smaller		
MGDH MGDK	MHME		7.5 kW 7.5 kW	11 kVA approx.		FN258-42-07				AWG10 600 VAC	φ5.3	or more 0.75 mm <sup>2</sup> /	φ5.3	13.3 mm²/ AWG6	
	MGME	3-phase, 400 V	6.0 kW	approx. 9.0 kVA	30 A	or FN258-42-33	DV0PM20050	DV0P1460	60 A (3P+1a)	or more	Terminal block	0.75 mm <sup>-</sup> / AWG18 100 VAC	Terminal block	600 VAC or more	
	МНМЕ		7.5 kW	approx. 11 kVA approx.	400.	(Recommended) component		RJ8095 (Recommended) component			M5	or more	M5		
		3-phase, 200 V	11 kW	17 kVA approx. 22 kVA	100 A 125 A	FS5559-80-34 (Recommended component	DV0P1450	T400-61D (Recommended component *6	150 A (3P+1a)		16 mm or smaller	0.75 mm²/ AWG18 600 VAC or more	10 mm or smaller	21.1 mm²/ AWG4 600 VAC	
MHDH MHDK	MDME		11 kW	approx. 17 kVA	50 A	FN258-42-07				13.3 mm²/ AWG6 600 VAC	φ6.4		φ4.3	or more 13.3 mm²/ AWG6	
		3-phase, 400 V	15 kW	approx. 22 kVA	60 A	or FN258-42-33 (Recommended component)	DV0PM20050		100 A (3P+1a)	or more *3	Terminal block M6	0.75 mm²/ AWG18 100 VAC or more	Terminal block M4	600 VAC or more 21.1 mm²/ AWG4 600 VAC or more	

- \*1 Select peripheral equipments for single/3phase common specification according to the power source.
- \*2 For the external dynamic brake resistor, use the magnetic contactor with the same rating as that for the main circuit.
- \*3 When use the external regenerative resistor of the option (DV0PM20058, DV0PM20059), use the cable with the same diameter as the main circuit cable.
- \*4 For the ground screw, use the same crimp terminal as that for the main circuit terminal block.
- \*5 The diameter of the ground cable and the external dynamic brake resistor cable must be equal to, or larger than that of the motor

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

- \*6 Use thses products to suit an international standard.
- Related page

Surge absorber......P.253 "Composition of Peripheral Equipments" Noise filter for signal ........ P.254 "Composition of Peripheral Equipments" Motor/brake connector ..... P.186, P.187 "Specifications of Motor connector"

About circuit breaker and magnetic contactor

To comply to EC Directives, install a circuit break er between the power and the noise filter without fail, and the circuit breaker should conform to IEC Standards and UL recognized (Listed and (4) marked). Suitable for use on a circuit capable of delivering not more than 5000 Arms symmetrical amperes, below the maximum input voltage of the product.

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

# <Remarks>

- · Select a circuit breaker and noise filter which match to the capacity of power supply (including a load condition).
- Terminal block and protective earth terminals
- Use a copper conductor cables with temperature rating of 75 °C or higher.
- Use the attached exclusive connector for A-frame to E-frame, and maintain the peeled off length of

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

•			,		
	Driver	Termina	al block screw		cover fastening screw
Frame	Terminal name	Nominal size	Fastening torque (N•m)	Nominal size	Fastening torque (N•m)
F(200 V)	L1, L2, L3, L1C, L2C, B1, B2, B3, NC, U, V, W	M5	1.0 to 1.7		
F(400 V)	24V、0V	M3	0.4 to 0.6	M3	0.19 to 0.21
F(400 V)	L1, L2, L3, B1, B2, B3, NC, U, V, W	M4	0.7 to 1.0	IVIO	0.19 (0 0.21
G	L1C, L2C, 24V, 0V, DB1, DB2, DB3, DB4, NC	M5	1.0 to 1.7		
G	L1, L2, L3, B1, B2, NC, U, V, W	M5	2.0 to 2.4	М3	0.3 to 0.5
Н	L1C, L2C, 24V, 0V, DB1, DB2	M4	0.7 to 1.0	M5	2.0 to 2.5
п	L1, L2, L3, B1, B2, NC, U, V, W	M6	2.2 to 2.5	IVIO	2.0 10 2.5

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

	Gro	ound screw		ector to host troller (X4)
Driver frame	Nominal size	Fastening torque (N•m)	Nominal size	Fastening torque (N•m)
A to E	M4	0.7 to 0.8		
G	M5	1.4 to 1.6	M2.6	0.3 to 0.35
Н	M6	2.4 to 2.6		

# <Caution>

- Applying fastening torque larger than the maximum value may result in damage to the product.
- Do not turn on power without tightening all terminal block screws properly, otherwise, loose contacts may generate heat (smoking, firing).
- <Remarks>
- To check for looseness, conduct periodic inspection of fastening torque once a year.

		Motor				Driver		Power				Optional par	ts				
	Power	Output	Part No.	Rating/	A5II series A5 series Part No.	A5IIE series A5E series Part No.		capacity	Encode	er Cable		Motor	Cable	Brake Cable	External	Reactor	Noise Filter
Motor series	supply	(W)	Note) 1	Spec. (page)	(Speed, Position, Torque, Full-Closed type) Note) 2	(Position control type Note) 3,4	Frame	rated load / (kVA)	20-bit Incremental Note) 5	17-bit Absolute Note) 4,5		without Brake Note) 5	with Brake Note) 5	Note) 5	Regenerative Resistor	Single phase 3-phase	Single phase 3-phase
		50	MSMD5AZ ☐ 1 *	49	MAD $\diamondsuit$ T1105	MAD $\diamondsuit$ T1105E	A-frame	Approx.							DV0P4280	DV0P227	
	Single phase	100	MSMD011 □ 1 *	51	MAD $\diamondsuit$ T1107	MAD $\diamondsuit$ T1107E		Approx. 0.4	-								DV0P4170
	100 V	200	MSMD021 □ 1 *	53	MBD 🔷 T2110	MBD ◇ T2110E	B-frame	Approx.							DV0P4283	DV0P228	
MSMD		400	MSMD041 ☐ 1 *	55	MCD ♦ T3120	MCD ♦ T3120E	C-frame	Approx.	MFECA	MFECA		MFMCA		MFMCB	DV0P4282		DV0PM2004
(Leadwire)		50	MSMD5AZ ☐ 1 *	50	MAD ◇ T1505		-	Approx.  O.5  Approx.	0 * * 0EAM	0 * * 0EAE Note) 7		0 * * 0EED	_	0 * * 0GET	DV0P4281	DV0P227	
3000 r/min	Single phase/	100	MSMD012	52	MAD ◇ T1505	MAD ◇ T1505E	A-frame	0.5 Approx.	_	Note) 7						DV0P220	DV0P4170 DV0PM2004
	3-phase 200 V	200	MSMD022 □ 1 *	54	MAD ♦ T1507	MAD $\diamondsuit$ T1507E	_	0.5 Approx.	_						D) (0D (000		D V OF IVI2004
5	200 1	400	MSMD042 □ 1 *	56	MBD ♦ T2510	MBD $\diamondsuit$ T2510E		0.9 Approx.							DV0P4283	DV0P228 DV0P220	DV0DM0004
Low inertia		750	MSMD082 □ 1 *	57	MCD ♦ T3520 MAD ♦ T1105		C-trame	1.3 Approx.				MEMOA		MEMOR		5 7 01 220	DV0PM2004
rtia i	Single	100	MSME5AZ ☐ 1 *  MSME011 ☐ 1 *	65 67	MAD $\diamondsuit$ T1107	MAD $\diamondsuit$ T1107E	A-frame	O.4 Approx.	MFECA 0 * * 0MJD	MFECA 0 * * 0MJE		MFMCA 0 * * 0NJD /For movable,\		MFMCB 0 * * 0PJT /For movable,\	DV0P4280	DV0P227	DV0P4170
	phase 100 V	200	MSME021 □ 1 *	69	MBD ♦ T2110	MBD ♦ T2110E	B-frame	O.4 Approx.	For movable, direction of motor shaft	(For movable, direction of motor shaft		direction of motor shaft		direction of motor shaft MFMCB	DV0P4283		5001 4170
MSME	100 1	400	MSME041 □ 1 *	71	MCD ♦ T3120	·		0.5 Approx. 0.9	MFECA 0 * * 0MKD	MFECA 0 * * 0MKE	1	0 * * 0NKD For movable, opposite direction		0 * * 0PKT For movable, opposite direction	DV0P4282	DV0P228	DV0PM2004
(Connector)		50	MSME5AZ ☐ 1 *	66	MAD $\diamondsuit$ T1505	MAD ◇ T1505E		Approx. 0.5	For movable, opposite direction of motor shaft	opposite direction of motor shaft		of motor shaft /	_	of motor shaft  MFMCB			
3000 r/min	Single	100	MSME012 □ 1 *	68	MAD $\diamondsuit$ T1505	MAD ♦ T1505E	A-frame	Approx.	MFECA 0 * * 0TJD / For fixed, \	MFECA 0 * * 0TJE / For fixed, \		0 * * 0RJD (For fixed, direction of)		0 * * 0SJT For fixed, \direction of	DV0P4281	DV0P227	DV0P4170
	phase/ 3-phase	200	MSME022 □ 1 *	70	MAD $\diamondsuit$ T1507	MAD ♦ T1507E		Approx.	direction of motor shaft/	direction of motor shaft/		\motor shaft/ MFMCA		\motor shaft/ MFMCB		DV0P220	DV0PM2004
	200 V	400	MSME042 □ 1 *	72	MBD ◇ T2510	MBD ◇ T2510E	B-frame	Approx. 0.9	0 * * 0TKD	0 * * 0TKE For fixed, opposite direction	1	0 * * 0RKD  For fixed, opposite direction of motor shaft		0 * * 0SKT  For fixed, opposite direction of motor shaft	DV0P4283	DV0P228	
		750	MSME082 □ 1 *	73	MCD ◇ T3520	MCD ♦ T3520E	C-frame	Approx.	opposite direction of motor shaft	of motor shaft	ľ	Note) 6		or motor strait		DV0P220	DV0PM2004
	Single phase	200	MHMD021 □ 1 *	59	MBD ◇ T2110	MBD ◇ T2110E	B-frame	Approx. 0.5							DV0P4283	DV0P228	DV0P4170
High /I eadwire	100 V	400	MHMD041 □ 1 *	61	MCD ◇ T3120	MCD ◇ T3120E	C-frame	Approx. 0.9							DV0P4282		DV0PM2004
Leadwire type  3000 r/min	Single	200	MHMD022 □ 1 *	60	MAD 🔷 T1507	MAD ♦ T1507E	A-frame	Approx. 0.5	MFECA 0 * * 0EAM	MFECA 0 * * 0EAE		MFMCA 0 * * 0EED	_	MFMCB 0 * * 0GET		DV0P227 DV0P220	DV0P4170
ត់ 3000 r/min	phase/ 3-phase	400	MHMD042 □ 1 *	62	MBD ◇ T2510	MBD ◇ T2510E	B-frame	Approx. 0.9		Note) 7					DV0P4283	DV0P228	DV0PM2004
	200 V	750	MHMD082 □ 1 *	63	MCD ♦ T3520	MCD ♦ T3520E	C-frame	Approx.								DV0P220	DV0PM2004

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

- Note) 2  $\diamondsuit$ : Drivers series K: A5II series H: A5 series
- Note) 3  $\diamondsuit$ : Drivers series K: A5IIE series H: A5E series
- Note) 4 Because A5IIE, A5E series drivers (dedicated for position control) do not support the 17-bit absolute specification, only 20-bit incremental type can be used in combination.
- Note) 5 Cable length: \*\* (03: 3 m, 05: 5 m, 10: 10 m, 20: 20 m) (Example. 3 m: MFECA0030EAM)
- Selection of cable for MSME motor (Movable: For application where the cable is movable.) Fixed: For application where the cable is fixed.

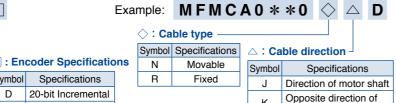
## · Encoder cable Example: $MFECA0**0 \diamondsuit \triangle \square$ Symbol Specifications △ : Cable direction М Movable Specifications

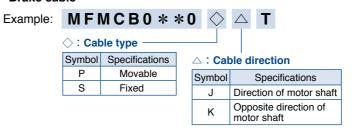
J Direction of motor shaft

Opposite direction of

Fixed

· Motor cable





Micro Cable   Brake   Cable   External   Reactor   Noise Filter   Interface Cable   Diviny-Residence   Div	_											
Micro Cable		Optional par	rts						<ul> <li>Options</li> </ul>			
Without Brake   Note) 5   Note) 6   Note) 5   Note) 6				Brake						Title	Part No.	Page
Without   Brake   Note) 5   Note) 6   Note) 5   Note) 6   Note) 5   Note) 6   Note) 5   Note) 6   Note)		Motor	Cable	Cable	Externa	l Reactor	Noise Filte	r	Interface Cable		DV0P4360	
DVOP4281		without	with		Regenerat	tive /	/					
Note) 5		Brake	Brake	Note) 5	Resisto	r						197
DV0P4283		Note) 5	Note) 5	14010) 0		,	,		Interface Conve	rsion Cable		
MFMCA												
MFMCA					DV0P42	80 DV0P227			0	Single row	DV0P4132	
MFMCA 0 ** 0 GED							DV0P4170	)		A-frame type	DV0PM20032	000
MFMCA 0 ** 0 GET					DV0P42	83				D-frame Double row	DV0PM20033	200
MFMCA 0 ** 0FM D								$\dashv$		type		
Note   Capital Processor   Connector Kit for					DV0P42	82	DV0PM2004	42		A-frame to D-frame	DV0PM20034	201
DV0P4281   DV0P4281   DV0P4282   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   Safety   DV0PM20035   303   DV0PM20042   Safety   DV0PM20035   303   DV0PM20042   Safety   DV0PM20035   304   DV0PM20035   305   DV0PM20042   DV0PM20036   Safety   DV0PM20035   Safety   DV0PM20035   Safety   DV0PM20035   Safety   DV0PM20035   Safety   DV0PM20035   Safety   DV0PM20035   Safety   DV0PM20036   Safety   DV0PM20036   Safety   DV0PM20036   Safety   DV0PM20036   Safety   DV0PM20036   Safety   DV0PM20037   Safety   DV0PM			_						Connection		D) (0D 1000	
DV0P428		0 * * 0EED		0 * * 0GET	DV0P42	81 DV0P227			Connector Kit fo	or		202
DV0P4283   DV0P4280							DV0P4170	)	Motor/Encoder	Connection		203
DV0P4283   DV0P228   DV0PM20042   NFMCA   DV0PM20024   DV0PM20025   NFMCA   NFMCA   NFMCA   DV0PM20025   NFMCA						DV0P220	DV0PM2004	42	Connector Kit fo	nr		
MFMCA							2 1 01 111200	_			DV0PM20040	206
MFMCA 0 * **ONJD   First measurate, and processes and pro					DV0P42	83 <sub>DV0P228</sub>				RS485, RS232	DV0PM20024	
MFMCA   O ** ONLD   Content of Kill   MFMCB   O ** OPAT   Overland							D) / 2 D) / 2 D 2					198
MFMCA   O * * ONUD   For monoidate   O * * OPUT   For monoidate   O * OPUT   OPU						DV0F220	DV0PM2004	42	Connector Kit			
0 - * ONLD   Green mouth   G		MFMCA		MEMCB								400
Section of motor shaft   MFMCA   DV0P4283   DV0P4283   DV0P4281   DV0P4283   DV0P44170   DV0P44170   DV0P4483   DV0P448					DV0P42	80 DV0P227						199
MFMCA 0 ** OFT ONKD 0 ** OPT OFT OKAN 0 ** OPT OFT OKAN 0 ** OPT OKAN 0 **		direction of		direction of			DV0P4170	)	Rattery For Ahs			
0 ** OPICT   For movable, (epopulate direction)   For movable, (epopulate directi					DV0P42	83				oldto Ericodol		207
DV0PM20028   DV0PM20024   DV0PM20025   DV0PM20026   DV0					D V 01 42			$\dashv$		A-frame		
MFMCA		opposite direction		opposite direction	DV0P42	82	DV0PM2004	42	_	B-frame	DV0PM20028	208
0 - 0 R.ID   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT   For fixed, derication of innotes shall   Note) 6   0 - 0 SKT			_						Diacket	C-frame	DV0PM20029	
For fixed, direction of interest and int			_		DV0P42	81 DV0D227					MFECA0**0EAD	188
		For fixed, \direction of		/ For fixed, \			DV0P4170					100
10		\motor shaft/		\motor shaft/		DV0P220	DV0PM2004	42		without Battery Box		-
Port lixed, opposite direction of motor shaft   Note) 6							D VOI IVILOU	-				189
Note) 6		/ For fixed, \		/ For fixed,	DV0P42	83 DV0P228			Encoder Cable			-
Note) 6		of motor shaft		of motor shaft			D) / 2 D) / 2 D 2	_	Encoder Cable			188
MFMCA		Note) 6				D V 01 220	DV0PM2004	42			MFECA0**0MJE	
MFMCA					DV0P428	83	DV0P4170			with Battery Box	MFECA0**0MKE	100
MFMCA								_			MFECA0**0TJE	109
Note) 6 Cables for opposite to output shaft cannot be used with 50 W or 100 W motor.  Note) 7 When you use a 17-bit absolute encoder as an incremental encoder, please use the encoder cable MFECA0**0EAD.  Parake cable  Example: MF M C B 0 ★ ★ 0					DV0P428	82	DV0PM2004	42				
DV0P4283   DV0P4280   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   DV0PM20042   MFMCA0**0RKD   MFMCB0**0GET   MFMCB0**0GET   MFMCB0**0SLT			_				DV0D4170					
DV0P4283   DV0P220   DV0PM20042   MFMCA0**0RJD   MFMCA0**0RJD   MFMCA0**0RJD   MFMCB0**0GET   MFMCB0**0PJT   MFMCB0**0PJT   MFMCB0**0PJT   MFMCB0**0SJT		0 * * 0EED		0 * * 0GET					Motor Cable	without Brake		101
Note) 6 Cables for opposite to output shaft cannot be used with 50 W or 100 W motor.  Note) 7 When you use a 17-bit absolute encoder as an incremental encoder, please use the encoder cable MFECA0**0EAD.  Brake Cable  External Regenerative Resistor  Brake Cable  External Regenerative Resistor  Brake Cable  External Regenerative Resistor  Symbol Specifications P Movable S Fixed  DV0P220 DV0P420  T  Symbol Specifications J Direction of motor shaft Noise Filter  DV0P3410  Symbol Specifications J Direction of motor shaft Noise Filter Signal Lines  DV0P1460  External Regenerative Resistor  DV0P227 DV0P227 DV0P227 DV0P228 DV0P227 DV0P220, DV0P221 DV0P220, DV0					DV0P428	B3 DV0P228	DV0PIVI2002	42	Wiotor Cable	Without Branc		101
Note) 6 Cables for opposite to output shaft cannot be used with 50 W or 100 W motor.  Note) 7 When you use a 17-bit absolute encoder as an incremental encoder, please use the encoder cable MFECA0**0EAD.  Brake Cable  External Regenerative Resistor  Brake Cable  External Regenerative Resistor  Brake Cable  External Regenerative Resistor  Fixed  MFMCB0**0SJT  MFMCB0**0SJT  MFMCB0**0SKT  MFMCB0**0SJT  MFMCB0**0SJT  MFMCB0**0SJT  MFMCB0**0SJT  MFMCB0**0SJT  MFMCB0**0SJT  MFMCB0**0SJT  MFMCB0**0SJT  MFMCB0**0SKT  DV0P4280  25 0 50 W DV0P4280  25 0 50 W DV0P4281  25 0 50 W DV0P4281  20 0 130 W DV0P4283  20 DV0P223, DV0P224, DV0P225, DV0P225, DV0P227, DV0P225, DV0P225, DV0P225, DV0P227, DV0P225, DV0P225, DV0P220, DV0P220, DV0P20047  Noise Filter  DV0P4170, DV0PM20042  DV0P4170, DV0PM20042  DV0P4170, DV0PM20042  DV0P4290, DV0P4200, DV0P4190  Symbol Specifications  P Movable  S Fixed  J Direction of motor shaft  K Opposite direction of  Noise Filter for Signal Lines  DV0P1460  254						DV0P220	D//UDM200	12				
100 W motor.  Note) 7 When you use a 17-bit absolute encoder as an incremental encoder, please use the encoder cable MFECA0**0EAD.    So Ω 25 W   DV0P4280	_										MFMCB0**0GET	
Note) 7 When you use a 17-bit absolute encoder as an incremental encoder, please use the encoder cable MFECA0**0EAD.    Solution   MFMCB0**0SKT   MFMCB0**OSKT   MFMCB0**OS		,		osite to outpu	t snatt ca	nnot be used	with 50 W	or				
encoder, please use the encoder cable MFECA0**0EAD.    External   50 Ω 25 W   DV0P4280   100 Ω 25 W   DV0P4281   25 Ω 50 W   DV0P4281   25 Ω 50 W   DV0P4282   30 Ω 100 W   DV0P4283   30 Ω 100 W   DV0P4284   20 Ω 130 W   DV0P4285   20 Ω 130 W   DV0P221, DV0P222, DV0P223, DV0P224, DV0P225, DV0P227, DV0P228, DV0P227, DV0P228, DV0P227, DV0P228, DV0P227, DV0P228, DV0P227, DV0P228, DV0P227, DV0P228, DV0P229, DV0P227, DV0P228, DV0P20047   Noise Filter   DV0P4170, DV0PM20042   DV0P429, DV0P				- 47 64 -6					Brake Cable			196
External Regenerative Resistor		,	•					aı				
External Regenerative Resistor   100 Ω 25 W   DV0P4281   25 Ω 50 W   DV0P4282   50 Ω 50 W   DV0P4283   30 Ω 100 W   DV0P4284   20 Ω 130 W   DV0P4284   20 Ω 130 W   DV0P4285   DV0P220, DV0P221, DV0P222, DV0P223, DV0P224, DV0P225, DV0P227, DV0P228, DV0P227, DV0P228, DV0P227, DV0P228, DV0P227, DV0P228, DV0P2047   DV0P4280, DV0P4470, DV0P4284   20 Ω 130 W   DV0P4285   DV0P227, DV0P228, DV0P227, DV0P228, DV0P227, DV0P228, DV0P227, DV0P228, DV0P227, DV0P228, DV0P2047   DV0P4470, DV0PM20042 DV0P4420, DV0PM20043   DV0P4490   250   D		end	oder, piease	use the enco	oder cable	WIFECAU UE	EAD.			50 O 25 W		
External Regenerative Resistor   25 Ω 50 W   DV0P4282   210												
- Brake cable  Example: M F M C B 0 ★ ★ 0												
- Brake cable  Example: M F M C B 0 * * 0												210
Example: MFMCB0**0 T  Symbol Specifications P Movable S Fixed  Symbol Specifications P Movable S Fixed  DV0P220, DV0P221, DV0P222, DV0P222, DV0P223, DV0P224, DV0P225, DV0P227, DV0P228, DV0P2047  DV0P4170, DV0PM20042 DV0P4220, DV0PM20043 DV0P4220, DV0PM20043 DV0P4220, DV0PM20043 DV0P4220, DV0PM20043 DV0P4220, DV0PM20043 DV0P4220, DV0PM20043 DV0P4190 253 Surge Single phase DV0P4190 3-phase (200 V) DV0P1450 Noise Filter for Signal Lines DV0P1460 254									1 10010101	30 Ω 100 W	DV0P4284	
Example: MFMCB0 * *0		. Broke ask	do.									
Symbol Specifications P Movable S Fixed  Symbol Specifications D V0P4220, DV0PM20043  Symbol Specifications D Symbol Specifications Symbol Specifications D Symbol Specificati				B0 * *(	) 🔷 🗸	<b>T</b>			Reactor	DV0P223, DV0P224	, DV0P225,	209
Symbol     Specifications       P     Movable       S     Fixed       S     Direction of motor shaft       Volume     Noise Filter       DV0P4220, DV0PM20043       DV0P3410     251       Surge     Single phase     DV0P4190       3-phase (200 V)     DV0P1450       Noise Filter     Noise Filter				ре ———								250
P Movable Symbol Specifications J Direction of motor shaft C Opposite direction of  Noise Filter for Signal Lines  DV01 3410  Surge Absorber 3-phase (200 V) DV0P1450  253  Noise Filter for Signal Lines  DV01 44190 253  Noise Filter for Signal Lines					△:Cable	direction			Noise Filter		∠∪∪43	
S Fixed J Direction of motor shaft  V Opposite direction of Noise Filter for Signal Lines DV0P1460 254							ns		Surge		DV0P4190	
			S F	ixed	J D	•			_			253
							n of		Noise Filter for S	Signal Lines	DV0P1460	254

21

Symbol Specifications

E 17-bit Absolute

Part No.

DV0P4360 DV0P4120 DV0P4121

DV0P4130 DV0P4131 DV0P4132

DV0PM20032

DV0PM20033

DV0PM20044

DV0PM20051

DV0PM20052

DV0PM20053

DV0PM20046

DV0PM20054 DV0PM20045

DV0PM20055

DV0P4310 DV0P4320

DV0P4330 DV0P4340

DV0PM20024

DV0PM20025

DV0PM20026 DV0PM20010

DV0P4350

DV0P2990

DV0P4430

DV0PM20030

MFMCF0\*\*2ECD MFMCA0\*\*3ECT

MFMCD0\*\*3ECT MFMCA0\*\*2FCD

MFMCE0\*\*2FCD MFMCA0\*\*3FCT 195

DV0P4280

DV0P4281

DV0P4282

DV0P4283

DV0P4284

DV0P4285

DV0PM20048

DV0PM20049

DV0P4190

DV0P1450

DV0P1460

DV0PM20050

250

251

253

254

MFECA0\*\*0ESE 190 MFMCA0\*\*2ECD 191 MFMCD0\*\*2ECD MFMCE0\*\*2ECD 192

208

A-frame Single row type

Double row

A-frame to D-frame DV0PM20034

Analog Monitor Signal DV0PM20031

without Battery Box MFECA0\*\*0ESD 189

D-frame (400 V)

E-frame (400 V)

E-frame (400 V)

E-frame (200 V)

D-frame (400 V)

D-frame (400 V)

with Battery Box

3-phase (400 V)

Surge Absorber 3-phase (200 V)

Noise Filter for Signal Lines

DV0P220, DV0P221, DV0P222, DV0P223, DV0P224, DV0P225,

DV0P4170, DV0PM20042

DV0P4220, DV0PM20043

		Motor				Driver		Dower				Optional	parts					· Options (IP6	35 motor)
					A5II series	A5IIE series		capacity	Encode	er Cable		Motor	Cable	Brake					Title
	Power	Output	Part No.	Rating/	Part No.			/ at \				WIOTOI	Cabic	Cable	External	Reactor		Interface Cable	1
otor series	supply	(W)	Note) 1	Spec. (page)	(Speed, Position, Torque, Full-Closed type) Note) 2	(Position control type Note) 3,4	Frame	(kVA)	20-bit Incremental Note) 5	17-bit Absolute Note) 4,5		without Brake Note) 5	with Brake Note) 5	Note) 5	Resistor	Single phase 3-phase	Noise Filter	Interface Conve	ersion Cable
	Single phase/	1000	MSME102 □ C *	74	MDD $\diamondsuit$ T5540	MDD $\diamondsuit$ T5540E	D-frame	Approx. 1.8				MEMCD	MEMCA		DV0P4284	DV0P222	DV0P4220		Sing
	200 V				-			Approx. 2.3	MFECA	MFECA		0**2ECD	0**2FCD	_	DV0P4285	DV0P222		Connector Kit	A-frame to Doubtype
							E-frame		0**0ESD	0**0ESE					Note) 6		DV0PM20043		E-frame (200 \
MSME 3000 r/min	3-phase 200 V			78	MFD ♦ TB3A2	MFD ♦ TB3A2E	F-frame					MFMCA 0**3ECT	MFMCA 0**3FCT		DV0P4285 ×2 in parallel	DV0P225	DV0P3410	Connection	D-frame (400 \ E-frame (400 \
	3-phase	750 1000 1500	MSME104 C *	105 106	MDD $\diamondsuit$ T3420 MDD $\diamondsuit$ T3420	MDD ♦ T3420E MDD ♦ T3420E		Approx. 2.3	MFECA	MFECA		MFMCD 0**2ECD	MFMCE 0**2FCD		DV0PM20048	— — —	Recommended	Connector Kit for Control Power Supply Input Connection	D-frame and E-frame (400 \
	400 V		MSME304 ☐ C * MSME404 ☐ C *	108 109	MFD $\diamondsuit$ T5440 MFD $\diamondsuit$ TA464	MFD $\diamondsuit$ T5440E MFD $\diamondsuit$ TA464E		Approx. 4.5	0**0ESD	0**0ESE		MFMCA 0**3ECT	MFMCA 0**3FCT	_	DV0PM20049 ×2 in parallel	Note) 7	P.252	Connector Kit for Motor Connection	A-frame to D-frame (200 \) D-frame (400 \)
	Single phase/ 3-phase		MDME102 □ C *	80	MDD ◇ T3530	MDD ♦ T3530E	- D-frame					MFMCD	MFMCA		DV0P4284	DV0P228 DV0P222 DV0PM20047	DV0P4220	Connector Kit for Regenerative Resistor	E-frame D-frame (400 )
	200 V	2000		82	¥	v	E-frame		MFECA 0**0ESD	MFECA 0**0ESE		02ECD	U**2FCD	_	DV0P4285 Note) 7	DV0P222 DV0P223	DV0PM20043	Connector Kit for Motor/Encoder	
MDME	3-phase 200 V		MDME402 □ C *	84	MFD ♦ TB3A2	MFD ♦ TB3A2E	F-frame					MFMCA 0**3ECT	MFMCA 0**3FCT		DV0P4285 ×2 in parallel	DV0P224 DV0P225	DV0P3410		RS485, RS232 Safety
2000 r/min		400 600	MDME044 □ C * MDME064 □ C *	111 112	MDD ♦ T2407 MDD ♦ T2407	MDD ♦ T2407E MDD ♦ T2407E	D-frame	Approx. 0.9				MEMCD	MEMCE		DV0PM20048	Note) 7		Connector Kit	Interface External Scale Encoder
	3-phase 400 V		MDME154 □ C * MDME204 □ C *	114 115	MDD 🔷 T3420 MED 🔷 T4430	MDD ♦ T3420E MED ♦ T4430E		Approx. 1.8 Approx. 2.3 Approx. 3.3	MFECA 0**0ESD	MFECA 0**0ESE		0**2ECD	0**2FCD	_	DV0PM20049	 Note) 7	Recommended components	Battery For Abs	Analog Monitor
		4000	MDME404 ☐ C *	117	MFD $\diamondsuit$ TA464	MFD $\diamondsuit$ TA464E	F-frame					MFMCA 0**3ECT	MFMCA 0**3FCT		DV0PM20049 ×2 in parallel		=0_	Mounting Bracket	D-frame
MGME	Single phase/ 3-phase 200 V								MFECA 0**0ESD	MFECA 0**0ESE		MFMCD 0**2ECD	MFMCA **2FCD	_	DV0P4284	DV0P228 DV0P221	DV0P4220	Encoder Cable	without Battery with Battery Bo
High torque type	3-phase 200 V	2000 3000	MGME202 \( \text{C} \times \) MGME302 \( \text{C} \times \)	93 94	MFD $\diamondsuit$ TA390 MFD $\diamondsuit$ TB3A2	MFD ♦ TA390E MFD ♦ TB3A2E	F-frame	Approx. 4.5				MFMCA 0**3ECT	MFMCA 0**3FCT		DV0P4285 ×2 in parallel	DV0P223 DV0P224	DV0P3410		without Brake
1000 r/min	3-phase 400 V		MGME204 □ C *	126	MFD $\diamondsuit$ T5440	MFD $\diamondsuit$ T5440E		Annroy 3 8	MFECA 0**0ESD	MFECA 0**0ESE		0**2ECD MFMCA	0**2FCD MFMCA	_	DV0PM20048 DV0PM20049 x2 in parallel	Note) 7	Recommended components P.252	Motor Cable	
	Single phase/ 3-phase	1000	MHME102 □ C *	97	MDD 🔷 T3530	MDD $\diamondsuit$ T3530E	D-frame					MFMCD 0**2ECD	MFMCA 0**2FCD		DV0P4284	DV0P228/ DV0P222 DV0PM20047/	DV0P4220		with Brake 50 Ω 25 W
,	200 V				, ,	,	E-frame		MFECA 0**0ESD	MFECA 0**0ESE		MFMCE 0**2ECD	MFMCE 0**2FCD	_	DV0P4285 Note) 6	DV0P222 DV0P223	DV0PM20043	External	100 Ω 25 W 25 Ω 50 W 50 Ω 50 W
MHME 2000 r/min	3-phase 200 V	4000	MHME402 ☐ C *	101	MFD ♦ TB3A2	MFD ♦ TB3A2E	F-frame	Approx. 4.5 Approx. 6 Approx. 7.5				MFMCA 0**3ECT	MFMCA 0**3FCT		DV0P4285 ×2 in parallel	DV0P224 DV0P225 Note) 7	DV0P3410	Regenerative Resistor	30 Ω 100 W 20 Ω 130 W 120 Ω 80 W
	3-phase	1500	MHME154 ☐ C *	131	MDD 🔷 T3420	MDD ♦ T3420E	D-trame	Approx. 1.8 Approx. 2.3 Approx. 3.3		MFECA		MFMCD 0**2ECD MFMCE 0**2ECD	MFMCE 0**2FCD MFMCE 0**2FCD	_	DV0PM20049	_	Recommended components	Reactor	80 Ω 190 W DV0P220, DV0 DV0P223, DV0 DV0P227, DV0
	400 V	4000	MHME404 ☐ C *	134	MFD $\diamondsuit$ TA464	MFD ♦ TA464E	F-frame		0**0ESD	0**0ESE		MFMCA 0**3ECT	MFMCA 0**3FCT	_	DV0PM20049 ×2 in parallel	Note) 7	P.252	Noise Filter	DV0P4170, DV DV0P4220, DV DV0P3410
	MSME 3000 r/min  MDME 2000 r/min  MGME (Low speed/High torque type) 1000 r/min	Name   Single   phase   3-phase   200 V	Note   Power supply   Coulout (W)	Note   Single phase   3-phase 200 v   1500   MSME102   C *	Single phase   200	Note   Power supply   Output   Part No.   Note   1   Note     Note   1   Note   Note   1   Note   Note   1   Note   Note   1   Note   Note   1   Note   Note   1   Note   Note   1   Note   Note   1   Note   Note	Note   Power supply   Note   Part No. (W)   Part No. (Note)   Ratings   Ratings   Ratings   Ratings   Ratings   Ratings   Repeat   Residence   Resid	Note   Power supply   Output   Part No.   Note   1   Note   Part No.   Spec.   Spec.   Part No.   Power pa	Power series   Power supply   (W)	Power supply   Output   Part No.   Pating   As Series   Part No.   Pating   As Series   Part No.   Part No.   Pating   As Series   Part No.   Part No.	Power supply     Power supply     Part No.   N	Power purply			Part   Part	Part   Part	Part   Part	Control   Cont	Marchan   Part   Part

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

Note) 6 Other combinations exist, and refer to P.210 for details. Note) 7 Reactor should be prepared by the user.

Note) 5	Cable length:	** (03: 3	3 m, 05	5: 5 m,	10: 10	0 m, 20:	20 r	n),
		(Examp	le. 3 n	n: MFE	CA00	30EAM	l)	
	O.,				. –			

Note) 2  $\diamondsuit$ : Drivers series K: A5II series H: A5 series Note) 3  $\diamondsuit$ : Drivers series K: A5IIE series H: A5E series

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

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

		ı	Motor				Driver		Power				Optional	parts				
		Power	Output	Part No.	Rating/	A5II series A5 series Part No.	A5IIE series A5E series Part No.	_	capacity		er Cable		Motor		Brake Cable	External	Reactor	
	Motor series	supply	(W)	Note) 1	Spec. (page)	Speed, Position, Torque, Full-Closed type Note) 2	(Position control type Note) 3,4	Frame	(rated ) load / (kVA)	20-bit Incremental Note) 5	17-bit Absolute Note) 4,5		without Brake Note) 5	with Brake Note) 5	Note) 5	Regenerative Resistor	Single phase 3-phase	Noise Filter
		Single phase/	1000	MSME102  ☐ 1 *	74	MDD ◇ T5540	MDD $\diamondsuit$ T5540E	D-frame	Approx. 1.8				MEMOD	MEMOA		DV0P4284	DV0P228 DV0P222	DV0P4220
		3-phase 200 V	1500	MSME152 □ 1 *	75	MDD $\diamondsuit$ T5540	MDD ♦ T5540E		Approx. 2.3	MFECA	MFECA		MFMCD 0**2ECD	MFMCA 0**2FCD			DV0PM20047 DV0P222	
				MSME202 □ 1 *	76	Ť	MED ◇ T7364E	E-frame	Approx. 3.3	0**0ETD	0**0ETE	_			_	DV0P4285 Note) 7	DV0P223	DV0PM2004
Low	моме	3-phase 200 V	3000 4000	MSME302  1 * MSME402  1 *		•	MFD ♦ TA390E MFD ♦ TB3A2E	F.	Approx. 4.5 Approx. 6				MFMCA	MFMCA		DV0P4285	DV0P224 DV0P225	DV0P3410
/ inertia	MSME 3000 r/min		5000	MSME502  1 *	79			r-trame	Арргох. 7.5				0**3ECT	0**3FCT		×2 in parallel	Note) 8	DV0P3410
Tia			750	MSME084 ☐ 1 *		·	MDD $\diamondsuit$ T2412E		Approx. 1.6								11010, 0	
			1000 1500	MSME104  1 * MSME154  1 *			MDD ♦ T3420E MDD ♦ T3420E	- 1	Approx. 1.8 Approx. 2.3				MFMCD 0**2ECD	MFMCE 0**2FCD		DV0PM20048		Recommende
		3-phase 400 V	2000	MSME204 \( \Boxed{1} \) 1 *		-	MED $\diamondsuit$ T4430E			MFECA 0**0ETD	MFECA 0**0ETE		0 2200	0 21 00	_	DV0PM20049	— Note) 8	components
		400 V		MSME304  1 * MSME404  1 *			MFD ♦ T5440E MFD ♦ TA464E	г.	Approx. 4.5	O OLID	O OLIL		MFMCA	MFMCA		DV0PM20049	Note) o	P.252
			4000 5000	MSME504  1 *		•	MFD $\diamondsuit$ TA464E	r-trame	Approx. 7.5				0**3ECT	0**3FCT		x2 in parallel		
		Single phase/	1000	MDME102 □ 1 *	80	MDD ◇ T3530	MDD ◇ T3530E	D-frame	Approx. 1.8							DV0P4284	DV0P228 DV0P222	DV0P4220
		3-phase 200 V	1500	MDME152 ☐ 1 *	81	MDD ◇ T5540	MDD $\diamondsuit$ T5540E	D-liame	Approx. 2.3				MFMCD 0**2ECD	MFMCA 0**2FCD			DV0PM20047 DV0P222	D V 01 4220
			2000	MDME202 ☐ 1 *	82	MED ◇ T7364	MED ◇ T7364E	E-frame		MFECA	MFECA	_				DV0P4285 Note) 7	DV0P223	DV0PM2004
			3000 4000	MDME302 □ 1 * MDME402 □ 1 *	83 84		MFD ♦ TA390E MFD ♦ TB3A2E	F <sub>-frame</sub>	Approx. 4.5 Approx. 6	0**0ETD	0**0ETE		MFMCA	MFMCA	_	DV0P4285	DV0P224 DV0P225	DV0P3410
		3-phase 200 V	5000	MDME502  1 *		•	MFD ♦ TB3A2E	1 mano	Approx. 7.5				0**3ECT	0**3FCT		×2 in parallel	D 701 220	210.0110
		200 \$		MDME752 \( \text{1 *}	86	MGD ♦ TC3B4	_	G-frame	Approx. 11				_	_		DV0P4285 ×3 in parallel	— Note) 8	Recommende components
	MDME 2000 r/min		15000	MDMEC12	88	MHD ♦ TC3B4 MHD ♦ TC3B4		H-frame	Approx. 22				Note) 6	Note) 6		DV0PM20058		P.252
			600	MDME044	112	•		l )-framo	Approx. 1.2				MFMCD	MFMCE		DV0PM20048		
Mic				MDME104 \( \Boxed{1} \) \( \text{MDME154} \( \Boxed{1} \) \( \text{1} \) \( \text{*} \)				-	Approx. 1.8 Approx. 2.3				0**2ECD	0**2FCD				
Middle i				MDME204  1 *			-	E-frame				_			-	DV0PM20049		Recommende
inertia		3-phase 400 V		MDME304 ☐ 1 * MDME404 ☐ 1 *			· ·	F-frame	Approx. 4.5 Approx. 6	MFECA 0**0ETD	MFECA 0**0ETE		MFMCA	MFMCA	_	DV0PM20049	Note) 8	components
മ				MDME504 [] 1 *		-	·		Approx. 7.5			_	0**3ECT	0**3FCT		x2 in parallel		P.252
				MDME754 □ 1 *		MGD ♦ TB4A2	_	G-frame	Approx. 11				_			DV0PM20049 ×3 in parallel		
				MDMEC14 ☐ 1 * MDMEC54 ☐ 1 *			_	H-frame	Approx. 17 Approx. 22				Note) 6	Note) 6		DV0PM20059		
		Single phase/ 3-phase 200 V		MFME152 \( \text{1 *}	89		MDD $\diamondsuit$ T5540E	D-frame					MFMCA 0**2ECD	MFMCA 0**2FCD		DV0P4284	DV0PM20047 DV0P222	DV0P4220
	MFME	3-phase	2500	MFME252 □ 1 *	90	MED ◇ T7364	MED ◇ T7364E	E-frame	Approx. 3.8	MFECA 0**0ETD	MFECA 0**0ETE		MFMCF 0**2ECD	MFMCE 0**2FCD	_	DV0P4285 Note) 7	DV0P224	DV0PM200
	(Flat type) 2000 r/min	200 V	4500	MFME452 □ 1 *	91	MFD $\diamondsuit$ TB3A2	MFD ♦ TB3A2E	F-frame	Approx. 6.8				MFMCD 0**3ECT	MFMCA 0**3FCT		DV0P4285 ×2 in parallel	— Note) 8	DV0P341
	2000 1/111111			MFME154 □ 1 *			MDD ◇ T3420E						MFMCF	MFMCE		DV0PM20048	10.0,0	Recommende
		3-phase 400 V	2500	MFME254 ☐ 1 *	123	MED ◇ T4430	MED ◇ T4430E	E-frame	Approx. 3.8	MFECA 0**0ETD	MFECA 0**0ETE	-	0**2ECD MFMCD	0**2FCD	_	DV0PM20049 DV0PM20049	— Note) 8	components
		.50 1	4500	MFME454 □ 1 *	124	MFD $\diamondsuit$ TA464	MFD ♦ TA464E	F-frame	Approx. 6.8	O OLID	O OLIL		0**3ECT	MFMCA 0**3FCT		×2 in parallel	11010/0	P.252

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

	Title		Part No.	F
Interface Cable			DV0P4360	ľ
			DV0P4120	1
			DV0P4121	1
Interface Conve	rsion Cab	le	DV0P4130	١
			DV0P4131	l
			DV0P4132	l
		Single row		t
Connector Kit	A-frame to D-frame	type  Double row	DV0PM20032 DV0PM20033	
for Power Supply Input		type		ļ
Connection	E-frame	,	DV0PM20044	l
	D-frame	,	DV0PM20051	ļ
	E-frame	(400 V)	DV0PM20052	ļ
Connector Kit for Control Power Supply Input Connection	D-frame E-frame		DV0PM20053	
Connector Kit	A-frame	to D-frame	DV0PM20034	1
for Motor	E-frame	(200 V)	DV0PM20046	١
Connection	D-frame	,	DV0PM20054	١
Connector Kit	E-frame	. ,	DV0PM20045	
for Regenerative Resistor	D-frame	(400 V)	DV0PM20055	1
Resistor	2	(.00 1)	DV0PM20036	
0 1 101			DV0PM20036 DV0PM20037	
Connector Kit fo Motor/Encoder (	-	n	DV0PM20037 DV0PM20038	
Wioton/Encoder (	30111100110		DV0PM20038 DV0PM20039	l
	RS485, I	Denna	DV0PM20039 DV0PM20024	
		13232	DV0PM20024	l
	Safety Interface		DV0PM20025 DV0P4350	
Connector Kit	External		DV0P4350 DV0PM20026	
		Scale		
	Encoder	Ionitor Signal	DV0PM20010 DV0PM20031	l
Pattony For Abov				
Battery For Absor			DV0P2990	
Battery Box	olute Enco			
			DV0P2990	
Battery Box Mounting Bracket	D-frame		DV0P2990 DV0P4430	
Battery Box Mounting	D-frame	oder  Battery Box	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE	
Battery Box Mounting Bracket	D-frame without E	oder  Battery Box	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD	
Battery Box Mounting Bracket	D-frame without E	oder  Battery Box	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD	
Battery Box Mounting Bracket	D-frame without E	Battery Box ery Box	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD	
Battery Box Mounting Bracket	D-frame without E	Battery Box ery Box	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD	
Battery Box Mounting Bracket	D-frame without E	Battery Box ery Box	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**2ECD MFMCD0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCF0**2ECD	
Battery Box Mounting Bracket Encoder Cable	D-frame without E	Battery Box ery Box	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**2ECD MFMCD0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCF0**3ECT MFMCA0**3ECT	
Battery Box Mounting Bracket Encoder Cable	D-frame without E with Batt	Battery Box ery Box	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCD0**3ECT MFMCA0**2FCD	
Battery Box Mounting Bracket Encoder Cable	D-frame without E	Battery Box ery Box	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCD0**3ECT MFMCA0**2FCD MFMCA0**2FCD MFMCA0**2FCD	
Battery Box Mounting Bracket Encoder Cable	D-frame without E with Batt	Battery Box ery Box Brake	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**2ECD MFMCA0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**2FCD MFMCA0**2FCD MFMCA0**3FCT	
Battery Box Mounting Bracket Encoder Cable	D-frame without E with Batt	Battery Box ery Box Brake	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**2ECD MFMCA0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**2FCD MFMCA0**3FCT MFMCA0**3FCT DV0P4280	
Battery Box Mounting Bracket Encoder Cable	D-frame without E with Batt with Bral  50 Ω 25	Battery Box ery Box Brake	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**2ECD MFMCA0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**2FCD MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281	
Battery Box Mounting Bracket Encoder Cable  Motor Cable	D-frame without E with Batt  with Brail $50 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$	Battery Box ery Box Brake	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**2ECD MFMCA0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282	
Battery Box Mounting Bracket Encoder Cable	D-frame without E with Batt  with Brail $50 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$ $50 \Omega 50$	Battery Box ery Box Brake	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**2ECD MFMCA0**2ECD MFMCEO**2ECD MFMCFO**2ECD MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4283	
Battery Box Mounting Bracket Encoder Cable  Motor Cable	D-frame without E with Batt  with Brail $50 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$ $30 \Omega 100$	Battery Box ery Box Brake	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCEO**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4283 DV0P4284	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative	D-frame without E with Batt  with Brail $50 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$ $50 \Omega 50$ $30 \Omega 100$ $20 \Omega 130$	Battery Box ery Box Brake	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCEO**2ECD MFMCEO**2ECD MFMCFO**2ECD MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4283 DV0P4284 DV0P4285	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative	D-frame without E with Batt  with Brail $50 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$ $30 \Omega 100$ $20 \Omega 130$ $120 \Omega 80$	Battery Box ery Box Brake  W 5 W W 0 W 0 W	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4283 DV0P4284 DV0P4285 DV0PM20048	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative	D-frame without E with Batt  with Brall $50 \Omega 25$ $100 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$ $30 \Omega 100$ $20 \Omega 130$ $120 \Omega 80$ $80 \Omega 190$	Battery Box ery Box  Brake  W  W  W  W  W  W  W  W  W  W  W  W  W	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4284 DV0P4285 DV0PM20048	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative	D-frame without E with Batt  with Brail $50 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$ $50 \Omega 50$ $30 \Omega 100$ $20 \Omega 130$ $120 \Omega 80$ $80 \Omega 190$ DV0P22 DV0P22 DV0P22	Battery Box ery Box Brake  W  W  W  W  W  W  W  O  W  O  W  O  W  O  O	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4285 DV0PM20048 DV0PM20049 DV0P222, DV0PM20047	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative Resistor	D-frame without E with Brail with Brail $50 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$ $50 \Omega 50$ $0 \Omega 100$ $0 \Omega 120$ $0 \Omega 130$ $0 \Omega 120$ $0 \Omega 130$ $0 \Omega$	Battery Box ery Box Brake  W  W  W  W  W  W  W  W  O  W  O  W  O  O	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4285 DV0PM20048 DV0PM20049 DV0P222, DV0PM20047	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative Resistor	D-frame without E with Brail with Brail $50 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$ $50 \Omega 50$ $0 \Omega 100$ $0 \Omega 120$ $0 \Omega 130$ $0 \Omega 120$ $0 \Omega 130$ $0 \Omega$	Battery Box ery Box Brake  W 5 W W 0 W 0 W 0 W 0 W 0 W 0 W 0 W 0 W 0 W	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4285 DV0PM20048 DV0PM20049 DV0P222, DV0PM20047	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative Resistor	D-frame without E with Bral with Bral $50 \Omega 25$ $100 \Omega 25$ $25 \Omega 50$ $50 \Omega 50$ $00 \Omega 100$ $00 \Omega 10$	Battery Box ery Box Brake  W  W  W  W  W  O W  O W  O W  O W  O	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4285 DV0PM20048 DV0PM20049 DV0P222, DV0PM20047	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative Resistor	D-frame without E with Batt  with Brail  50 Ω 25  100 Ω 25  25 Ω 50  50 Ω 50  30 Ω 100  20 Ω 130  120 Ω 80  80 Ω 190  DV0P22  DV0P22  DV0P41  DV0P42  DV0P34  Single pl	Battery Box ery Box Brake  W 5 W W 0 W 0 W 0 W 0 W 0 W 0 W 0 W 0 W 0 W	DV0P2990 DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**2ECD MFMCA0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4285 DV0PM20048 DV0PM20049 DV0P222, DV0PM20047 0042 0043	

Note) 2 ♦: Drivers series K: A5II series H: A5 series Note) 3 ♦: Drivers series K: A5IIE series H: A5E series

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

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

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

Note) 7 Other combinations exist, and refer to P.210 for details.

Note) / Other combinations exist, and refer to P.210 for de Note) 8 Reactor should be prepared by the user.

		ı	Motor				Driver		Power			Optional	parts					
	Motor series	Power supply	Output (W)	Part No. Note) 1	Rating/ Spec. (page)	A5II series A5 series Part No. Speed, Position, Torque, Full-Closed type Note) 2	A5IIE series A5E series Part No. (Position control type Note) 3,4	Frame	capacity  at rated load load (kVA)	20-bit Incremental Note) 5	17-bit Absolute Note) 4,5	Motor without Brake Note) 5	with Brake Note) 5	Brake Cable Note) 5	Regenerative Resistor	Reactor (Single phase) 3-phase	Noise Filter	
		Single phase/ 3-phase 200 V	900	MGME092 □ 1 *	92	MDD $\diamondsuit$ T5540	MDD $\diamondsuit$ T5540E	D-frame	Approx. 1.8	rioto, c	10.07 1,0	MFMCD 0**2ECD	MFMCA 0**2FCD		DV0P4284	DV0P228 DV0P221	DV0P4220	
		3-phase	2000 3000 4500	MGME202			MFD ♦ TA390E MFD ♦ TB3A2E MFD ♦ TB3A2E	-	Approx. 3.8 Approx. 4.5 Approx. 7.5	MFECA 0**0ETD	MFECA 0**0ETE	MFMCA 0**3ECT	MFMCA 0**3FCT	_	DV0P4285 ×2 in parallel	DV0P223 DV0P224	DV0P3410	
Middle inertia	MGME  (Low speed/ High torque type	200 V	6000		96	MGD ♦ TC3B4	_	G-frame	Approx. 9.0			— Note) 6	— Note) 6	-	DV0P4285 ×3 in parallel	 Note) 7	Recommended components P.252	
rtia	1000 r/min		900	MGME094 □ 1 *	125	MDD $\diamondsuit$ T3420	MDD ◇ T3420E	D-frame	Approx. 1.8			MFMCD 0**2ECD	MFMCE 0**2FCD		DV0PM20048			
		3-phase 400 V		MGME204	127	MFD $\diamondsuit$ T5440 MFD $\diamondsuit$ TA464 MFD $\diamondsuit$ TA464	MFD $\diamondsuit$ T5440E MFD $\diamondsuit$ TA464E MFD $\diamondsuit$ TA464E	-	Approx. 3.8 Approx. 4.5 Approx. 7.5	MFECA 0**0ETD	MFECA 0**0ETE	MFMCA 0**3ECT	MFMCA 0**3FCT	_	DV0PM20049 ×2 in parallel	 Note) 7	Recommended components P.252	
			6000	MGME604 □ 1 *	129	MGD $\diamondsuit$ TB4A2	_	G-frame	Approx. 9.0			Note) 6	– Note) 6		DV0PM20049 ×3 in parallel			
		Single phase/ 3-phase 200 V	1000	MHME102 □ 1 *  MHME152 □ 1 *	97 98	MDD ♦ T3530 MDD ♦ T5540	MDD ◇ T3530E  MDD ◇ T5540E	D-frame	Approx. 1.8 Approx. 2.3			MFMCD 0**2ECD	MFMCA 0**2FCD		DV0P4284	DV0P228 DV0P222 DV0PM20047 DV0P222	DV0P4220	
			2000	MHME202 □ 1 *	99	MED ◇ T7364	MED ◇ T7364E	E-frame	Approx. 3.3	MFECA	MFECA	MFMCE 0**2ECD	MFMCE 0**2FCD		DV0P4285 Note) 8	DV0P223	DV0PM20043	
		3-phase 200 V	3000 4000 5000	MHME302 \( \_ 1 \ \* \) MHME402 \( \_ 1 \ \* \) MHME502 \( \_ 1 \ \*	101		MFD ♦ TA390E MFD ♦ TB3A2E MFD ♦ TB3A2E	-	Approx. 4.5 Approx. 6 Approx. 7.5	0**0ETD	0**0ETE	MFMCA 0**3ECT	MFMCA 0**3FCT	_	DV0P4285 ×2 in parallel	DV0P224 DV0P225	DV0P3410	
High inertia	MHME 2000 r/min			MHME752 \( \_ 1 \*		MGD $\diamondsuit$ TC3B4	-		Approx. 11			— Note) 6	— Note) 6		DV0P4285 ×3 in parallel	 Note) 7	Recommended components P.252	
Ø			1000 1500	MHME104	130 131	MDD ♦ T2412 MDD ♦ T3420	MDD ♦ T2412E MDD ♦ T3420E	D-frame	Approx. 1.8 Approx. 2.3			MFMCD 0**2ECD	MFMCE		DV0PM20048		1,20	
		2 phase	2000	MHME204 □ 1 *	132	MED <> T4430	MED <> T4430E			MFECA	MFECA	MFMCE 0**2ECD	0**2FCD		DV0PM20049		Recommended	
		3-phase 400 V	4000	MHME304	134	· ·	MFD ♦ T5440E MFD ♦ TA464E MFD ♦ TA464E	-	Approx. 4.5 Approx. 6 Approx. 7.5	0**0ETD	0**0ETE	MFMCA 0**3ECT	MFMCA 0**3FCT	_	DV0PM20049 ×2 in parallel	Note) 7	components P.252	
			7500	MHME754 □ 1 *	136	MGD $\diamondsuit$ TB4A2	_	G-frame	Approx. 9.0			Note) 6	— Note) 6		DV0PM20049 ×3 in parallel			

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

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

Note) 3  $\diamondsuit$ : Drivers series K: A5IE series H: A5E series

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

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

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

Note) 7 Reactor should be prepared by the user.

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

	Title		Part No.	Pa	
Interface Cable			DV0P4360	Г	
oriado dabie			DV0F4300	1	
			DV0P4120 DV0P4121	1	
ntorfoco Com:	roion Cabla		DV0P4121 DV0P4130	1	
nterface Conve	rsion Cable	)			
			DV0P4131	-	
			DV0P4132	L	
0	to to	Single row ype	DV0PM20032		
Connector Kit for Power Supply Input	D-frame Double row type		DV0PM20033	2	
Connection	E-frame (2	200 V)	DV0PM20044		
	D-frame (4	400 V)	DV0PM20051		
	E-frame (4	400 V)	DV0PM20052		
Connector Kit for Control Power Supply Input Connection	D-frame a E-frame (4		DV0PM20053		
Connector Kit	A-frame to	D-frame	DV0PM20034	2	
for Motor	E-frame (2	200 V)	DV0PM20046	٦	
Connection	D-frame (4	400 V)	DV0PM20054	1	
Connector Kit	E-frame	•	DV0PM20045	1	
for Regenerative Resistor	D-frame (4	400 V)	DV0PM20055		
			DV0PM20036	2	
Connector Kit fo	r		DV0PM20037		
Motor/Encoder (			DV0PM20038	20	
			DV0PM20039	2	
	RS485, R	S232	DV0PM20024	F	
	Safety		DV0PM20025	1	
	Interface		DV0P4350	Ι΄	
Connector Kit	External S	oolo	DV0F4330	H	
		Cale		١.	
	Encoder	0. 1	DV0PM20010	1	
		nitor Signal		$\vdash$	
Battery For Abso	olute Encod	ier	DV0P2990	2	
Battery For Abso Battery Box	olute Encoc	ier	DV0P2990 DV0P4430	2	
	D-frame	aer			
Battery Box Mounting Bracket			DV0P4430	2	
Battery Box Mounting	D-frame	attery Box	DV0P4430 DV0PM20030	2	
Battery Box Mounting Bracket	D-frame without Ba	attery Box	DV0P4430 DV0PM20030 MFECA0**0ETD	2	
Battery Box Mounting Bracket	D-frame without Ba	attery Box	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE	2	
Battery Box Mounting Bracket	D-frame without Ba with Batte	attery Box ry Box	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD	1	
Battery Box Mounting Bracket	D-frame without Ba	attery Box ry Box	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD	1	
Battery Box Mounting Bracket Encoder Cable	D-frame without Ba with Batte	attery Box ry Box	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCE0**2ECD MFMCF0**2ECD	1	
Battery Box Mounting Bracket	D-frame without Ba with Batte	attery Box ry Box	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCF0**2ECD	1 1	
Battery Box Mounting Bracket Encoder Cable	D-frame without Ba with Batte	attery Box ry Box	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCE0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCD0**3ECT	1 1	
Battery Box Mounting Bracket Encoder Cable	D-frame without Ba with Batte without Br	attery Box ry Box ake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**2FCD	1 1 1	
Battery Box Mounting Bracket Encoder Cable	D-frame without Ba with Batte	attery Box ry Box ake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**2FCD MFMCA0**2FCD	1 1 1	
Battery Box Mounting Bracket Encoder Cable	D-frame without Ba with Batte without Br	attery Box ry Box rake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**2FCD MFMCA0**3FCT	1 1 1	
Battery Box Mounting Bracket Encoder Cable	D-frame without Ba with Batte without Br with Brake	attery Box ry Box ake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**2FCD MFMCA0**3FCT MFMCA0**3FCT DV0P4280	1 1 1	
Battery Box Mounting Bracket Encoder Cable	D-frame without Ba with Batte without Br with Brake $50 \Omega 25 V$ $100 \Omega 25$	attery Box ry Box ake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCE0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281	1 1 1	
Battery Box Mounting Bracket Encoder Cable  Motor Cable	D-frame without Ba with Batte without Br with Brake $50 \Omega 25 V$ $100 \Omega 25 \Omega 50 V$	attery Box ry Box ake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282	1 1 1	
Battery Box Mounting Bracket Encoder Cable Motor Cable	D-frame without Ba with Batte without Br with Brake $50 \Omega 25 V$ $100 \Omega 25$	attery Box ry Box ake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCE0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281	2 1 1 1	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative	D-frame without Ba with Batte without Br with Brake $50 \Omega 25 V$ $100 \Omega 25 \Omega 50 V$	attery Box ry Box ake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4283 DV0P4284	2 1 1 1	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative	D-frame without Ba with Batte with Brake 50 $\Omega$ 25 V 100 $\Omega$ 25 $\Omega$ 50 V 50 $\Omega$ 50 V	attery Box ry Box ake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4283	2 1 1 1 1 1	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative	D-frame without Ba with Batte with Brake 50 $\Omega$ 25 V 100 $\Omega$ 25 $\Omega$ 50 V 50 $\Omega$ 50 V 30 $\Omega$ 100	attery Box ry Box ake	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3FCT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4283 DV0P4284	2 1 1 1 1 1	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative	D-frame without Ba with Batte with Brake 50 $\Omega$ 25 V 100 $\Omega$ 25 $\Omega$ 50 V 50 $\Omega$ 50 V 30 $\Omega$ 100 20 $\Omega$ 130	attery Box ry Box ake  W W V W W W	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCE0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4283 DV0P4284 DV0P4285	2 1 1 1	
Battery Box Mounting Bracket Encoder Cable  Motor Cable	D-frame without Ba with Batter without Br with Brake $50 \Omega 25 V$ $100 \Omega 25$ $25 \Omega 50 V$ $50 \Omega 50 V$ $30 \Omega 100$ $20 \Omega 130$ $120 \Omega 80$ $80 \Omega 190$ DV0P220 DV0P223	attery Box ry Box ake  V W V W W W W W DV0P221,	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4285 DV0PM20048 DV0PM20049 DV0P222,	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative Resistor	D-frame without Batte with Batte  with Brake  50 $\Omega$ 25 V  100 $\Omega$ 25  25 $\Omega$ 50 V  50 $\Omega$ 50 V  30 $\Omega$ 100  20 $\Omega$ 130  120 $\Omega$ 80  80 $\Omega$ 190  DV0P220  DV0P227  DV0P4170	attery Box ry Box ake  V W V W W W W W DV0P221,	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4285 DV0PM20048 DV0PM20048 DV0PM20049 DV0P222, DV0PM20047	2 2 2 2 2 2 2	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative Resistor	D-frame without Batte with Batte  with Brake  50 $\Omega$ 25 V  100 $\Omega$ 25  25 $\Omega$ 50 V  50 $\Omega$ 50 V  30 $\Omega$ 100  20 $\Omega$ 130  120 $\Omega$ 80  80 $\Omega$ 190  DV0P220  DV0P227  DV0P4170	attery Box ry Box ry Box ake  W W W W W W W W DV0P221, DV0P224, DV0P228, O, DV0PM2	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4285 DV0PM20048 DV0PM20048 DV0PM222, DV0PM225, DV0PM20047	2 2 2 2 2 2 2 2	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative Resistor	D-frame without Ba with Batte with Brake with Brake 50 $\Omega$ 25 $V$ 100 $\Omega$ 25 25 $\Omega$ 50 $V$ 30 $\Omega$ 100 20 $\Omega$ 130 120 $\Omega$ 80 80 $\Omega$ 190 DV0P220 DV0P223 DV0P227 DV0P417 DV0P422 DV0P341	attery Box ry Box ake  W W W W W W W DV0P221, DV0P224, DV0P228, D, DV0PM2 D, DV0PM2 D, DV0PM2	DV0P4430 DV0PM20030 MFECA0**0ETD MFECA0**0ETE MFMCA0**2ECD MFMCD0**2ECD MFMCF0**2ECD MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3ECT MFMCA0**3FCT DV0P4280 DV0P4281 DV0P4282 DV0P4283 DV0P4284 DV0P4285 DV0PM20048 DV0PM20048 DV0PM222, DV0PM225, DV0PM20047	22 2 2 2	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative Resistor  Reactor	D-frame without Ba with Batter with Brake with Brake So $\Omega$ 25 V 100 $\Omega$ 25 $\Omega$ 50 V 50 $\Omega$ 50 V 30 $\Omega$ 100 $\Omega$ 20 $\Omega$ 130 120 $\Omega$ 80 80 $\Omega$ 190 DV0P220 DV0P223 DV0P227 DV0P417 DV0P4221 DV0P3411 Single pha	attery Box ry Box ake  W W W W W W W DV0P221, DV0P224, DV0P228, D, DV0PM2 D, DV0PM2 D, DV0PM2 D asse	DV0P4430  DV0PM20030  MFECA0**0ETD  MFECA0**0ETE  MFMCA0**2ECD  MFMCD0**2ECD  MFMCF0**2ECD  MFMCA0**3ECT  MFMCA0**3FCT  MFMCA0**3FCT  DV0P4280  DV0P4281  DV0P4283  DV0P4284  DV0P4285  DV0P4285  DV0PM20048  DV0PM20049  DV0P222, DV0P225, DV0PM20047  0042  0043	2 2 2 2 2	
Battery Box Mounting Bracket Encoder Cable  Motor Cable  External Regenerative Resistor	D-frame without Ba with Batter with Brake with Brake So $\Omega$ 25 V 100 $\Omega$ 25 $\Omega$ 50 V 50 $\Omega$ 50 V 30 $\Omega$ 100 $\Omega$ 20 $\Omega$ 130 120 $\Omega$ 80 80 $\Omega$ 190 DV0P220 DV0P223 DV0P227 DV0P417 DV0P4221 DV0P3411 Single pha	attery Box ry Box ake  W W W W W W W DV0P221, DV0P224, DV0P228, D, DV0PM2 D, DV0PM2 D asse 200 V)	DV0P4430  DV0PM20030  MFECA0**0ETD  MFECA0**0ETE  MFMCA0**2ECD  MFMCD0**2ECD  MFMCF0**2ECD  MFMCA0**3ECT  MFMCA0**3FCT  MFMCA0**3FCT  DV0P4280  DV0P4281  DV0P4282  DV0P4283  DV0P4284  DV0P4285  DV0PM20048  DV0PM20049  DV0P222, DV0PM20047  0042  0043	22 2 2 2	

# Driver Specifications A5II, A5 series (Speed, Position, Torque, Full-Closed type)

	100 V	Main	circuit	Single phase, 100 V to 120 V +10 % 50 Hz/60 Hz			
	100 V	Contro	ol circuit	Single phase, 100 V to 120 V +10 % 50 Hz/60 Hz			
	200 V	Main	A-frame to D-frame	Single/3-phase, 200 V to 240 V +10 % 50 Hz/60 Hz			
Input		circuit	E-frame to H-frame	3-phase, 200 V to 230 V +10 % 50 Hz/60 Hz			
Input power		Control	A-frame to D-frame	Single phase, 200 V to 240 V +10 % 50 Hz/60 Hz			
		circuit	E-frame to H-frame	Single phase, 200 V to 230 V +10 % 50 Hz/60 Hz			
	400 V	Main circuit	D-frame to H-frame	3-phase, 380 V to 480 V			
	400 V	Control circuit	D-frame to H-frame	DC 24 V ± 15 %			
		tempe	erature	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 11)			
Env	vironment	ment humidity		Both operating and storage: 20 % to 85 %RH (free from condensation*1)			
		Alti	tude	Lower than 1000 m			
		Vibration		5.88 m/s <sup>2</sup> or less, 10 Hz to 60 Hz (No continuous use at resonance frequency)			
Co	ntrol meth	nod		IGBT PWM Sinusoidal wave drive			
, En	Encoder feedback			17-bit (131072 resolution) absolute encoder, 7-wire serial 20-bit (1048576 resolution) incremental encoder, 5-wire serial			
			A/B phase	A/B phase, initialization signal defferential input.			
	Feedback scale eedback		serial	Manufacturers that support serial communication scale:  DR. JOHANNES HEIDENHAIN GmbH Fagor Automation S.Coop.  Magnescale Co., Ltd.			
				Mitutoyo Corporation Nidec Sankyo Corporation Renishaw plc General purpose 10 inputs			
Paralle	Control	signal	Input	The function of general-purpose input is selected by parameters.			
_			Output	General purpose 6 outputs  The function of general-purpose output is selected by parameters.			
I/O co	Analog	signal Input		3 inputs (16Bit A/D : 1 input, 12Bit A/D : 2 inputs)			
onne			Output	2 outputs (Analog monitor: 2 output)			
connector	Pulse si	anal	Input	2 inputs (Photo-coupler input, Line receiver input)			
	1 0100 31	91141	Output	4 outputs ( Line driver: 3 output、open collector: 1 output)			
_			USB	Connection with PC etc.			
	mmunicat ction	ion	RS232	1:1 communication			
			RS485	1 : n communication up to 31 axes to a host.			
Sa	fety functi	on		Used for functional safety.			
Fro	ont panel			(1) 5 keys (2) LED (6-digit) (3) Connector for monitor (Analog monitor output (2ch), Digital monitor output (1ch))			
Re	generatio	n		A, B, G and H-frame: no built-in regenerative resistor (external resistor only) C-frame to F-frame: Built-in regenerative resistor (external resistor is also enabled.)			
Dy	namic bra	ke		A-frame to G-frame: Built-in (external resistor is also available to G-frame) H-frame: External only			
Со	Control mode			Switching among the following 7 mode is enabled, (1) Position control (2) Speed control (3) Toque control (4) Position/Speed control (5) Position/Torque control (6) Speed/Torque control (7) Full-closed control			
_							

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

Dampin 2DOF s Control Control Analog input	Max. command pulse frequency  Input pulse signal format  Electronic gear (Division/Multiplication of command pulse)  Smoothing filter  Torque limit command input Torque feed forward input neous Speed Observer Control ettings	(1) Deviation counter clear (2) Command pulse inhibitation (3) Electric gear (4) Damping control switching etc.  Positioning complete (In-position) etc.  Exclusive interface for Photo-coupler: 500 kpps Exclusive interface for line driver: 4 Mpps  Differential input ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)  1/1000 times to 1000 times  Primary delay filter or FIR type filter is adaptable to the command input Individual torque limit for both positive and negative direction is enabled.  Analog voltage can be used as torque feed forward input.  Available  Only available at A5II Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2 (3) Selection of internal velocity setup 3 (4) Speed zero clamp etc.
Position control  Analog input  Instanta Dampin 2DOF s  Control  Control  Analog input  Instanta Dampin Analog input  Instanta Dampin Analog input	Max. command pulse frequency  Input pulse signal format  Electronic gear (Division/Multiplication of command pulse)  Smoothing filter  Torque limit command input Torque feed forward input neous Speed Observer Control  ettings	Positioning complete (In-position) etc.  Exclusive interface for Photo-coupler: 500 kpps Exclusive interface for line driver: 4 Mpps  Differential input ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)  1/1000 times to 1000 times  Primary delay filter or FIR type filter is adaptable to the command input Individual torque limit for both positive and negative direction is enabled.  Analog voltage can be used as torque feed forward input.  Available  Available  Only available at A5II Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
Position control  Analog input Instanta Dampin 2DOF s  Control  Control  Analog input Instanta Dampin 2nut Analog input Instanta Dampin 2nut Instanta Dampin I	Max. command pulse frequency  Input pulse signal format  Electronic gear (Division/Multiplication of command pulse)  Smoothing filter  Torque limit command input Torque feed forward input neous Speed Observer Control  ettings	Exclusive interface for Photo-coupler: 500 kpps Exclusive interface for line driver: 4 Mpps  Differential input ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)  1/1000 times to 1000 times  Primary delay filter or FIR type filter is adaptable to the command input Individual torque limit for both positive and negative direction is enabled.  Analog voltage can be used as torque feed forward input.  Available  Available  Only available at A5II Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
Analog input Instanta Dampin 2DOF s  Control  Control  Analog input	Input pulse signal format  Electronic gear (Division/Multiplication of command pulse)  Smoothing filter  Torque limit command input Torque feed forward input neous Speed Observer (Control ettings	Exclusive interface for line driver: 4 Mpps  Differential input ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)  1/1000 times to 1000 times  Primary delay filter or FIR type filter is adaptable to the command input Individual torque limit for both positive and negative direction is enabled.  Analog voltage can be used as torque feed forward input.  Available  Available  Only available at A5II Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
Analog input Instanta Dampin 2DOF s  Control  Control  Analog input	Electronic gear (Division/Multiplication of command pulse) Smoothing filter Torque limit command input Torque feed forward input neous Speed Observer (Control obtings	((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)  1/1000 times to 1000 times  Primary delay filter or FIR type filter is adaptable to the command input Individual torque limit for both positive and negative direction is enabled.  Analog voltage can be used as torque feed forward input.  Available  Available  Only available at A5II Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
Analog input Instanta Dampin 2DOF s  Control  Control  Analog input	(Division/Multiplication of command pulse) Smoothing filter Torque limit command input Torque feed forward input neous Speed Observer Control	Primary delay filter or FIR type filter is adaptable to the command input Individual torque limit for both positive and negative direction is enabled.  Analog voltage can be used as torque feed forward input.  Available  Available Only available at A5II Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
Analog input Instanta Dampin 2DOF s  Control  Control  Analog input	Smoothing filter Torque limit command input Torque feed forward input neous Speed Observer Control Sttings	Individual torque limit for both positive and negative direction is enabled.  Analog voltage can be used as torque feed forward input.  Available  Available  Only available at A5I Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
input Instanta Dampin 2DOF s  Control  Control  Analog input	Torque limit command input Torque feed forward input neous Speed Observer Control ettings	Individual torque limit for both positive and negative direction is enabled.  Analog voltage can be used as torque feed forward input.  Available  Available  Only available at A5I Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
input Instanta Dampin 2DOF s  Control  Control  Analog input	Torque feed forward input neous Speed Observer Control ettings	Analog voltage can be used as torque feed forward input.  Available  Available  Only available at A5I Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
Instanta Dampin 2DOF s  Control  Control  Analog input	neous Speed Observer Control ettings	Available Available Only available at A5II Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
Dampin 2DOF s  Control  Control  Analog input	nput	Available Only available at A5II Series (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
2DOF s Control Control Analog input	nput	Only available at A5II Series  (1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
Control  Control  Analog input	nput	(1) Selection of internal velocity setup 1 (2) Selection of internal velocity setup 2
Control  Analog input	•	setup 2
တ္က Analog input	putput	
e input		Speed arrival etc.
фед contro	Velocity command input	Speed command input can be provided by means of analog voltage.  Parameters are used for scale setting and command polarity.  (6 V/Rated rotational speed Default)
contro	Torque limit command input	Individual torque limit for both positive and negative direction is enabled.
Internal	Torque feed forward input	Analog voltage can be used as torque feed forward input.
3	velocity command	Switching the internal 8speed is enabled by command input.
—		Individual setup of acceleration and deceleration is enabled, with 0 s
Soft-sta	t/down function	to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled.
Zero-sp	ed clamp	Speed zero clamp input is enabled.
	neous Speed Observer	Available
Speed (2DOF s	ontrol filter	Available
로 2DOF s	ettings	Only available at A5I Series
S Control	nput	Speed zero clamp, Torque command sign input etc.
ු Control	output	Speed arrival etc.
Control Control Analog input	Torque command input	Speed command input can be provided by means of analog voltage.  Parameters are used for scale setting and command polarity. (3 V/rated torque Default)
್ Speed I	mit function	Speed limit value with parameter is enabled.
Control	nput	(1) Deviation counter clear (2) Command pulse inhibition (3) Command dividing gradual increase switching (4) Damping control switching etc.
Control	utput	Full-closed positioning complete etc.
F	Max. command pulse frequency	Exclusive interface for Photo-coupler: 500 kpps Exclusive interface for line driver : 4 Mpps
	Input pulse signal format	Differential input
Full-closed control <sup>2</sup>	Electronic gear (Division/ Multiplication of command pulse)	1/1000 times to 1000 times
trol	Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input
<sup>№</sup> Analog	Torque limit command input	Individual torque limit for both positive and negative direction is enabled.
input	Torque feed forward input	Analog voltage can be used as torque feed forward input.
	nge of division/multiplication of	1/40 times to 160 times
feedbac Dampin	Control	Available
Auto tui		The load inertia is identified in real time by the driving state of the motor operating according to the command given by the controlling device and set up support software "PANATERM". The gain is set automatically in accordance with the rigidity setting.
일 Division	of encoder feedback pulse	Set up of any value is enabled (encoder pulses count is the max.).
Division Protecti	Hard error	Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current and encoder error etc.
function	Soft error	Excess position deviation, command pulse division error, EEPROM error etc.
	lity of alarm data	The alarm data history can be referred to.

<sup>\*2</sup> Not applicable to 2DOF control system.

# A5IIE, A5E series (Position control type)

		100 V	Main	circuit	Single phase, 100 V to 120 V +10 % 50 Hz/60 Hz			
		100 7	Control circuit		Single phase, 100 V to 120 V +10 % 50 Hz/60 Hz			
	Input power	200 V	Main	A-frame to D-frame	Single/3-phase, 200 V to 240 V +10 % 50 Hz/60 Hz			
			circuit	E-frame to F-frame	3-phase, 200 V to 230 V +10 % 50 Hz/60 Hz			
	ower		Control	A-frame to D-frame	Single phase, 200 V to 240 V +10 % 50 Hz/60 Hz			
			circuit	E-frame to F-frame	Single phase, 200 V to 230 V +10 % 50 Hz/60 Hz			
		400 V	Main circuit	D-frame to F-frame	3-phase, 380 V to 480 V			
			Control circuit	D-frame to F-frame	DC 24 V ± 15 %			
Basic	temperature			erature	Ambient temperature: 0 °C to 50 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation 1)			
sic Sp	Environment		humidity		Both operating and storage : 20 % to 85 %RH (free from condensation*1)			
Specifications			Altitude		Lower than 1000 m			
ations	Vibration			ation	5.88 m/s² or less, 10 Hz to 60 Hz (No continuous use at resonance frequency)			
0,	Control method				IGBT PWM Sinusoidal wave drive			
	Encoder feedback				20-bit (1048576 resolution) incremental encoder, 5-wire serial			
	Pa	Control	signal Input Output		General purpose 10 inputs  The function of general-purpose input is selected by parameters.			
	Parallel I/O	Control			General purpose 6 outputs  The function of general-purpose output is selected by parameters.			
		Analog	sional	Input	none			
	connector	7 tridiog	oigilai	Output	2 outputs (Analog monitor: 2 output)			
	ťor	Pulse si	anal	Input	2 inputs (Photo-coupler input, Line receiver input)			
				Output	4 outputs ( Line driver: 3 output、 open collector: 1 output)			
		mmunicat ction	tion	USB	Connection with PC etc.			
	Fro	nt panel			(1) 5 keys (2) LED (6-digit) (3) Analog monitor output (2ch)			
	Reg	generatio	n		A, B-frame: no built-in regenerative resistor (external resistor only) C-fram to F-frame: Built-in regenerative resistor (external resistor is also enabled.)			
	Dyr	namic bra	ıke		Built-in			
	Cor	ntrol mod	е		(1) Position control (2) Internal velocity control (3) Position/ Internal velocity control			
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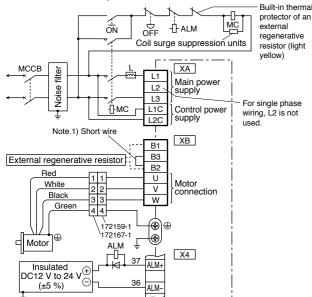
<sup>\*1</sup> Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

31

		Control inpu	ut	(1) Deviation counter clear (2) Command pulse inhibitation (3) Electric gear (4) Damping control switching etc.
	Position control	Control outp	out	Positioning complete (In-position) etc.
			Max. command pulse frequency	Exclusive interface for Photo-coupler: 500 kpps Exclusive interface for line driver: 4 Mpps
		Pulse input	Input pulse signal format	Differential input ((1) Positive and Negative direction, (2) A and B-phase, (3) Command and direction)
			три	Electronic gear (Division/
П			Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input
Function		Instantaneo	us Speed Observer	Available
ă		Damping Co	ontrol	Available
		2DOF settin	igs	Only available at A5IE Series
		Auto tuning		The load inertia is identified in real time by the driving state of the motor operating according to the command given by the controlling device and set up support software "PANATERM".  The gain is set automatically in accordance with the rigidity setting.
	င္ပ	Division of e	encoder feedback 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.
		function	Soft error	Excess position deviation, command pulse division error, EEPROM error etc.
		Traceability	of alarm data	The alarm data history can be referred to.

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

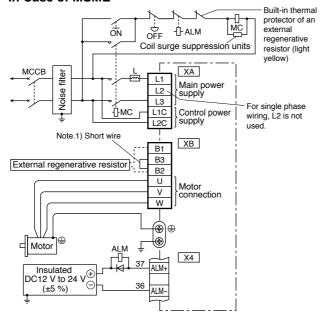




## In Case of MSME

and Terminal Block

Wiring to Connector, XA, XB, XC, XD



# Note.1)

protector of an

regenerative

resistor (light

external

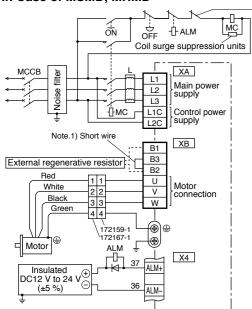
Frame	Short wire	Built-in	Connection of the connector XB			
No.	(Accessory) regenerative resistor		In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.		
A-frame B-frame		without	Always open between B2-B3     Connect an external regenerative resistor between B1-B2	Always open between B2-B3		
C-frame D-frame		with	Remove the short wire accessory from between B2-B3.     Connect an external regenerative resistor between B1-B2.	Shorted between B2-B3 with an attached short wire		

Frame	Short wire	Built-in	Connection of the connector XB			
	(Accessory)	regenerative resistor	In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.		
A-frame B-frame	t-frame without without		Always open between B2-B3     Connect an external regenerative resistor between B1-B2	Always open between B2-B3		
C-frame D-frame	with	with	Remove the short wire accessory from between B2-B3.     Connect an external regenerative resistor between B1-B2.	Shorted between B2-B3 with an attached short wire		

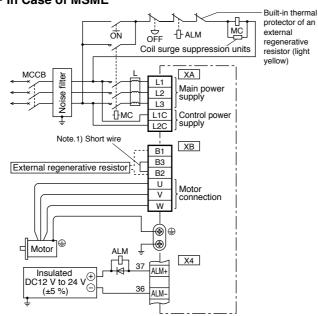
# In Case of 3-phase, A-frame to D-frame, 200 V type

# · In Case of MSMD. MHMD

Note.1)



# · In Case of MSME



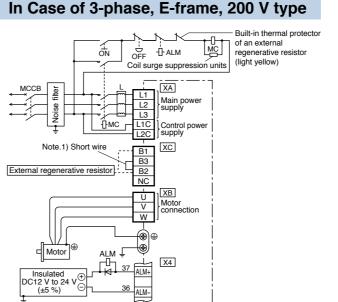
# Note.1

Frame	Short wire	Built-in		ne connector XB
No.	(Accessory)	regenerative resistor	In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.
A-frame B-frame		without	Always open between B2-B3     Connect an external regenerative resistor between B1-B2	Always open between B2-B3
C-frame D-frame		with	Remove the short wire accessory from between B2-B3.     Connect an external regenerative resistor between B1-B2	Shorted between B2-B3 with an attached short wire

## Note.1)

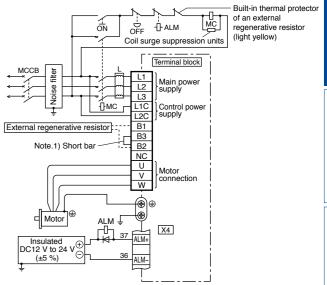
	,					
Frame	Short wire	Built-in	Connection of the connector XB			
No.	(Accessory)	regenerative resistor	In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.		
A-frame B-frame		without	Always open between B2-B3     Connect an external regenerative resistor between B1-B2	Always open between B2-B3		
C-frame D-frame		with	Remove the short wire accessory from between B2-B3.     Connect an external regenerative resistor between B1-B2	Shorted between B2-B3 with an attached short wire		

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



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

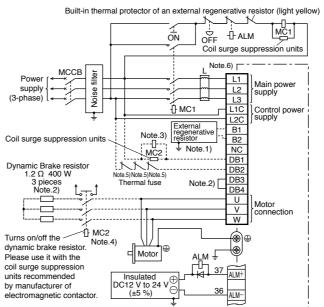
# In Case of 3-phase, F-frame, 200 V type



Note.1)

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

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



# Note.1) About regenerative resistor

Frame	Short bar	Built-in	Connection of terminal block			
	(Accessory)	regenerative resistor	In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.		
G-frame without without		without	Connect an external regenerative resistor between B1-B2 • Open between B1-B2			
Note.2	2) About	dynamic b	orake resistor			
Frame No.	Chart har	Short bar Accessory)  Built-in dynamic brake	Connection of	terminal block		
	(Accessory)		In case of using	In case of not using		

Remove attached short bar

hetween DR3-DR4

common	for	G	Q.	н	fram	-Δι

Note.3) Magnetic contactor MC2 must be the same	e rating as the contactor MC1 in the main circuit.
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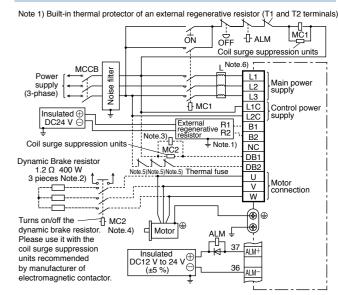
tact.

· Shorted with attached short har

between DB3-DB4
 Open between DB1-DB2

Note.6) Reactor should be prepared by the customer.

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



## Note.1) About regenerative resistor

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

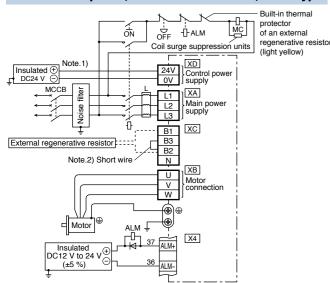
# Specification of external regenerative resistor, please refer to P.139, "Options Components

Note.2	2) About	dynamic b	rake resistor	
F	Short bar	Built-in	Connection of	terminal block
No.	(Accessory)	dynamic brake	In case of using	In case of not u

Note.4	) Servo may	be turned of	on in the $\epsilon$	external s	equence	if the con	ntact depo	osits: to p	protect the	system, į	provide the	auxiliary	conta
Note.5	) Provide an	external pro	otective d	levice (e.	a. thermal	fuse) to	monitor t	he temp	erature of	the extern	nal dvnami	c brake re	esistor.

<sup>\*</sup> Refer to P.186, P.187, Specifications of Motor connector.

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

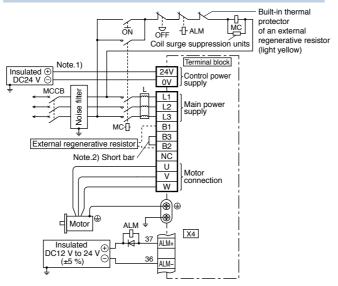


Note.1) Shielding the circuit is recommended for the purpose of noise reduction. Note.2)

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

Wiring to Connector, XA, XB, XC, XD

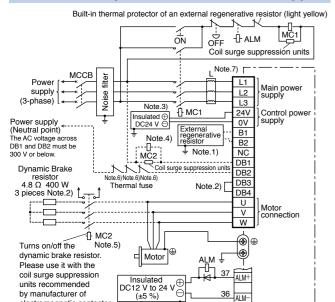
and Terminal Block



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

		•					
		Short bar		Connection of terminal block			
		(Accessory)		In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.		
	F-frame	with	with	Remove the short bar accessory from between B2-B3.     Connect an external regenerative resistor between B1-B2	Shorted between B2-B3 with an attached short bar		

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



# Note.1) About regenerative resistor

Frame	Short bar	Built-in	Connection of terminal block					
No.	(Accessory)	regenerative resistor	In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.				
G-frame	G-frame without without		<ul> <li>Connect an external regenerative resistor between B1-B2</li> </ul>	Open between B1-B2				
Note.2) About dynamic brake resistor								
Connection of terminal			f terminal block					

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

## <common for G & H frame>

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

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

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

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

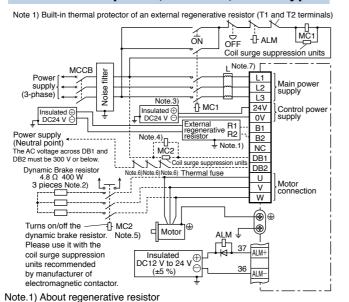
Note.7) Reactor should be prepared by the customer.

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

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

Frame	Short bar	Duiit-ii i		torrinia bioon
	(Accesson) regener	regenerative resistor	In case of using an external regenerative resistor.	In case of not using an external regenerative resistor.
F-frame	with	with	Remove the short bar accessory from between B2-B3.     Connect an external regenerative resistor between B1-B2	Shorted between B2-B3 with an attached short bar

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



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

Specification of external regenerative resistor, please refer to P.139, "Options Components". Note.2) About dynamic brake resistor

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

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

# Outline Description of Safe Torque Off (STO)

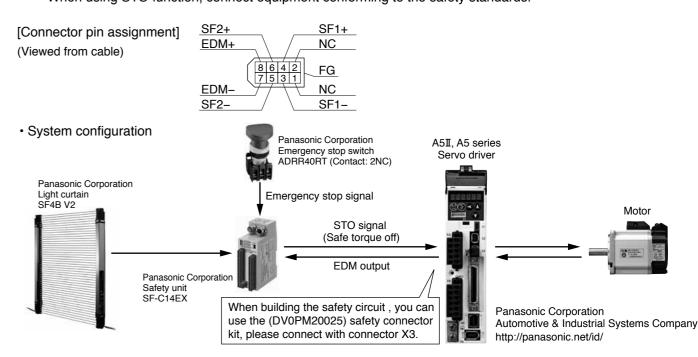
The safe torque off (STO) function is a safety function that shuts the motor current and turns off motor output torque by forcibly turning off the driving signal of the servo driver internal power transistor. For this purpose, the STO uses safety input signal and hardware (circuit).

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

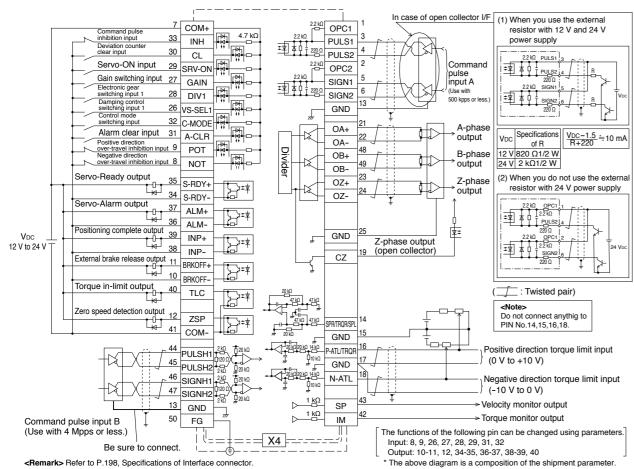
This is an alarm condition and the 7-seg LED on the front panel displays the error code number.

# **Safety Precautions**

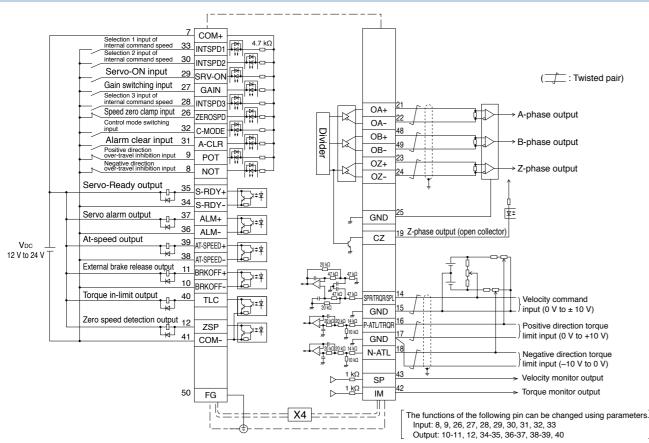
- · When using the STO function, be sure to perform equipment risk assessment to ensure that the system conforms to the safety requirements.
- · Even while the STO function is working, the following potential safety hazards exist. Check safety in risk assessment.
- · The motor may move when external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



# **Wiring Example of Position Control Mode**



# Wiring Example of Velocity Control Mode (Excluding A5IIE, A5E series)

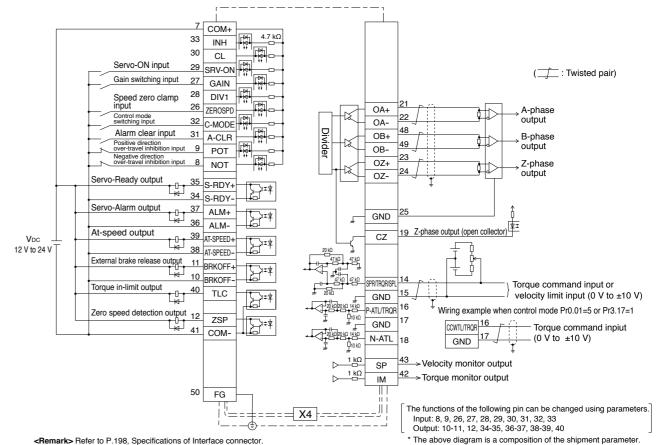


37

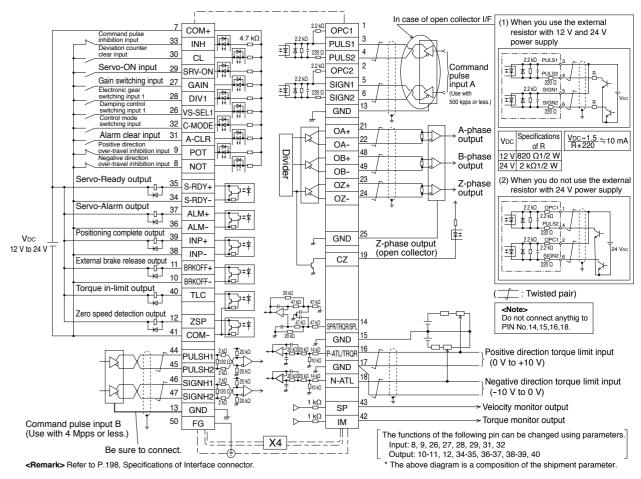
<Remark> Refer to P.198, Specifications of Interface connector

The above diagram is a composition of the shipment parameter.

# Wiring Example of Torque Control Mode (Excluding A5IIE, A5E series)



# Wiring Example of Full-closed Control Mode (Excluding A5IIE, A5E series)



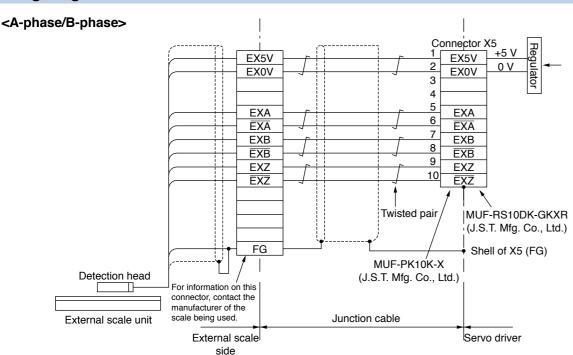
# **Applicable External Scale**

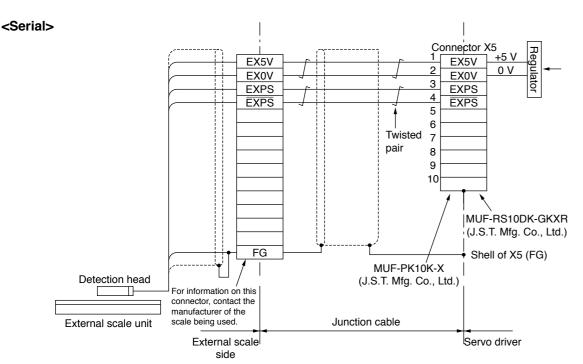
The manufacturers applicable external scales for this product are as follows.

Wiring to the Connector, X5 (Excluding A5IIE, A5E series)

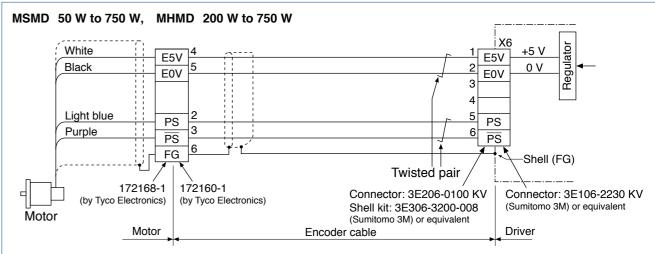
- DR. JOHANNES HEIDENHAIN GmbH
- Fagor Automation S.Coop.
- · Magnescale Co., Ltd.
- Mitutoyo Corporation
- Nidec Sankyo Corporation
- Renishaw plc
- \* For the details of the external scale product, contact each company.

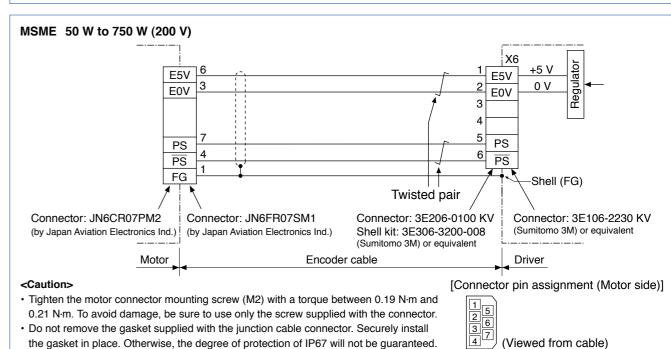
# Wiring Diagram of X5

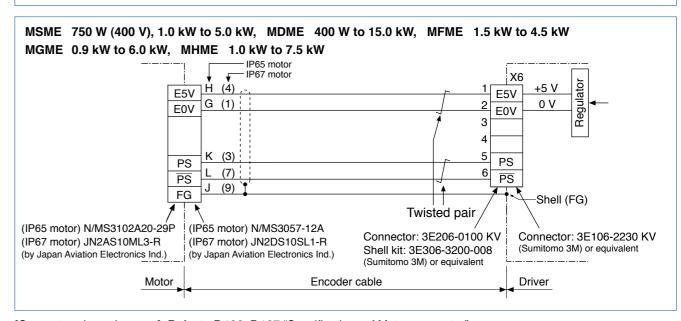




# In Case of 20-bit Incremental Encoder







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

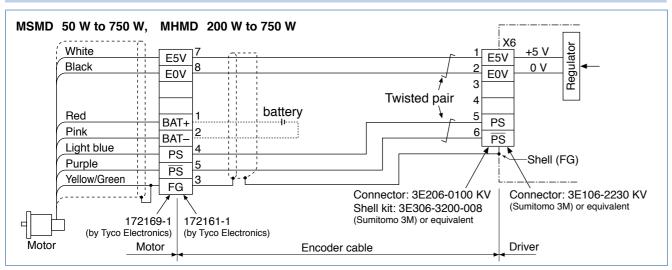
\*1 The height of the safety by-pass provided plug is one of the 14 mm or 24 mm to connector X3.

Japan Molex Inc.

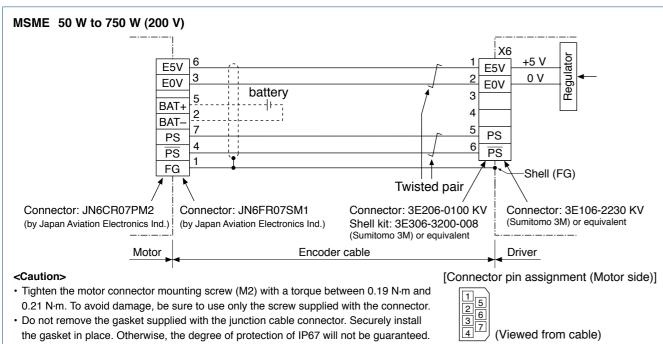
Connector XB 06JFAT-SAXGF J.S.T. Mfg. Co., Ltd.

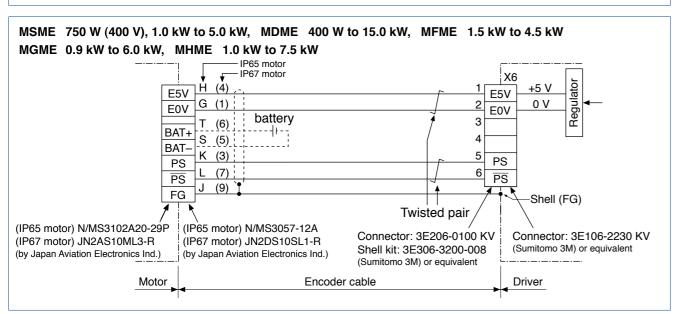
**A5 Family** 

# In Case of 17-bit Absolute Encoder (A5IE, A5E series does not correspond.)



Wiring to the Connector, X6



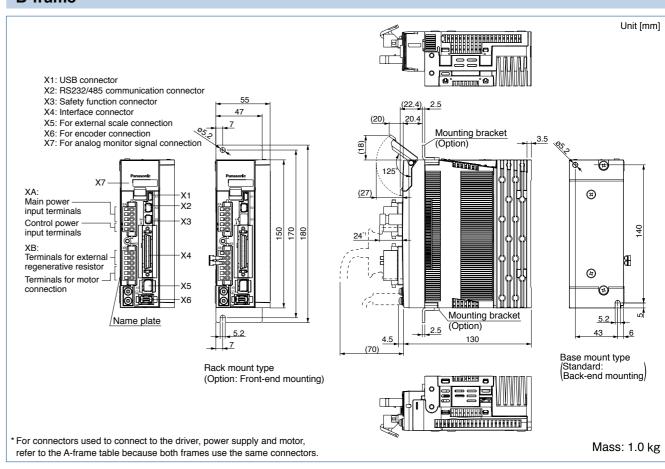


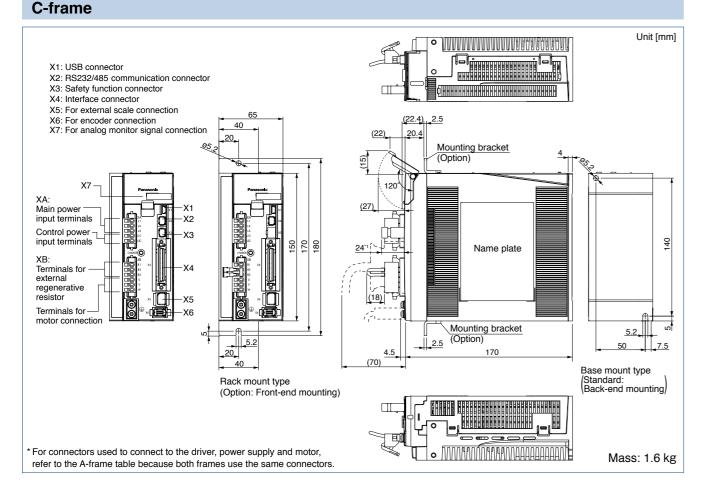
[Connector pin assignment] Refer to P.186, P.187 "Specifications of Motor connector".

## A-frame Unit [mm] X1: USB connector X2: RS232/485 communication connector X3: Safety function connector X4: Interface connector X5: For external scale connection X6: For encoder connection Mounting bracket X7: For analog monitor signal connection (Option) **₹** 🚱 XA: Main power input terminals -X2 Control power -X3 Terminals for external Terminals for motor connection -X5 **¬**⊚-Mounting bracket 5.2 Name plate (Option) 5.2 \_28 \_\_6 Rack mount type Base mount type (Standard: Back-end mounting) (Option: Front-end mounting) Connector of driver side J.S.T. Mfg. Co., Ltd. J.S.T. Mfg. Co., Ltd. Connector XA S05B-F32SK-GGXR Connector XB S06B-F32SK-GGXR Connector X1 UB-M5BR-DMP14-4S (or equin ent) J.S.T. Mfg. Co., Ltd. 1-2040537-1 (or equivalent) Connector X3 2040537-1 (or equivalent Tyco Electronics Mass: 0.8 kg Connector X4 10250-52A2PF (or equivalent Sumitomo 3M J.S.T. Mfg. Co., Ltd. Connector of power and motor side (Attached to the driver) | A5II.A5 | A5IIE.A5E Connector X5 MUF-RS10DK-GKXR (or equivalent) Connector XA 05JFAT-SAXGF J.S.T. Mfg. Co., Ltd. Connector X6 3E106-2230 KV (or equivalent) Sumitomo 3M

# **B-frame**

Connector X7 530140610 (or equivalent

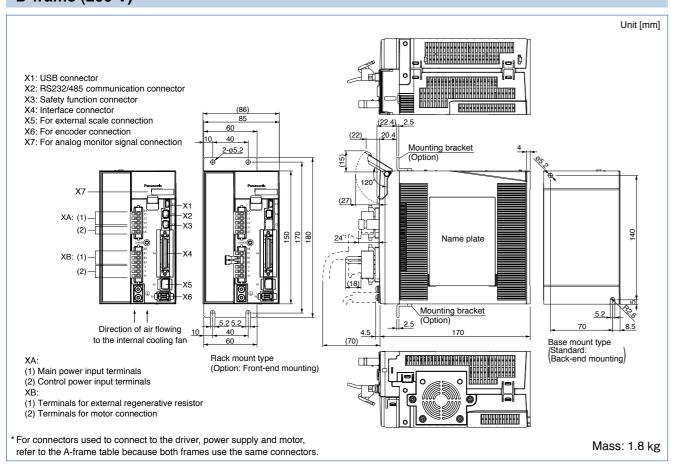


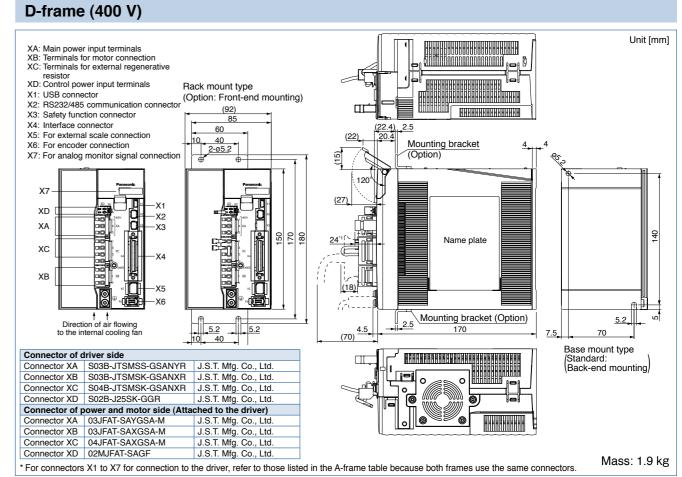


• The size of A5II, A5 series and A5IIE, A5E series is same.

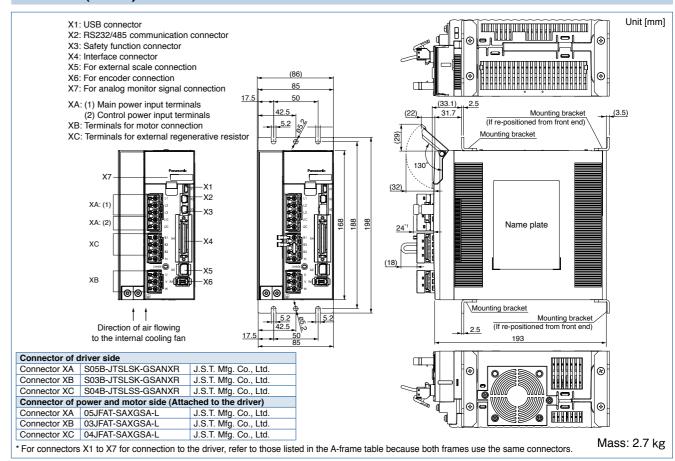
\*1 The height of the safety by-pass provided plug is one of the 14 mm or 24 mm to connector X3.

# **D-frame (200 V)**



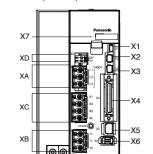


# E-frame (200 V)



# E-frame (400 V)

- X1: USB connector X2: RS232/485 communication connector
- X3: Safety function connector
- X4: Interface connector
- X5: For external scale connection
- X6: For encoder connection
- X7: For analog monitor signal connection
- XA: Main power input terminals
- XB: Terminals for motor connection
- XC: Terminals for external regenerative resistor
- XD: Control power input terminals



Direction of air flowing to the internal cooling fan

42.5

• The size of A5II, A5 series and A5IIE, A5E series is same.

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

(If re-positioned from front end)

Name plate

Mounting bracket

\Mounting bracket

193

Mass: 2.7 kg

Connector of driver side
Connector XA | S03B-JTSLSS-GSANYR | J.S.T. Mfg. Co., Ltd. Connector XB S03B-JTSLSK-GSANXR J.S.T. Mfg. Co., Ltd. Connector XC S04B-JTSLSK-GSANXR J.S.T. Mfg. Co., Ltd.

Connector of power and motor side (Attached to the driver) J.S.T. Mfg. Co., Ltd. J.S.T. Mfg. Co., Ltd. J.S.T. Mfg. Co., Ltd. J.S.T. Mfg. Co., Ltd.

Connector XD 02MJFAT-SAGF \* For connectors X1 to X7 for connection to the driver, refer to those listed in the A-frame table because both frames use the same connectors.

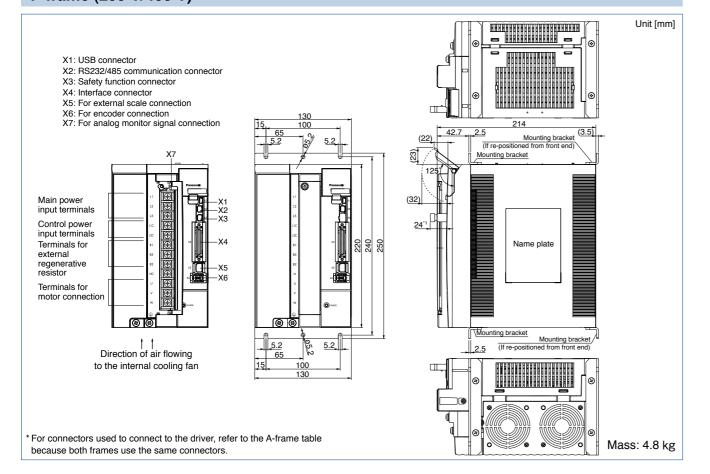
# F-frame (200 V/400 V)

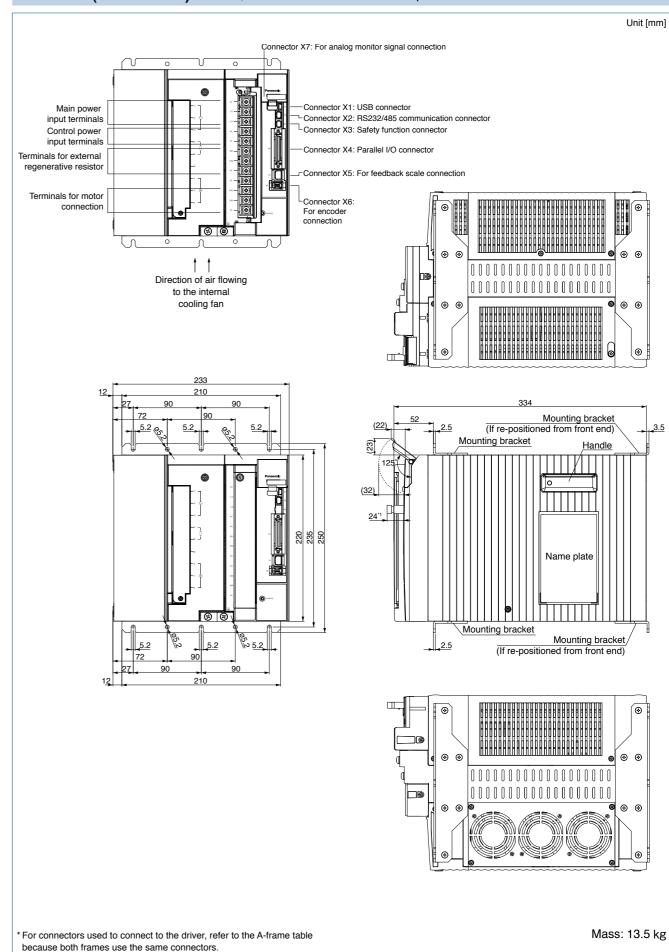
Connector XD S02B-J25SK-GGR

Connector XA 03JFAT-SAYGSA-L

Connector XB 03JFAT-SAXGSA-L

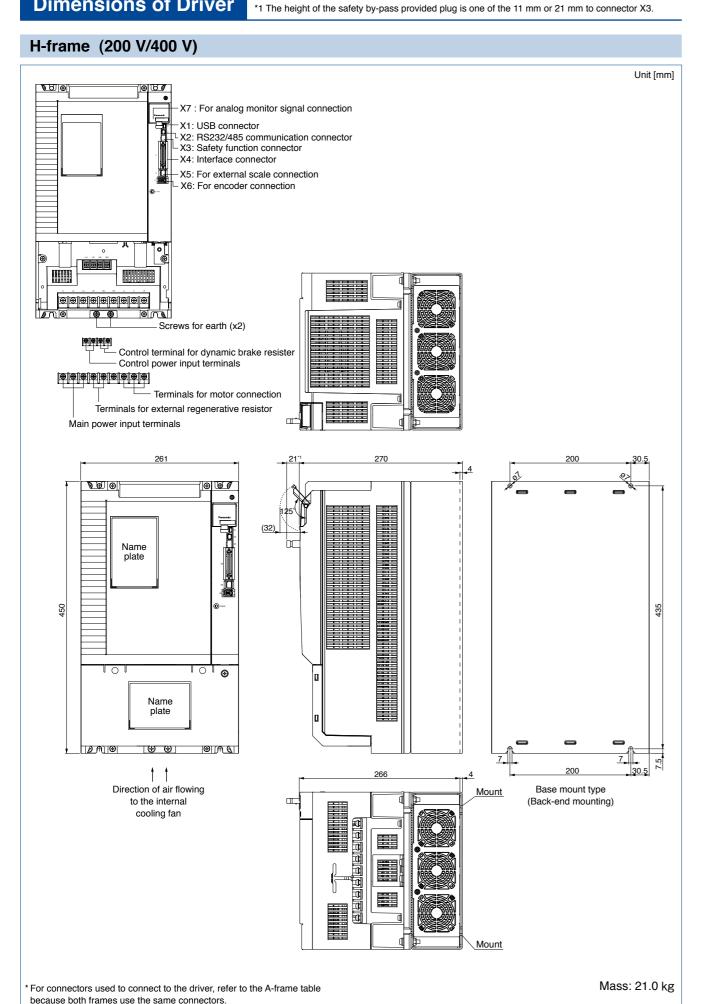
Connector XC 04JFAT-SAXGSA-L





# **Features/Lineup**

200 W to 750 W.....



A5IE, A5E series is out of the lineup.

# **Features**

- Line-up IP65 motor: 50 W to 5.0 kW IP67 motor: 50 W to 15.0 kW
- Max speed: 6000r/min (MSME 50 W to 750 W)
- · Low inertia (MSME) to High inertia (MHME).
- · Low cogging torque: Rated torque ratio 0.5 % (typical value).
- 20-bit incremental encoder (1048576 pulse)
- 17-bit absolute encoder (131072 pulse).

# **Motor Lineup**

Small capacity



# MSME Low inertia

Max. speed: 6000 r/min Rated speed: 3000 r/min Rated output: 50 W to

Enclosure: IP67



# MSMD Low inertia Max. speed: 5000 r/min

: 4500 r/min(750 W) Rated speed: 3000 r/min Enclosure: IP65



# MHMD High inertia

Max. speed: 5000 r/min : 4500 r/min(750 W) Rated speed: 3000 r/min 750 W(200 V) Rated output: 50 W to 750 W Rated output: 200 W to 750 W Enclosure: IP65



# Low inertia

Max. speed: 5000r /min : 4500 r/min (from 4.0 kW)

Rated speed: 3000 r/min Rated output: 750 W(400 V), 1.0 kW to 5.0 kW Enclosure: IP65, IP67

(Low speed/ High torque type)

Middle inertia

Max. speed: 2000 r/min

IP65: 0.9 kW to 3.0 kW

IP67: 0.9 kW to 6.0 kW

Enclosure: IP65, IP67

Rated output

Rated speed: 1000 r/min



## MDME Middle inertia

Max. speed: 3000 r/min 2000 r/min (from 11.0 kW) Rated speed: 2000 r/min : 1500 r/min

Rated output IP65: 400 W to 5.0 kW IP67: 400 W to 15.0 kW Enclosure: IP65, IP67



# MFME (Flat type)\* Middle inertia

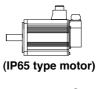
Max. speed: 3000 r/min Rated speed: 2000 r/min Rated output: 1.5 kW to 4.5 kW Enclosure: IP67

# High inertia

Max. speed: 3000 r/min Rated speed: 2000 r/min : 1500 r/min(7.5 kW) Rated output

IP65: 1.0 kW to 5.0 kW IP67: 1.0 kW to 7.5 kW Enclosure: IP65, IP67

# Middle capacity motor has the IP67 type.



# Compact

(IP67 type motor)

Part No.: M ME \*\*\*\* \*\* C: IP65 motor 1: IP67 motor

**MGME (200 V)** 0.9 kW to 6.0 kW . P.92

MHME (200 V) 1.0 kW to 7.5 kW . P.97

MSME (400 V) 750 W to 5.0 kW. P.104 MDME (400 V)

400 W to 15.0 kW .... MFME (400 V)

MGME (400 V) 0.9 kW to 6.0 kW ...

1.5 kW to 4.5 kW ...

MHME (400 V) 1.0 kW to 7.5 kW ...... P.130

**IP67 motor** 

P.137 dimensions... **Motors with Gear Reducer** 

Model No. designation...... P.142 The combination of the driver and the motor..... Table of motor specifications... P.143 Torque Characteristics of Motor .P.144

Type and Specifications...... P.141

Dimensions of Motor.....

**Description** Environmental Conditions.... P.182 Notes on [Motor specification]

**Motor Specification** 

Permissible Load at Output Shaft... Built-in Holding Brake .....

				AC1	00 V
Mataumaadal		IP65		MSMD5AZG1□	MSMD5AZS1
Motor model		IP67		-	-
A !! I- ! -	Model	A5II, A5 s	series	MAD	T1105
Applicable driver *2	No.	A5IIE, A5	E series	MAD <b>⊘T1105E</b>	_
unver	Fr	ame symb	ool	A-fra	ame
Power supply	capacit	y	(kVA)	0	.5
Rated output			(W)	5	0
Rated torque			(N·m)	0.	16
Momentary M	ax. peal	k torque	(N·m)	0.48	
Rated current		(A	A(rms))	1.1	
Max. current		(,	A(o-p))	4.7	
Regenerative b	orake	Without	option	No limit Note)2	
frequency (times/	min) Note)1	DV0P4	1280	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotationa	al speed		(r/min)	5000	
Moment of ine	ertia	Without	brake	0.025	
of rotor (×10 <sup>-4</sup>	kg·m²)	With b	rake	0.027	
Recommender ratio of the load			30 times or less		
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute	
R	esolutio	n per singl	e turn	1048576	131072

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

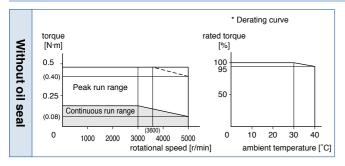
Static friction torque (N·m)	0.29 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

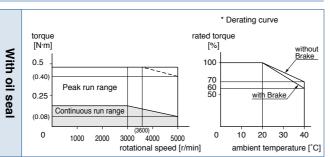
# • Permissible load (For details, refer to P.183)

<b>.</b> .	Radial load P-direction (N)	147
During assembly	Thrust load A-direction (N)	88
document	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 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.

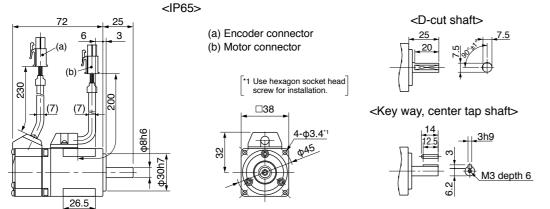
# Torque characteristics (at AC100 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)





# **Dimensions**

<Without Brake> Mass: 0.32 kg



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

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

[Unit: mm]

# 200 V MSMD 50 W [Low inertia, Small capacity]

# **Specifications**

				AC200 V		
Motor mode	al	IP65		MSMD5AZG1□	MSMD5AZS1	
	<del>2</del> I ⊧1	IP67		-	-	
A 1: 1- 1 -	Model	A5II, A5	series	MAD	T1505	
Applicable driver	No. ⊧2	A5IIE, A	5E series	MAD <b>⊘T1505E</b>	-	
unver	F	rame sym	ıbol	A-fr	ame	
Power supp	oly capacit	ty	(kVA)	0	.5	
Rated outp	ut		(W)	5	0	
Rated torqu	ıe		(N·m)	0.	16	
Momentary	Max. pea	k torque	(N·m)	0.48		
Rated curre	ent	(	(A(rms))	1.1		
Max. currer	nt		(A(o-p))	4.7		
Regenerativ	e brake	Without option No limit Note)2		it Note)2		
frequency (tin	nes/min) Note)	DV0P4281		No limit Note)2		
Rated rotat	ional spee	ed	(r/min)	30	00	
Max. rotation	nal speed	i	(r/min)	5000		
Moment of	inertia	Withou	t brake	0.0	)25	
of rotor (×1	0 <sup>-4</sup> kg·m²)	With brake		0.027		
Recommen ratio of the		0 0	30 times or less			
Rotary encoder specifications Note)5				20-bit Incremental	17-bit Absolute	
	Resolution	esolution per single turn		1048576	131072	

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

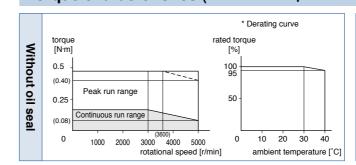
Static friction torque (N·m)	0.29 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

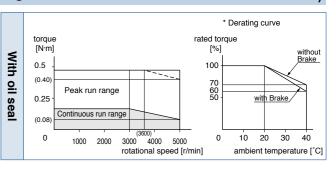
# • Permissible load (For details, refer to P.183)

	Radial load P-direction (N)	147
During assembly	Thrust load A-direction (N)	88
docombry	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 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.

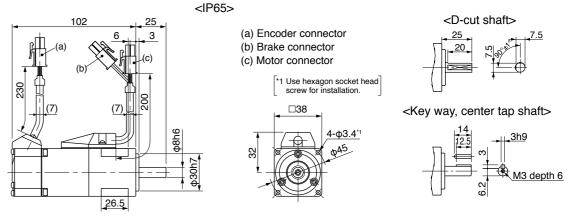
# Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)





# Dimensions

<With Brake> Mass: 0.53 kg



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

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

[Unit: mm]

Motor model

Applicable

Rated output Rated torque

Rated current

Max. current

Regenerative brake frequency (times/min) Note)1

Rated rotational speed

Max. rotational speed

of rotor (×10<sup>-4</sup> kg·m<sup>2</sup>)

Recommended moment of inertia

ratio of the load and the rotor

Rotary encoder specifications

Moment of inertia

driver

IP67 Model A5II, A5 series

Frame symbol

No.

Momentary Max. peak torque

Power supply capacity

A5 Family

# **Specifications**

			AC1	00 V	
Motor model		IP65	MSMD011G1□	MSMD011S1	
*1		IP67	_	_	
A If a a late	Model	A5II, A5 series	MAD<	MAD $\diamondsuit$ T1107	
Applicable driver *2	No.	A5IE, A5E series	MAD <b>⊘T1107E</b>	_	
unven	Fr	ame symbol	A-fr	ame	
Power supply	capacit	y (kVA)	0	.4	
Rated output		(W)	1(	00	
Rated torque		(N·m)	0.	32	
Momentary M	ax. peal	k torque (N·m)	0.95		
Rated current		(A(rms))	1.7		
Max. current		(A(o-p))	7.2		
Regenerative b	orake	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	ıl speed	(r/min)	5000		
Moment of ine	ertia	Without brake	0.051		
of rotor (×10 <sup>-4</sup>	kg·m²)	With brake	0.054		
Recommende ratio of the loa			30 times or less		
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute	
R	esolutio	n per single turn	1048576	131072	

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

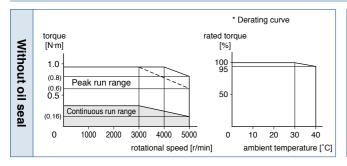
Static friction torque (N·m)	0.29 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

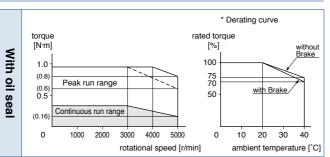
# Permissible load (For details, refer to P.183)

	Radial load P-direction (N)	147
During assembly	Thrust load A-direction (N)	88
document	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 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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

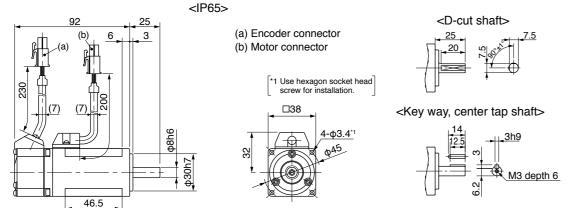




# **Dimensions**

<Cautions>

Mass: 0.47 kg <Without Brake>



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

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

# 200 V MSMD 100 W [Low inertia, Small capacity]

A5IIE, A5E series MAD T1505E

(kVA)

(N·m)

(N·m)

(A(rms))

(A(o-p)) Without option

(r/min)

(r/min)

Note)3

DV0P4281

Without brake

With brake

Resolution per single turn

(W)

Specifications						
		AC2	200 V	Brake specifications (For details, refer to P.1)		
IP65		MSMD012G1	MSMD012S1	(This brake will be released when it is energized.)  (Do not use this for braking the motor in motion.)		

0.95

1.1

4.7

No limit Note)2

No limit Note)2

3000

5000

0.051

0.054

30 times or less

17-bit

Absolute

131072

20-bit

Incremental

1048576

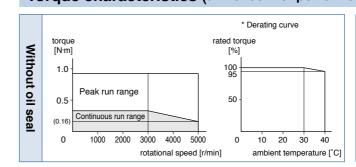
_	Static friction torque (N·m)	0.29 or more
MAD $\diamondsuit$ T1505	Engaging time (ms)	35 or less
1505E –	Releasing time (ms) Note)4	20 or less
A-frame	Exciting current (DC) (A)	0.3
0.5	Releasing voltage (DC) (V)	1 or more
100	Exciting voltage (DC) (V)	24±1.2
0.32		
	<b>—</b> • • • • • • • • • • • • • • • • • • •	

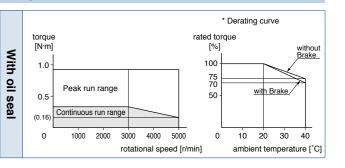
• Permissible load (For details, refer to P.183)

	Radial load P-direction (N)	147
During assembly	Thrust load A-direction (N)	88
docombry	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 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

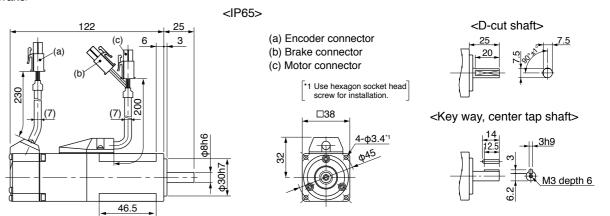
# Torque characteristics (at AC200 V of power voltage)





# **Dimensions**

Mass: 0.68 kg <With Brake>



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

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

				AC1	00 V
IP65				MSMD021G1□	MSMD021S1□
Motor model *1		IP67		-	_
A U la la	Model	A5II, A5 series		МВО	T2110
Applicable driver *2	No.	A5IIE, A	5E series	MBD <b>⊘T2110E</b>	-
unver	Fr	ame sym	ıbol	B-fra	ame
Power supply	capacit	y	(kVA)	0.	.5
Rated output			(W)	20	00
Rated torque			(N·m)	0.0	64
Momentary Ma	ax. peal	k torque	(N·m)	1.91	
Rated current (A(rms))		2.5			
Max. current (A(o-p))			10.6		
Regenerative b	rake	Without	option	No limit Note)2	
frequency (times/r	min) Note)1	DV0P	4283	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotationa	l speed		(r/min)	5000	
Moment of ine	rtia	Withou	t brake	0.14	
of rotor ( $\times 10^{-4}$	kg·m²)	With I	orake	0.16	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less			
Rotary encode	er speci	fications	Note)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per sing	le turn	1048576	131072

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

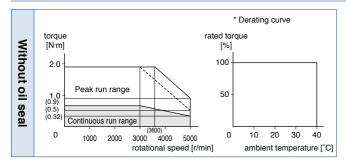
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

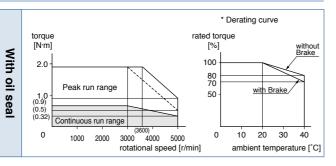
# Permissible load (For details, refer to P.183)

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

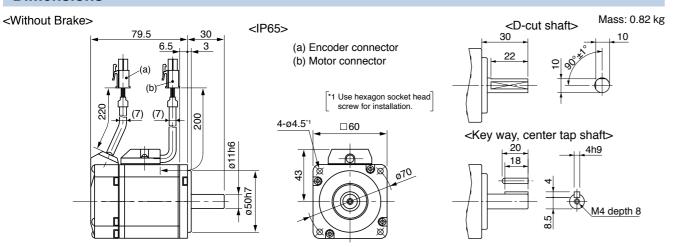
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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





# **Dimensions**



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

[Unit: mm]

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

# **Specifications**

					AC2	00 V
		IP65		MSMD022G1□	MSMD022S1	
Motor mod	*1		IP67		-	-
A	М	lodel	A5II, A5 series		MAD <b>◇T1507</b>	
Applicable driver	*2 N	0.	A5IIE, A	5E series	MAD <b>⊘T1507E</b>	_
unver		Fr	ame sym	bol	A-fr	ame
Power sup	ply ca	pacity	/	(kVA)	0	.5
Rated outp	ut			(W)	20	00
Rated torqu	ue			(N·m)	0.0	64
Momentary	/ Max.	peal	c torque	(N·m)	1.91	
Rated curre	ent		(.	A(rms))	1.6	
Max. current (A(o-p))			6.9			
Regenerativ	ve bral	ke	Without	option	No limi	t Note)2
frequency (ti	mes/min)	Note)1	DV0P4283		No limit Note)2	
Rated rotat	tional	spee	d	(r/min)	30	00
Max. rotation	onal s	peed		(r/min)	50	00
Moment of	inertia	a	Without	brake	0.14	
of rotor (×1	0 <sup>-4</sup> kg	∵m²)	With b	rake	0.16	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times	s or less			
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
Resolution per single turn			1048576	131072		

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

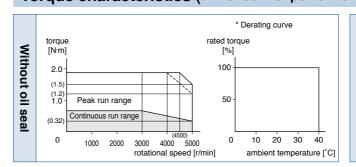
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

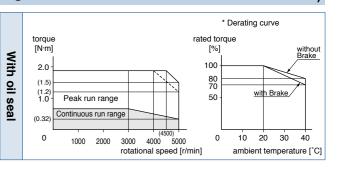
# • Permissible load (For details, refer to P.183)

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
	Thrust load A-direction (N) Thrust load B-direction (N) Radial load P-direction (N)

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

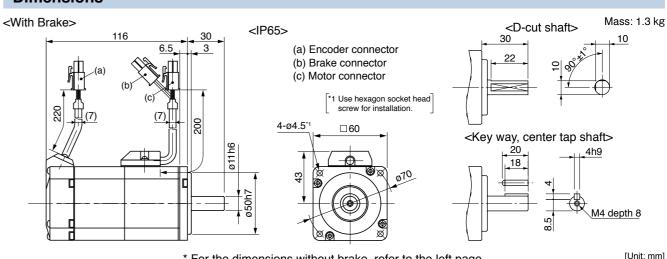
# Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)





# **Dimensions**

<Cautions>



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

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

				AC100 V	
IP65		IP65		MSMD041G1□	MSMD041S1
Motor model		IP67		-	_
A	Model	A5II, A5 series		MCD<	T3120
Applicable driver *2	No.	A5IIE, A5E s	eries	MCD <b>♦T3120E</b>	_
unven	Fr	ame symbol		C-fr	ame
Power supply	capacit	y (k	VA)	0	.9
Rated output			(W)	40	00
Rated torque		(N	l·m)	1	.3
Momentary Max. peak torque (N·m)			3.8		
Rated current (A(rms))			4.6		
Max. current (A(o-p))			19.5		
Regenerative brake Without option			No limi	t Note)2	
frequency (times/min) Note)1 DV0P4282		2	No limit Note)2		
Rated rotation	al spee	d (r/n	nin)	3000	
Max. rotationa	al speed	(r/n	nin)	5000	
Moment of ine	ertia	Without bra	ke	0.26	
of rotor (×10 <sup>-2</sup>	kg·m²)	With brake	Э	0.28	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less		
Rotary encode	er speci	fications No	ote)5	20-bit Incremental	17-bit Absolute
F	esolutio	Resolution per single turn			131072

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

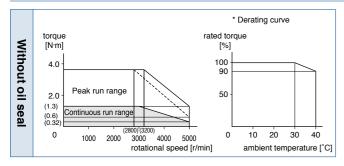
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

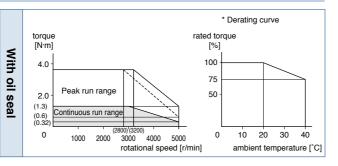
# Permissible load (For details, refer to P.183)

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

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

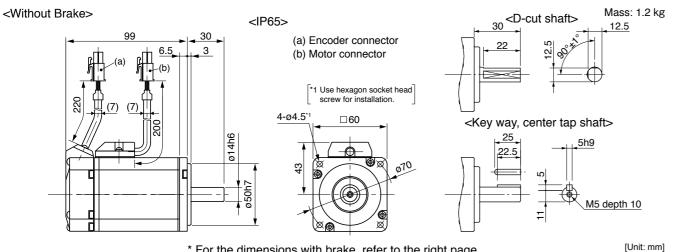
# Torque characteristics (at AC100 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)





# **Dimensions**

<Cautions>



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

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

Dimensions are subject to change without notice. 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** 

			AC2	00 V
		IP65	MSMD042G1□	MSMD042S1□
Motor model		IP67	-	-
Annliaghla	Model	A5II, A5 series	МВО⊜	T2510
Applicable driver *2	No.	A5IIE, A5E series	MBD <b>⊘T2510E</b>	_
divei	Fr	ame symbol	B-fra	ame
Power supply	capacit	y (kVA)	0.	.9
Rated output		(W)	40	00
Rated torque		(N·m)	1.	.3
Momentary Ma	ax. peal	k torque (N·m)	3.8	
Rated current		(A(rms))	2.6	
Max. current (A(o-p))			11	.0
Regenerative b	rake	Without option	No limi	t Note)2
frequency (times/i	min) Note)1	DV0P4283	No limi	t Note)2
Rated rotation	al spee	d (r/min)	3000	
Max. rotationa	l speed	(r/min)	5000	
Moment of ine	rtia	Without brake	0.26	
of rotor (×10 <sup>-4</sup>	kg·m²)	With brake	0.28	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less	
Rotary encode	er speci	fications Note)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per single turn	1048576	131072

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

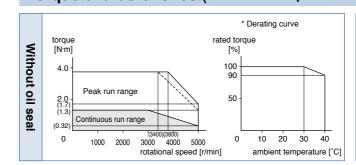
1.27 or more
50 or less
15 or less
0.36
1 or more
24±1.2

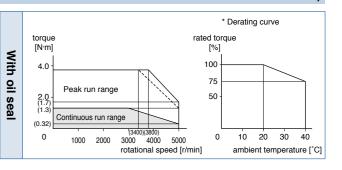
# • Permissible load (For details, refer to P.183)

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
	Thrust load A-direction (N) Thrust load B-direction (N) Radial load P-direction (N)

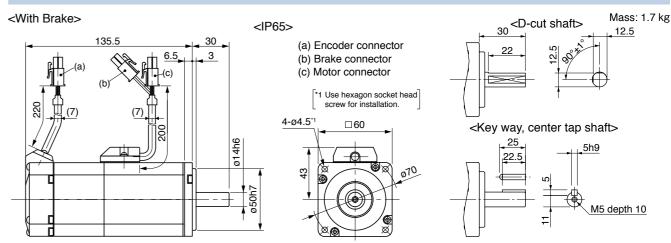
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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





# **Dimensions**



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

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

[Unit: mm]

				00 V		
Motor model	IP65		MSMD082G1□	MSMD082S1□		
Motor model *1		IP67	_	-		
A	Model	A5II, A5 series	MCD<	T3520		
Applicable driver *2	No.	A5IIE, A5E series	MCD <b>⊘T3520E</b>	_		
unver	Fr	ame symbol	C-fr	ame		
Power supply	capacit	y (kVA)	1	.3		
Rated output		(W)	75	50		
Rated torque		(N·m)	2	.4		
Momentary Ma	ax. peal	k torque (N·m)	7.1			
Rated current		(A(rms))	4.0			
Max. current		(A(o-p))	17.0			
Regenerative b	Regenerative brake Without option		No limit Note)2			
frequency (times/	frequency (times/min) Note)1 DV0P4283		No limit Note)2			
Rated rotation	Rated rotational speed		3000			
Max. rotationa	l speed (r/min)		Max. rotational speed		4500	
Moment of ine	rtia	Without brake	0.87			
of rotor (×10 <sup>-4</sup>	kg·m²)	With brake	0.97			
Recommended moment of inertia ratio of the load and the rotor Note)3		20 times	s or less			
Rotary encode	Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
R	esolutio	n per single turn	1048576	131072		

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

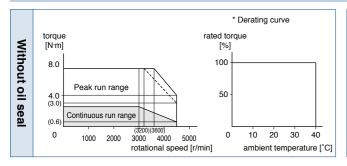
Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

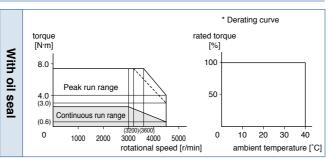
• Permissible load (For details, refer to P.183)

	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

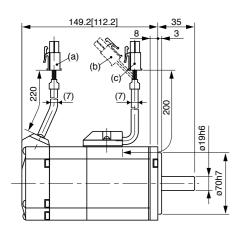
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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

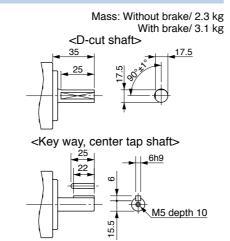




# **Dimensions**



(a) Encoder connector (b) Brake connector (c) Motor connector \*1 Use hexagon socket head screw for installation. □80



\* Figures in [ ] represent the dimensions without brake.

[Unit: mm]

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

<IP65>

MEMO

				AC1	00 V	
Matanasalah			MHMD021G1□	MHMD021S1		
Motor model		IP67		-	-	
Amaliaahla	Model	A5II, A5	series	МВО	T2110	
Applicable driver *2	No.	A5IIE, A5E series		MBD <b>⊘T2110E</b>	_	
unver	Fr	ame sym	bol	B-fra	ame	
Power supply	capacit	y	(kVA)	0.5		
Rated output (W) 200				00		
Rated torque			(N·m)	0.64		
Momentary M	lax. peal	k torque	(N·m)	1.91		
Rated current (A(rms))		2.5				
Max. current (A(o-p))			10.6			
Regenerative brake Without option		option	No limit Note)2			
frequency (times	/min) Note)1	DV0P	4283	No limit Note)2		
Rated rotation	Rated rotational speed		al speed (r/min)		3000	
Max. rotationa	al speed		(r/min)	5000		
Moment of inc	ertia	Without	brake	0.42		
of rotor (×10	4 kg·m²)	With b	rake	0.45		
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less				
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
F	Resolutio	n per sing	le turn	1048576	131072	

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

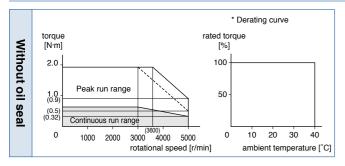
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

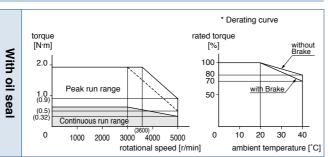
# Permissible load (For details, refer to P.183)

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

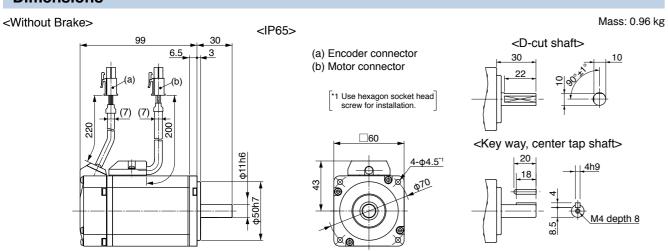
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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





# **Dimensions**



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

[Unit: mm]

Reduce the moment of inertia ratio if high speed response operation is required. <Cautions> Dimensions are subject to change without notice. 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 MHMD 200 W [High inertia, Small capacity]

# **Specifications**

				AC2	00 V
<b>M</b> - <b>t</b> - · · · · - · · · ·	IP65		MHMD022G1□	MHMD022S1	
Motor mode	ÐI ⊧1	IP67		-	_
A 1: 1- 1 -	Model	A5 <b>I</b> I, A5	series	MAD	T1507
Applicable driver	No.	A5IIE, A	5E series	MAD <b>⊘T1507E</b>	_
diivei	Fr	ame sym	bol	A-fra	ame
Power supp	oly capacit	y	(kVA)	0	.5
Rated outpo	ut		(W)	20	00
Rated torqu	ıe		(N·m)	0.0	64
Momentary	Max. peal	k torque	(N·m)	1.91	
Rated curre	ent	(	A(rms))	1.6	
Max. currer	nt		(A(o-p))	6.9	
Regenerativ	e brake	Without	option	No limit Note)2	
frequency (tin	nes/min) Note)1	DV0P4283		No limi	t Note)2
Rated rotat	ional spee	d	(r/min)	30	00
Max. rotation	nal speed		(r/min)	5000	
Moment of	inertia	Without	brake	0.42	
of rotor (x1)	0 <sup>-4</sup> kg·m <sup>2</sup> )	With b	rake	0.45	
Recommen ratio of the			tia Note)3	30 times	s or less
Rotary encoder specifications Note)5  Resolution per single turn		Note)5	20-bit Incremental	17-bit Absolute	
		n per sing	le turn	1048576	131072

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

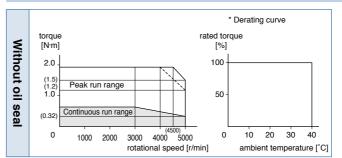
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

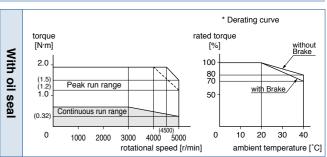
# • Permissible load (For details, refer to P.183)

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

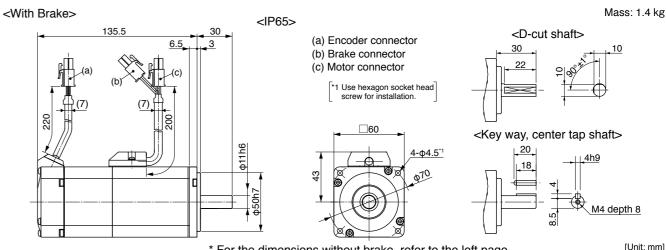
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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





# **Dimensions**



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

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

			AC1	AC100 V		
		IP65	MHMD041G1	MHMD041S1		
Motor model		IP67	-	-		
Amaliaalala	Model	A5II, A5 series	MCD	T3120		
Applicable driver *2	No.	A5IE, A5E series	MCD <b>⊘T3120E</b>	_		
unvei	Fr	ame symbol	C-fr	ame		
Power supply	capacit	y (kVA)	0	.9		
Rated output		(W)	40	00		
Rated torque		(N·m)	1	1.3		
Momentary M	ax. peal	k torque (N·m)	3.8			
Rated current		(A(rms))	4.6			
Max. current		(A(o-p))	19	).5		
Regenerative b	orake	Without option	No lim	No limit Note)2		
frequency (times/	min) Note)1	DV0P4282	No limit Note)2			
Rated rotation	al spee	d (r/min)	3000			
Max. rotationa	ıl speed	(r/min)	5000			
Moment of ine	ertia	Without brake	0.67			
of rotor (×10 <sup>-4</sup> kg·m²) With brake			0.70			
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less			
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
R	esolutio	n per single turn	1048576	131072		

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

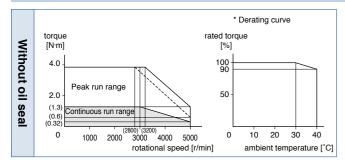
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

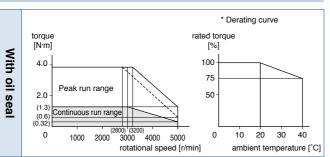
# • Permissible load (For details, refer to P.183)

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

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

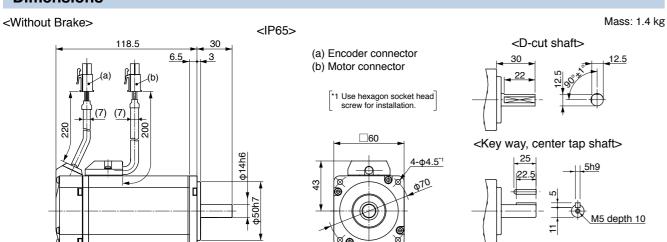
# Torque characteristics (at AC100 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)





# **Dimensions**

<Cautions>



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

Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. [Unit: mm]

# **A5 Family**

**Motor Specifications** 

# **Specifications**

			AC2	00 V	
		IP65		MHMD042G1□	MHMD042S1
Motor mode	el ⊧1	IP67		-	-
A II l. l .	Model	A5II, A5	series	MBD <b>◇T2510</b>	
Applicable driver	No.	A5IIE, A	5E series	MBD <b>⊘T2510E</b>	-
diivei	Fi	rame sym	bol	B-fra	ame
Power supp	oly capacit	у	(kVA)	0.	.9
Rated outpo	ut		(W)	40	00
Rated torqu	ie		(N·m)	1.	3
Momentary	Max. pea	k torque	(N·m)	3.8	
Rated curre	ent	(	A(rms))	2.6	
Max. currer	nt		(A(o-p))	11.0	
Regenerativ	e brake	Without option No limit Note)2		t Note)2	
frequency (tin	nes/min) Note)1	DV0P	4283	No limit Note)2	
Rated rotat	ional spee	d	(r/min)	3000	
Max. rotation	nal speed		(r/min)	5000	
Moment of	inertia	Without	t brake	0.0	67
of rotor ( $\times 10^{-4} \text{ kg} \cdot \text{m}^2$ )		With brake		0.70	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times	s or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
	Resolution per single turn			1048576	131072

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

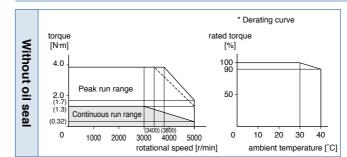
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

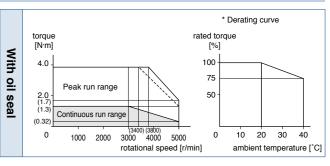
# • Permissible load (For details, refer to P.183)

	During assembly  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

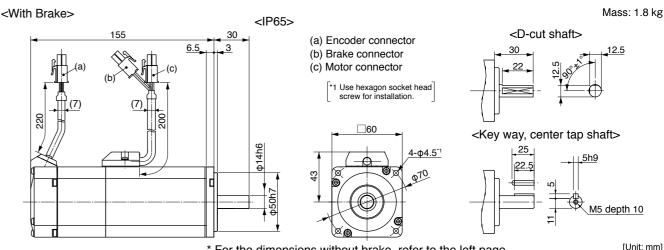
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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





# **Dimensions**



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

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

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

				00 V	
IP65		IP65	MHMD082G1□	MHMD082S1	
Motor model *1		IP67	-	-	
Amaliaahla	Model	A5II, A5 series	MCD <b>⊘</b> T3520		
Applicable driver *2	No.	A5IIE, A5E series	MCD <b>⊘T3520E</b>	_	
unver	Fr	ame symbol	C-fr	ame	
Power supply	capacit	y (kVA)	1	.3	
Rated output		(W)	7	50	
Rated torque		(N·m)	2.4		
Momentary Ma	ax. peal	k torque (N·m)	7.1		
Rated current		(A(rms))	4.0		
Max. current		(A(o-p))	17.0		
Regenerative brake Without option		Without option	No limit Note)2		
frequency (times/r	min) Note)1	DV0P4283	No lim	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	1.51		
of rotor ( $\times 10^{-4}$	of rotor (×10 <sup>-4</sup> kg·m²) With brake		1.61		
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less		
Rotary encode	er speci	fications Note)5	20-bit Incremental	17-bit Absolute	
R	esolutio	n per single turn	1048576	131072	

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

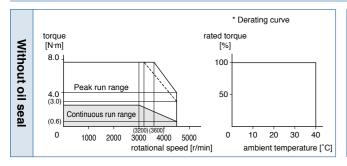
Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

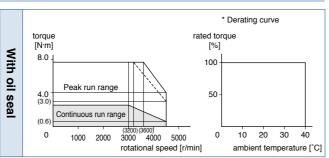
• Permissible load (For details, refer to P.183)

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

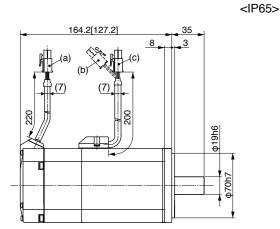
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



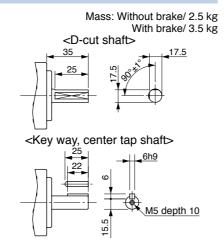


# **Dimensions**



(c) Motor connector \*1 Use hexagon socket head screw for installation.

(a) Encoder connector (b) Brake connector



\* Figures in [ ] represent the dimensions without brake.

[Unit: mm]

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

MEMO

				AC1	AC100 V	
Matanasadal		IP65		-	-	
Motor model *1		IP67		MSME5AZG1	MSME5AZS1	
	Model	el A5II, A5 series		MAD <b>♦</b> T1105		
Applicable driver *2	No.	A5IIE, A5E series		MAD <b>⊘T1105E</b>	_	
anver	Fr	ame sym	bol	A-fra	ame	
Power supply	capacit	y	(kVA)	0	.4	
Rated output			(W)	5	0	
Rated torque			(N·m)	0.16		
Momentary Ma	ax. peal	k torque	(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 (times/r	min) Note)1	DV0P	4280	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	0.025		
of rotor ( $\times 10^{-4}$	kg·m²)	With b	rake	0.027		
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less			
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute		
R	esolutio	n per sing	le turn	1048576	131072	

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

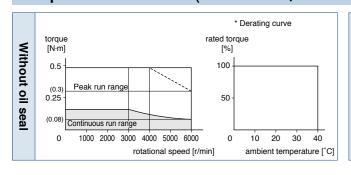
Static friction torque (N·m)	0.29 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

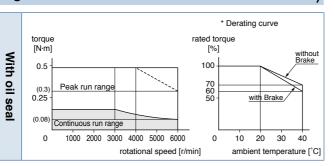
# • Permissible load (For details, refer to P.183)

	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 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



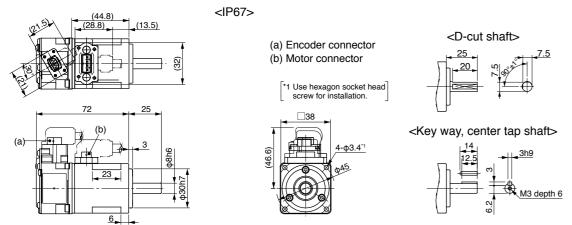


# **Dimensions** < In Case of Without Brake, Cable direction to output shaft.>

· Motor cables for opposite to output shaft cannot be used with 50 W motor.

Mass: 0.31 kg

[Unit: mm]



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

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

# **Specifications**

					AC2	00 V
		IP65			-	-
Motor mod	1 <b>C</b> I *1		IP67		MSME5AZG1□	MSME5AZS1
		Model	A5 <b>I</b> , A5	series	MAD	T1505
Applicable driver	*2	No.	A5IIE, A	5E series	MAD◇T1505E	_
unver	Ì	Fr	ame sym	ibol	A-fra	ame
Power sup	ply o	capacity	/	(kVA)	0	.5
Rated outp	out			(W)	5	0
Rated torq	ue			(N·m)	0.	16
Momentary	у Ма	x. peal	c torque	(N·m)	0.48	
Rated curr	ent		(	(A(rms))	1.1	
Max. current (A(o-p))			4.	.7		
Regenerati	ve b	rake	Without	option	No limi	it Note)2
frequency (ti	imes/m	nin) Note)1	DV0P4280		No limit Note)2	
Rated rota	tiona	al spee	d	(r/min)	3000	
Max. rotati	ional	speed		(r/min)	6000	
Moment of	f iner	tia	Without	t brake	0.025	
of rotor (x1	10-4	kg·m²)	With brake		0.027	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times	s or less		
Rotary end	Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute	
Resolution per single turn				1048576	131072	

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

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

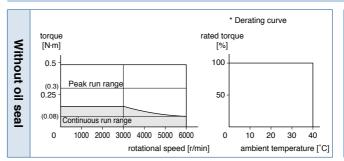
Static friction torque (N·m)	0.29 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

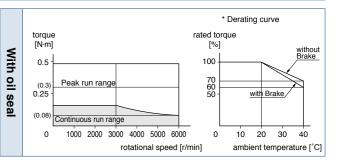
# • Permissible load (For details, refer to P.183)

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

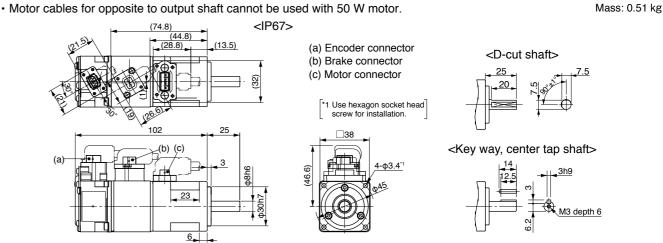
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

# Torque characteristics (at AC200V of power voltage)





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



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

[Unit: mm]

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

				AC1	00 V
		IP65		-	-
Motor model *1		IP67		MSME011G1	MSME011S1
Annlinable	Model	<b>A5I</b> , <b>A5</b> s	eries	MAD	T1107
Applicable driver *2	No.	A5IIE, A5I	E series	MAD <b>⊘T1107E</b>	_
unver	Fr	ame symb	ol	A-fra	ame
Power supply	capacit	y	(kVA)	0	.4
Rated output			(W)	10	00
Rated torque			(N·m)	0.:	32
Momentary Ma	ax. peal	k torque	(N·m)	0.95	
Rated current		(A	(rms))	1.6	
Max. current (A(o-p))			6.9		
Regenerative b	rake	Without o	ption	No limi	t Note)2
frequency (times/r	min) Note)1	DV0P4	280	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotationa	l speed	(	(r/min)	6000	
Moment of ine	rtia	Without b	orake	0.051	
of rotor ( $\times 10^{-4}$	kg·m²)	With br	ake	0.054	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less		
Rotary encoder specifications Note)5			Note)5	20-bit Incremental	17-bit Absolute
Resolution per single turn				1048576	131072

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

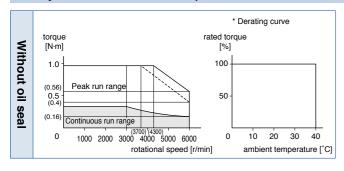
Static friction torque (N·m)	0.29 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.3
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

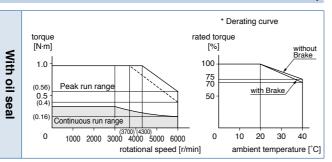
# • Permissible load (For details, refer to P.183)

	Radial load P-direction (N)	147
During assembly	Thrust load A-direction (N)	88
accombiy	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 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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

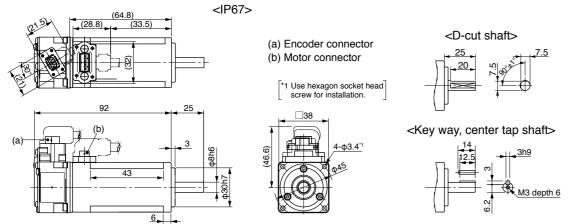




# **Dimensions** < In Case of Without Brake, Cable direction to output shaft.>

· Motor cables for opposite to output shaft cannot be used with 100 W motor.

Mass: 0.46 kg



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

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

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

# **Specifications**

			AC200 V		
Matauaaaa		IP65		-	-
Motor mode *	.	IP67		MSME012G1□	MSME012S1
Annlinable	Model	A5II, A5	series	MAD	T1505
Applicable driver *	No.	A5IIE, A	5E series	MAD <b>⊘T1505E</b>	_
divei	Fr	ame sym	bol	A-fr	ame
Power supp	ly capacit	y	(kVA)	0	.5
Rated outpu	t		(W)	10	00
Rated torque	е		(N·m)	0.3	32
Momentary	Max. peal	k torque	(N·m)	0.95	
Rated curre	nt	(	A(rms))	1.1	
Max. current	t	(	(A(o-p))	4	.7
Regenerative	e brake	Without	option	No limi	t Note)2
frequency (time	es/min) Note)1	DV0P4280		No limit Note)2	
Rated rotation	onal spee	d	(r/min)	3000	
Max. rotation	nal speed		(r/min)	6000	
Moment of in	nertia	Without brake		0.051	
of rotor (×10	) <sup>-4</sup> kg·m <sup>2</sup> )	With brake		0.054	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times	s or less	
Rotary encoder specifications Note)5			Note)5	20-bit Incremental	17-bit Absolute
Resolution per single turn				1048576	131072

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

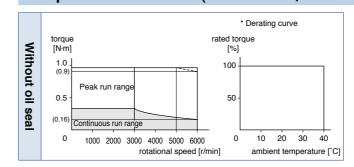
nore
SS
SS
re
2

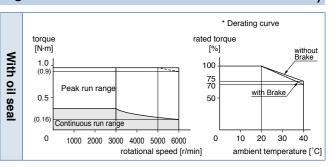
# • Permissible load (For details, refer to P.183)

	Radial load P-direction (N)	147
During assembly	Thrust load A-direction (N)	88
document	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 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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

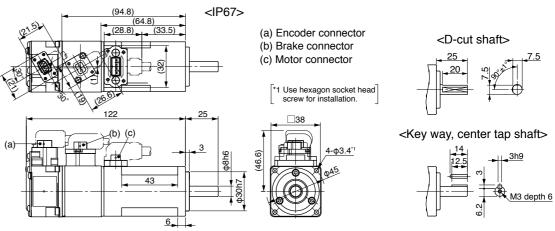




# **Dimensions** < In Case of With Brake, Cable direction to output shaft.>

· Motor cables for opposite to output shaft cannot be used with 100 W motor.

Mass: 0.66 kg



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

[Unit: mm]

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

			AC1	00 V	
Mataria		IP65		-	-
Motor model *1		IP67		MSME021G1□	MSME021S1
A I' I. I .	Model	el A5II, A5 series		MBD <b>⇔</b> T2110	
Applicable *2	No.	A5IIE, A5	E series	MBD <b>⊘T2110E</b>	_
unver	Fr	ame syml	bol	B-fra	ame
Power supply	capacit	y	(kVA)	0	.5
Rated output			(W)	20	00
Rated torque			(N·m)	0.64	
Momentary Ma	ax. peal	k torque	(N·m)	1.91	
Rated current		(/	A(rms))	2.5	
Max. current (A(o-p))			A(o-p))	10.6	
Regenerative b	rake	Without	option	No limit Note)2	
frequency (times/r	nin) 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 ( $\times 10^{-4}$	kg·m²)	With b	rake	0.16	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less		
Rotary encode	er speci	fications	Note)5	20-bit Incremental	17-bit Absolute
Resolution per single turn			le turn	1048576	131072

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

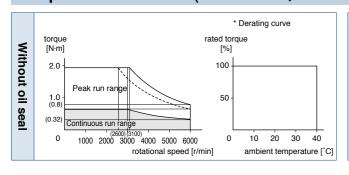
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

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

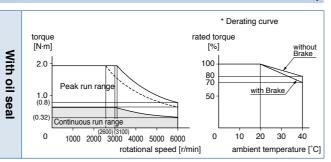
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



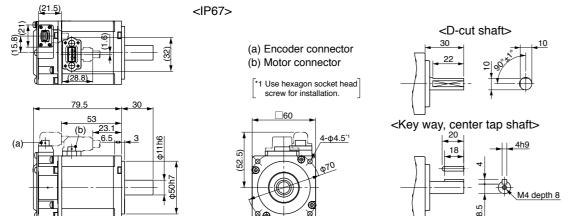
<Cautions>



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



[Unit: mm]



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

Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. 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 MSME 200 W [Low inertia, Small capacity]

# **Specifications**

				AC200 V	
Motor model	-1	IP65		-	_
		IP67		MSME022G1□	MSME022S1
Applicable driver *2	Mode	A5II, A5 series		MAD <b>◇</b> T1507	
	*2 No.	A5IIE, A5E series		MAD <b>⊘T1507E</b>	-
	F	Frame symbol		A-frame	
Power supply capacity (kVA)		0.5			
Rated output (W)		200			
Rated torque (N·m)			0.64		
Momentary Max. peak torque (N·m)		1.91			
Rated current (A(rms))		1.5			
Max. current (A(o-p))		(A(o-p))	6.5		
Regenerative brake frequency (times/min) Note)1		Without	option	No limit Note)2	
		DV0P4283		No limit Note)2	
Rated rota	tional spec	ed	(r/min)	30	00
Max. rotational speed (r/min)		6000			
Moment of inertia of rotor (×10 <sup>-4</sup> kg·m²)		Without	t brake	0.14	
		With b	With brake 0.16		16
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less			
Rotary end	oder spec	ifications	Note)5	20-bit Incremental	17-bit Absolute
Resolut		on per single turn		1048576	131072

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

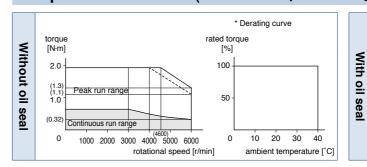
,	,
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2
	·

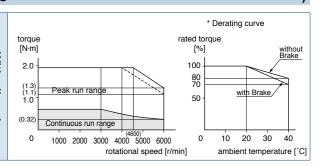
# • Permissible load (For details, refer to P.183)

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

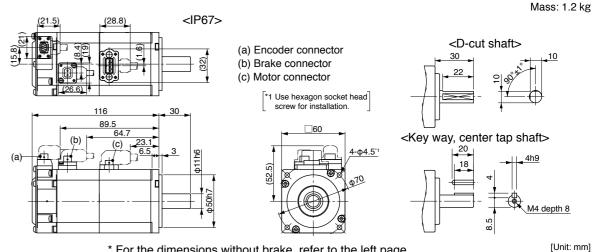
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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





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



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

Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. 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>

				AC100 V		
Motor model	IP65		-	-		
*1		IP67		MSME041G1□	MSME041S1	
Annliachla	Model	A5II, A5 series		MCD <b>⊘</b> T3120		
Applicable driver *2	No.	A5IIE, A5	E series	MCD <b>⊘T3120E</b>	-	
divei	Fr	ame symb	ool	C-fr	ame	
Power supply	capacit	y	(kVA)	0	.9	
Rated output			(W)	40	00	
Rated torque			(N·m)	1.3		
Momentary Ma	ax. peal	k torque	(N·m)	3.8		
Rated current		(/	A(rms))	4.6		
Max. current (A(o-p))				19.5		
Regenerative b	rake	Without	option	No limit Note)2		
frequency (times/r	min) Note)1	DV0P4	1282	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	0.26		
of rotor ( $\times 10^{-4}$	kg·m²)	With b	rake	0.28		
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less			
Rotary encoder specifications Note)5			Note)5	20-bit Incremental	17-bit Absolute	
R	esolutio	n per singl	e turn	1048576	131072	

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

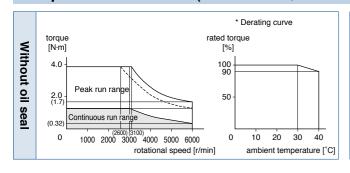
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

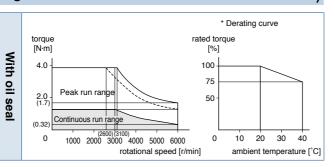
#### Permissible load (For details, refer to P.183)

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

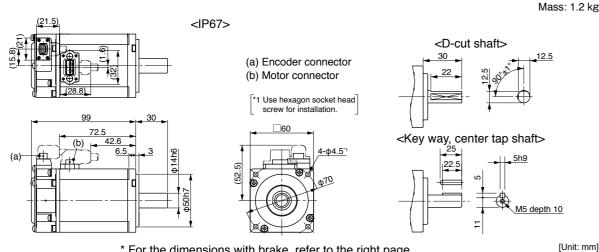
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \( \rightarrow \) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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





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



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

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

## **Specifications**

			AC200 V			
Motor mode		IP65		-	-	
*	.	IP67		MSME042G1□	MSME042S1	
Annlinable	Model	A5 <b>I</b> I, A5	series	MBD<	T2510	
Applicable driver *	No.	A5IIE, A	5E series	MBD <b>⊘T2510E</b>	-	
divoi	Fr	ame sym	bol	B-fra	ame	
Power supp	ly capacit	y	(kVA)	0.	.9	
Rated output	ıt		(W)	40	00	
Rated torque	е		(N·m)	1.	.3	
Momentary	Max. peal	k torque	(N·m)	3.8		
Rated curre	nt	(	A(rms))	2.4		
Max. curren	t	(	(A(o-p))	10.2		
Regenerative	e brake	Without	option	No limit Note)2		
frequency (time	es/min) Note)1	DV0P4283		No limit Note)2		
Rated rotation	onal spee	d	(r/min)	3000		
Max. rotatio	nal speed		(r/min)	6000		
Moment of i	nertia	Without	brake	0.26		
of rotor (×10	) <sup>-4</sup> kg·m²)	With b	orake	0.28		
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times	s or less		
Rotary enco	Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute	
	Resolution per single turn				131072	

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

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

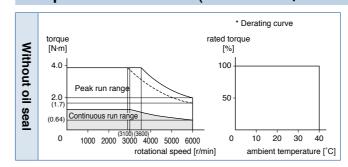
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

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

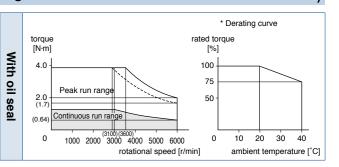
	Radial load P-direction (N)	392
During assembly	Thrust load A-direction (N)	147
docombry	Thrust load B-direction (N)	196
During	Radial load P-direction (N)	245
operation	Thrust load A, B-direction (N)	98

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

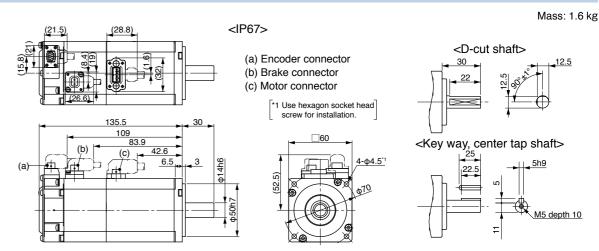
## Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



<Cautions>



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



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

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

				AC200 V		
		IP65		-	-	
Motor model *1		IP67		MSME082G1□	MSME082S1	
Ammliaabla	Model	A5II, A5 series		MCD <b>⊘</b> T3520		
Applicable *2	No.	A5IIE, A	5E series	MCD <b>⊘T3520E</b>	_	
anver	Fr	ame sym	bol	C-fra	ame	
Power supply	capacit	y	(kVA)	1.	.3	
Rated output			(W)	75	50	
Rated torque			(N·m)	2.	.4	
Momentary Ma	ax. peal	k torque	(N·m)	7.1		
Rated current		(	A(rms))	4.1		
Max. current		(	(A(o-p))	17.4		
Regenerative b	rake	Without	option	No limit Note)2		
frequency (times/r	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	0.87		
of rotor ( $\times 10^{-4}$	kg·m²)	With b	orake	0.97		
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less			
Rotary encode	er speci	fications	Note)5	20-bit Incremental	17-bit Absolute	
R	esolutio	n per sing	le turn	1048576	131072	

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

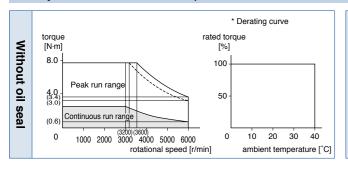
Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

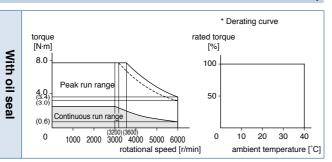
#### • Permissible load (For details, refer to P.183)

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

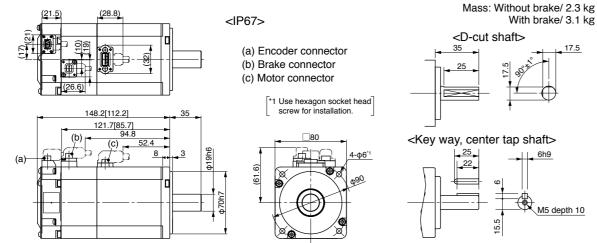
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.

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





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



\* Figures in [ ] represent the dimensions without brake.

73

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

## **Specifications**

					AC200 V		
		IP65			MSME102GC□	MSME102SC	
Motor mode	€I ∗1		IP67		MSME102G1□	MSME102S1	
A		Model	A5 <b>I</b> I, A5	series	MDD<	T5540	
Applicable driver	*2	No.	A5IIE, A5E series		MDD <b>⊘T5540E</b>	-	
unven		Fr	ame sym	bol	D-fr	ame	
Power supp	oly (	capacity	y	(kVA)	1.	.8	
Rated outp	ut			(W)	10	00	
Rated torqu	ıe			(N·m)	3.	18	
Momentary	Ма	ıx. peal	k torque	(N·m)	9.55		
Rated curre	ent		(	A(rms))	6.6		
Max. currer	nt			(A(o-p))	28		
Regenerativ	/e b	rake	Without option		No limi	t Note)2	
frequency (tin	nes/n	nin) Note)1	DV0P4284		No limit Note)2		
Rated rotat	iona	al spee	d	(r/min)	3000		
Max. rotation	onal	speed		(r/min)	5000		
Moment of	ine	rtia	Without brake		2.03		
of rotor (×1	0-4	kg·m²)	With b	orake	2.:	35	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less				
Rotary enco	Rotary encoder specifications		Note)5	20-bit Incremental	17-bit Absolute		
Resolution per single turn			le turn	1048576	131072		

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

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

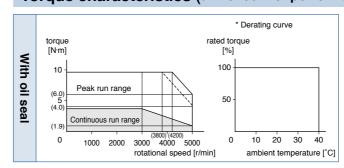
,	,
Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

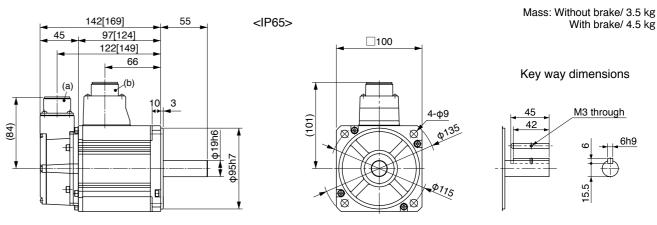
Radial load P-direction (N)	980
Thrust load A-direction (N)	588
Thrust load B-direction (N)	686
Radial load P-direction (N)	490
Thrust load A, B-direction (N)	196
	Thrust load A-direction (N) Thrust load B-direction (N) Radial load P-direction (N)

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

74

[Unit: mm]

			AC2	00 V
		MSME152GC□	MSME152SC□	
Motor model *1		IP67	MSME152G1□	MSME152S1
Amaliaalala	Model	A5II, A5 series	MDD<	T5540
Applicable *2	No.	A5IIE, A5E series	MDD <b>⊘T5540E</b>	_
anver	Fr	ame symbol	D-fr	ame
Power supply	capacit	y (kVA)	2	.3
Rated output		(W)	15	00
Rated torque		(N·m)	4.	77
Momentary Ma	ax. peal	k torque (N·m)	14.3	
Rated current		(A(rms))	8.2	
Max. current		(A(o-p))	35	
Regenerative b	rake	Without option	No limit Note)2	
frequency (times/n	nin) Note)1	DV0P4284	No limit Note)2	
Rated rotation	al spee	d (r/min)	3000	
Max. rotationa	speed	(r/min)	5000	
Moment of ine	rtia	Without brake	2.84	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	3.17	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
Re	esolutio	n per single turn	1048576	131072

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

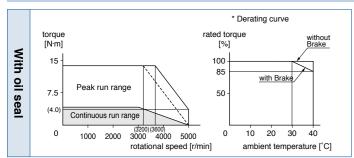
Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

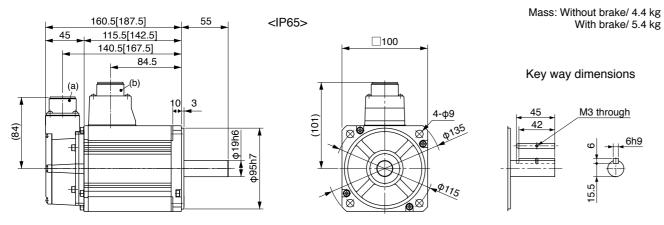
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
accombiy	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



(a) Encoder connector

**Dimensions** 

- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

### **Specifications**

				AC2	00 V	
N4 - 4		IP65		MSME202GC□	MSME202SC	
Motor mode	ÐI ⊧1	IP67		MSME202G1□	MSME202S1	
	Model	Model A5II, A5 series		MED◇	MED <b>◇T736</b> 4	
Applicable driver	No.	A5IIE, A5E series		MED <b>⊘T7364E</b>	-	
unven	F	rame sym	bol	E-fra	ame	
Power supp	oly capacit	у	(kVA)	3.	.3	
Rated outpo	ut		(W)	20	00	
Rated torqu	ie		(N·m)	6.5	37	
Momentary	Max. pea	k torque	(N·m)	19.1		
Rated curre	ent	(	A(rms))	11.3		
Max. current (A(o-p))			4	8		
Regenerativ	e brake	Without option		No limit Note)2		
frequency (tin	nes/min) Note)1	DV0P4285		No limit Note)2		
Rated rotat	ional spee	d	(r/min)	3000		
Max. rotation	nal speed	l	(r/min)	5000		
Moment of	inertia	Without brake		3.68		
of rotor (×1	0 <sup>-4</sup> kg·m²)	With brake		4.01		
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times	s or less		
Rotary enco	oder speci	fications	Note)5	20-bit Incremental	17-bit Absolute	
Resolutio		n per sing	le turn	1048576	131072	

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

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

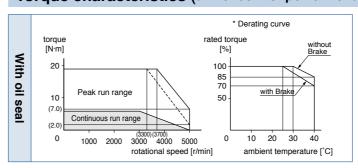
Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

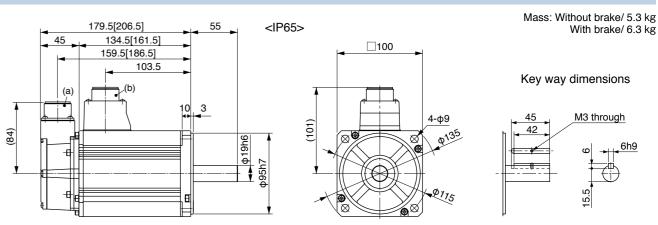
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
docombry	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

			AC2	00 V	
Matauraadal		IP65		MSME302GC□	MSME302SC□
Motor model *1		IP67		MSME302G1□	MSME302S1
Ammliaalala	Model	A5II, A5 series		MFD <b>⊘TA390</b>	
Applicable driver *2	No.	A5IIE, A5	E series	MFD <b>⊘TA390E</b>	_
divei	Fr	ame symb	ol	F-fra	ame
Power supply	capacit	y	(kVA)	4	.5
Rated output			(W)	30	00
Rated torque			(N·m)	9.	55
Momentary Ma	ax. peal	k torque	(N·m)	28.6	
Rated current		(A	(rms))	18.1	
Max. current		(/	۹(o-p))	77	
Regenerative b	rake	Without option		No limit Note)2	
frequency (times/	min) Note)1	DV0P4285×2		No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotationa	l speed		(r/min)	5000	
Moment of ine	rtia	Without I	brake	6.50	
of rotor ( $\times 10^{-4}$	kg·m²)	With br	ake	6.85	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less		
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute	
Resolution per single turn			e turn	1048576	131072

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

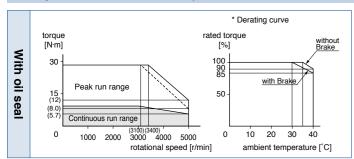
Static friction torque (N·m)	11.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

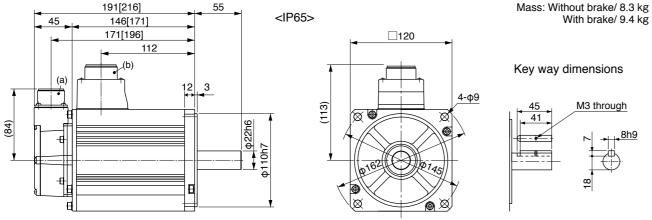
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## **Specifications**

				AC2	00 V
M-4		IP65		MSME402GC□	MSME402SC
Motor mode	ÐI ⊧1	IP67		MSME402G1□	MSME402S1
	Model	A5 <b>I</b> I, A5	series	MFD♦	TB3A2
Applicable driver	No.	A5IIE, A	5E series	MFD <b>⊘TB3A2E</b>	-
unven	F	rame sym	bol	F-fra	ame
Power supp	oly capacit	у	(kVA)	6	.0
Rated outp	ut		(W)	40	00
Rated torqu	ie		(N·m)	12	2.7
Momentary	Max. pea	k torque	(N·m)	38.2	
Rated curre	ent	(	A(rms))	19.6	
Max. currer	nt	(	(A(o-p))	8	3
Regenerativ	e brake	Without option		No limit Note)2	
frequency (tin	nes/min) Note)	DV0P4285×2		No limit Note)2	
Rated rotat	ional spee	d	(r/min)	3000	
Max. rotation	nal speed	I	(r/min)	4500	
Moment of	inertia	Without	brake	12.9	
of rotor (×1	0 <sup>-4</sup> kg·m²)	With b	rake	14.2	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times	s or less		
Rotary enco	oder speci	fications	Note)5	20-bit Incremental	17-bit Absolute
Resolutio		n per sina	le turn	1048576	131072

200 V MSME 4.0 kW [Low inertia, Middle capacity]

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

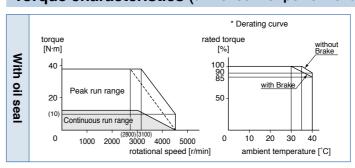
,	,
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

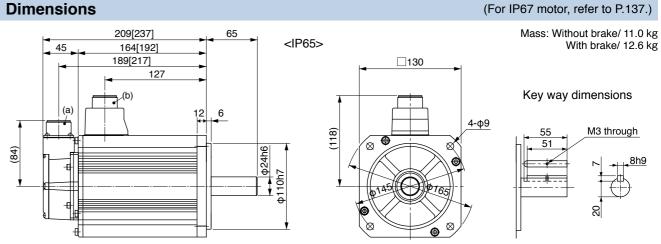
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

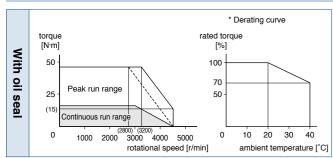
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

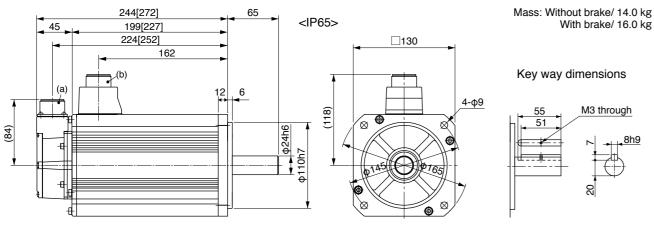
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

200 V MDME 1.0 kW [Middle inertia, Middle capacity]

**Motor Specifications** 

## **Specifications**

				AC2	00 V		
			IP65		MDME102GC□	MDME102SC	
Motor mod	el *1		IP67		MDME102G1□	MDME102S1	
		Model	A5II, A5	series	MDD<	T3530	
Applicable driver	*2	No.	A5IIE, A	5E series	MDD <b>⊘T3530E</b>	_	
uriver		Fr	ame sym	bol	D-fra	ame	
Power sup	ply c	apacit	/	(kVA)	1.	.8	
Rated outp	ut			(W)	10	00	
Rated torqu	ue			(N·m)	4.	77	
Momentary	/ Ma	x. peal	c torque	(N·m)	14.3		
Rated curre	ent		(	A(rms))	5.7		
Max. current (A(o-p))				24			
Regenerativ	ve bi	rake	Without option		No limit Note)2		
frequency (ti	mes/m	in) Note)1	DV0P4284		No limit Note)2		
Rated rotal	tiona	al spee	d	(r/min)	2000		
Max. rotation	onal	speed		(r/min)	3000		
Moment of	iner	tia	Without	brake	4.60		
of rotor (×1	0 <sup>-4</sup> l	kg·m²)	With b	rake	5.90		
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times	s or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute				
Resolution per single turn			le turn	1048576	131072		

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

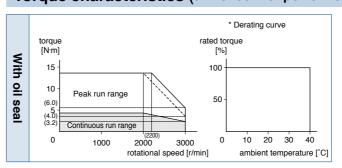
Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

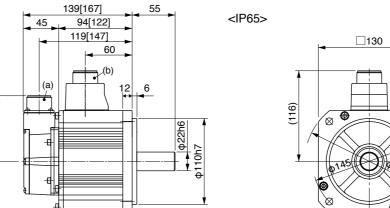
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
docombry	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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

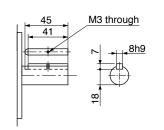


#### **Dimensions** (For IP67 motor, refer to P.138.)



Mass: Without brake/ 5.2 kg With brake/ 6.7 kg

Key way dimensions



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

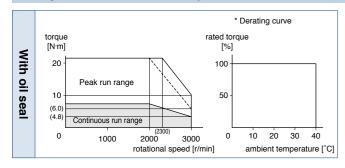
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

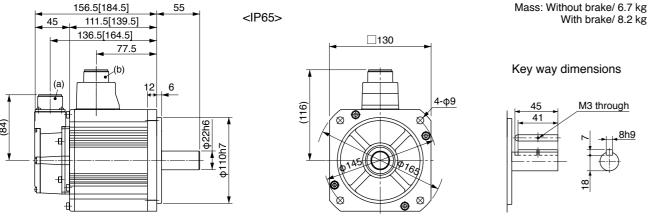
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

81

[Unit: mm]

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

200 V MDME 2.0 kW [Middle inertia, Middle capacity]

## **Specifications**

				AC2	00 V		
		IP65			MDME202GC□	MDME202SC	
Motor mod	1 <b>e</b> l *1		IP67		MDME202G1□	MDME202S1	
		Model	A5II, A5	series	MED<	T7364	
Applicable driver	*2	No.	A5IIE, A	5E series	MED <b>⊘T7364E</b>	-	
unver	Ì	Fr	ame sym	bol	E-fra	ame	
Power sup	ply o	capacity	/	(kVA)	3	.3	
Rated outp	out			(W)	20	00	
Rated torq	ue			(N·m)	9.	55	
Momentary	у Ма	x. peal	c torque	(N·m)	28.6		
Rated current (A(rms))					11.5		
Max. current (A(o-p))					49		
Regenerati	ve b	rake	Without	option	No limit Note)2		
frequency (ti	imes/m	nin) Note)1	DV0P4285		No limit Note)2		
Rated rota	tiona	al spee	d	(r/min)	2000		
Max. rotati	onal	speed		(r/min)	3000		
Moment of	iner	tia	Without brake		8.72		
of rotor (x1	10-4	kg·m²)	With b	rake	10.0		
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times	s or less		
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute			
Resolution per single turn				le turn	1048576	131072	

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

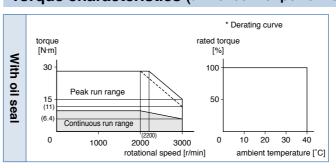
,	,
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

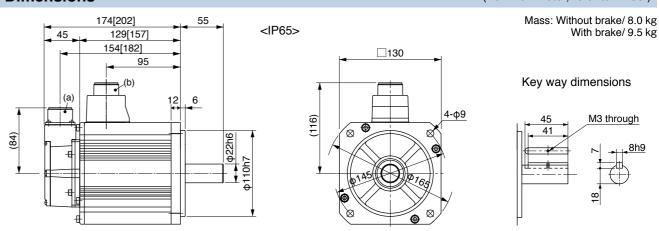
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
docombry	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions** (For IP67 motor, refer to P.138.)



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

# ies

				AC2	00 V	
		IP65		MDME302GC	MDME302SC	
Motor model		IP67		MDME302G1□	MDME302S1	
A II In I .	Model	A5II, A5	series	MFD◇	TA390	
Applicable driver *2	No.	A5IIE, A	5E series	MFD <b>⊘TA390E</b>	-	
unven	Fı	ame sym	bol	F-fra	ame	
Power supply	capacit	y	(kVA)	4.	.5	
Rated output			(W)	30	00	
Rated torque			(N·m)	14	1.3	
Momentary M	ax. pea	k torque	(N·m)	43.0		
Rated current		(.	A(rms))	17.4		
Max. current	current (A(o-p))			74		
Regenerative	brake	Without option		No limit Note)2		
frequency (times	/min) Note)1	DV0P4285×2		No limit Note)2		
Rated rotation	nal spee	d	(r/min)	2000		
Max. rotation	al speed		(r/min)	3000		
Moment of inc	ertia	Without	brake	12.9		
of rotor (×10 <sup>-4</sup>	kg·m²)	With b	orake	14.2		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less			
Rotary encod	er speci	fications	Note)5	20-bit Incremental	17-bit Absolute	
Resolution per single turn				1048576	131072	

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

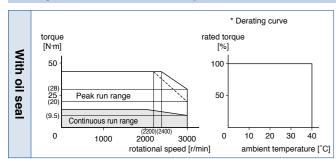
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

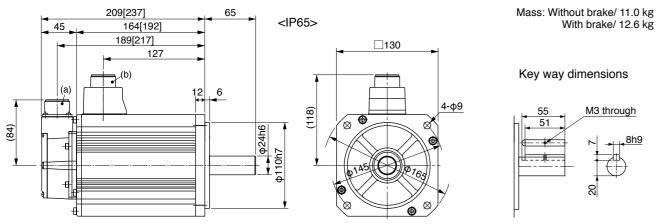
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

## **Specifications**

			AC2	00 V		
M-4	-1	IP65		MDME402GC	MDME402SC	
Motor mode	*1	IP67		MDME402G1□	MDME402S1	
	Model	A5Ⅱ, A5	series	MFD♦	TB3A2	
Applicable driver	*2 No.	A5IIE, A	5E series	MFD <b>⊘TB3A2E</b>	-	
unver	F	rame sym	bol	F-fra	ame	
Power supp	oly capacit	у	(kVA)	6.	0	
Rated outp	ut		(W)	40	00	
Rated torqu	ıe		(N·m)	19	.1	
Momentary	Max. pea	k torque	(N·m)	57.3		
Rated current (A(rms))			21.0			
Max. current (A(o-p))			8	9		
Regenerativ	e brake	Without	option	No limi	No limit Note)2	
frequency (tir	mes/min) Note)1	DV0P4285×2 N		No limi	t Note)2	
Rated rotat	ional spee	d	(r/min)	2000		
Max. rotation	onal speed	l	(r/min)	3000		
Moment of	inertia	Without	brake	37.6		
of rotor (×1	0 <sup>-4</sup> kg·m²)	With b	rake	42.9		
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times	s or less			
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
Resolutio		n per sing	le turn	1048576	131072	

200 V MDME 4.0 kW [Middle inertia, Middle capacity]

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

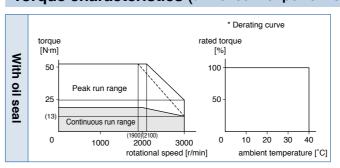
24.5 or more
80 or less
25 or less
1.3±10 %
2 or more
24±2.4

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

	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N)	784
document	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 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



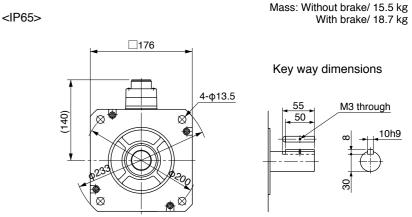
#### **Dimensions**

178[207]

133[162]

158[187]

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

<a href="#"><Cautions></a> Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

83

			AC2	00 V
55		IP65	MDME502GC	MDME502SC
Motor model *1		IP67	MDME502G1	MDME502S1
	Model	A5II, A5 series	MFD <b>⊘TB3A2</b>	
Applicable driver *2	No.	A5IIE, A5E series	MFD <b>⊘TB3A2E</b>	_
anver	Fr	ame symbol	F-fr	ame
Power supply	capacit	y (kVA)	7	.5
Rated output		(W)	50	00
Rated torque		(N·m)	23	3.9
Momentary Ma	ax. peal	k torque (N·m)	71.6	
Rated current (A(rms))			25.9	
Max. current (A(o-p))			110	
Regenerative brake Without option		120		
		DV0P4285×2	No lim	t Note)2
Rated rotation	al spee	d (r/min)	2000	
Max. rotationa	l speed	(r/min)	3000	
Moment of ine	rtia	Without brake	48.0	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	53.3	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
R	esolutio	n per single turn	1048576	131072

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

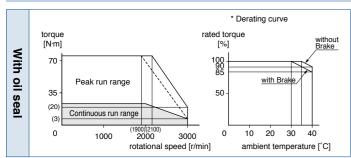
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

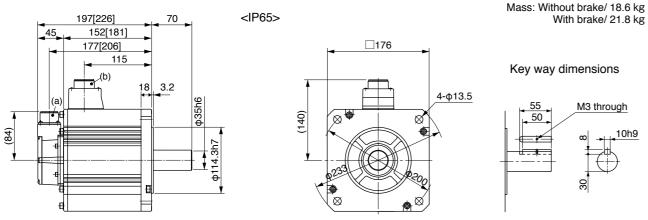
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

#### **Specifications**

			AC2	00 V		
M-4		IP65		-	-	
Motor model		IP67		MDME752G1□	MDME752S1	
	Model	A5II, A5	series	MGD♦TC3B4		
Applicable driver *2	No.	A5IIE, A	5E series	-	_	
unver	Fr	ame sym	bol	G-fr	ame	
Power supply	y capacit	у	(kVA)	1	1	
Rated output			(W)	75	00	
Rated torque	;		(N·m)	47	'.8	
Momentary N	/lax. peal	k torque	(N·m)	119		
Rated current (A(rms))		44.0				
Max. current (A(o-p))			16	35		
Regenerative	brake	Without	option	No limi	No limit Note)2	
frequency (time	s/min) Note)1	DV0P4285×3		No limit Note)2		
Rated rotatio	nal spee	d	(r/min)	1500		
Max. rotation	al speed		(r/min)	3000		
Moment of in	ertia	Without	brake	101		
of rotor (×10	<sup>-4</sup> kg·m²)	With b	orake	107		
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times	s or less			
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
Resolution per single turn		le turn	1048576	131072		

200 V MDME 7.5 kW [Middle inertia, Middle capacity]

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

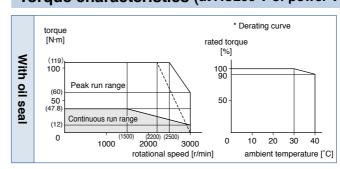
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

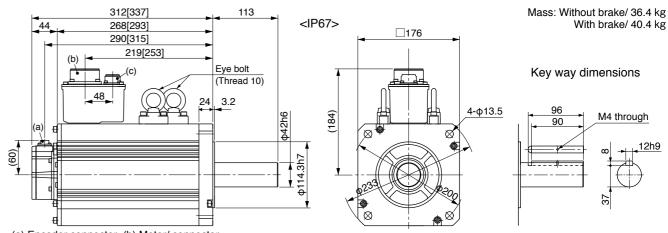
	Radial load P-direction (N)	2058
During assembly	Thrust load A-direction (N)	980
docombry	Thrust load B-direction (N)	1176
During	Radial load P-direction (N)	1176
operation	Thrust load A, B-direction (N)	490

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.46.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector (b) Motor/ connector
- (c) Brake connector (only with brake)
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

			AC2	00 V
		IP65	-	-
Motor model *1		IP67	MDMEC12G1	MDMEC12S1
Ammliaalala	Model	A5II, A5 series	MHD♦TC3B4	
Applicable driver *2	No.	A5IIE, A5E series	_	_
anver	Fr	ame symbol	H-fr	ame
Power supply	capacit	y (kVA)	1	7
Rated output		(W)	110	000
Rated torque		(N·m)	70.0	
Momentary Ma	ax. peal	k torque (N·m)	175	
Rated current (A(rms))			54.2	
Max. current (A(o-p))			20	03
Regenerative brake Without option		No limit Note)2		
		DV0PM20058	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	212	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	220	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
R	esolutio	n per single turn	1048576	131072

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

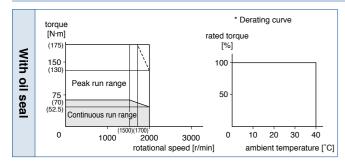
Static friction torque (N·m)	100 or more
Engaging time (ms)	300 or less
Releasing time (ms) Note)4	140 or less
Exciting current (DC) (A)	1.08±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

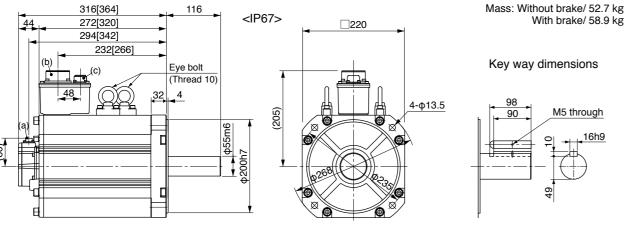
	Radial load P-direction (N)	4508
During assembly	Thrust load A-direction (N)	1470
assembly	Thrust load B-direction (N)	1764
During	Radial load P-direction (N)	2254
operation	Thrust load A, B-direction (N)	686

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.47.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector (b) Motor/ connector
- (c) Brake connector (only with brake)
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

87

### **Specifications**

				AC2	00 V
<b>M</b> - <b>t</b> - · · · · · · · · · · · · · · · · · ·		IP65		-	-
Motor mode	ÐI ⊧1	IP67		MDMEC52G1□	MDMEC52S1
A 1: 1- 1	Model	A5 <b>I</b> I, A5	series	МНО◇	ТСЗВ4
Applicable driver	No.	A5IIE, A	5E series	-	-
unven	Fr	ame sym	bol	H-fra	ame
Power supp	oly capacit	y	(kVA)	2	2
Rated outp	ut		(W)	150	000
Rated torqu	ie		(N·m)	95	5.5
Momentary	Max. peal	k torque	(N·m)	224	
Rated curre	ent	(	A(rms))	66.1	
Max. current (A(o-p))			23	36	
Regenerativ	e brake	Without	option	No limit Note)2	
frequency (tin	nes/min) Note)1	DV0PM20058		No limit Note)2	
Rated rotat	ional spee	d	(r/min)	1500	
Max. rotation	nal speed		(r/min)	2000	
Moment of	inertia	Without brake		302	
of rotor (×1	0 <sup>-4</sup> kg·m²)	With b	rake	3-	11
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times	s or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
Resolution per			le turn	1048576	131072

200 V MDME 15.0 kW [Middle inertia, Middle capacity]

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

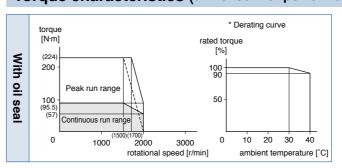
Static friction torque (N·m)	100 or more
Engaging time (ms)	300 or less
Releasing time (ms) Note)4	140 or less
Exciting current (DC) (A)	1.08±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

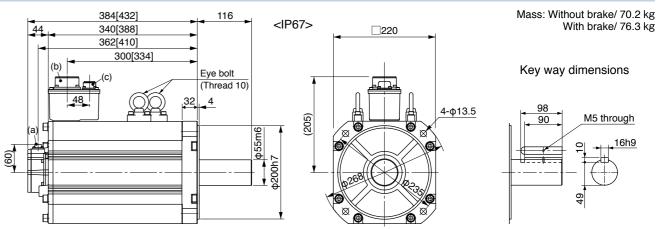
	Radial load P-direction (N)	4508
During assembly	Thrust load A-direction (N)	1470
accombiy	Thrust load B-direction (N)	1764
During	Radial load P-direction (N)	2254
operation	Thrust load A, B-direction (N)	686

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.47.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector (b) Motor/ connector
- (c) Brake connector (only with brake)
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

				AC2	00 V
		IP65		-	-
Motor model *1		IP67		MFME152G1	MFME152S1
Annlinable	Model	A5II, A5 series	;	MDD<	T5540
Applicable driver *2	No.	A5IIE, A5E se	ries	MDD <b>⊘T5540E</b>	_
unver	Fr	ame symbol		D-fr	ame
Power supply	capacit	y (k\	/A)	2	.3
Rated output		(	W)	15	00
Rated torque		(N·	m)	7.	16
Momentary Ma	ax. peal	k torque (N	m)	21.5	
Rated current (A(rms))		7.5			
Max. current (A(o-p))		32			
Regenerative b	rake	Without option	on	100	
frequency (times/r	min) Note)1	DV0P4284		No limit Note)2	
Rated rotation	al spee	d (r/m	in)	2000	
Max. rotationa	l speed	(r/m	in)	3000	
Moment of ine	rtia	Without brak	е	18.2	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	;	23.5	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encode	er speci	fications No	te)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per single tur	'n	1048576	131072

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

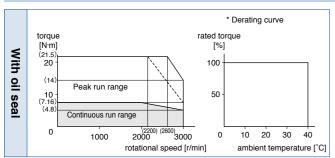
Static friction torque (N·m)	7.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	35 or less
Exciting current (DC) (A)	0.83±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

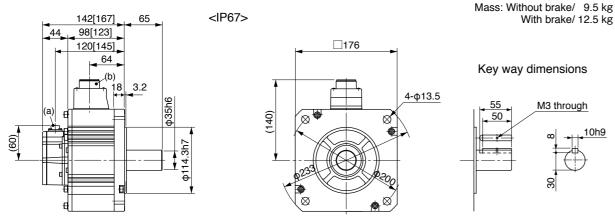
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \( \rightarrow \) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

### **Specifications**

				AC2	00 V
Motor mod	-1	IP65		-	-
	*1	IP67		MFME252G1	MFME252S1
A	Mode	A5II, A5	series	MED<	T7364
Applicable driver	*2 No.	A5IIE, A	5E series	MED <b>⊘T7364E</b>	_
unven	F	rame sym	bol	E-fra	ame
Power sup	ply capac	ty	(kVA)	3	.8
Rated outp	ut		(W)	25	00
Rated torqu	ue		(N·m)	11	.9
Momentary	Max. pea	ak torque	(N·m)	30.4	
Rated current (A(rms))			13.4		
Max. current (A(o-p))			5	7	
Regenerativ	ve brake	Without	option	75	
frequency (ti	mes/min) Note	DV0P4285		No limit Note)2	
Rated rotal	tional spe	ed	(r/min)	2000	
Max. rotation	onal spee	d	(r/min)	3000	
Moment of	inertia	Without	brake	35.8	
of rotor (×1	0 <sup>-4</sup> kg·m <sup>2</sup> )	With b	rake	45	5.2
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary enc	Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
	Resolution per single turn			1048576	131072

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

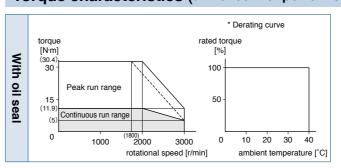
Static friction torque (N·m)	21.6 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	100 or less
Exciting current (DC) (A)	0.75±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

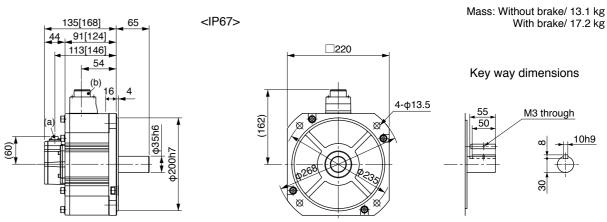
During assembly	Radial load P-direction (N)	1862
	Thrust load A-direction (N)	686
accombly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	294

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

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

[Unit: mm]

			AC200 V		
IP65		-	-		
Motor model		IP67		MFME452G1□	MFME452S1
A 12 11	Model	A5II, A5	series	MFD⇔	TB3A2
Applicable driver *2	No.	A5IIE, A	5E series	MFD <b>⊘TB3A2E</b>	_
unven	Fr	ame sym	bol	F-fra	ame
Power supply	capacit	у	(kVA)	6.	8
Rated output			(W)	45	00
Rated torque			(N·m)	21	.5
Momentary M	ax. peal	k torque	(N·m)	54.9	
Rated current		(	A(rms))	24.7	
Max. current (A(o-p))		105			
Regenerative b	orake	Without	option	67	
frequency (times/	min) Note)1	DV0P4	0P4285×2 375		75
Rated rotation	al spee	d	(r/min)	2000	
Max. rotationa	ıl speed		(r/min)	3000	
Moment of ine	ertia	Without	brake	63.1	
of rotor ( $\times 10^{-4}$	kg·m²)	With b	orake	70.9	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less			
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
Resolution per single turn			1048576	131072	

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

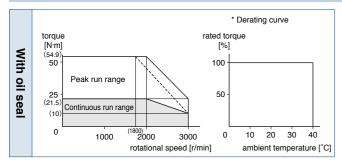
Static friction torque (N·m)	31.4 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	100 or less
Exciting current (DC) (A)	0.75±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

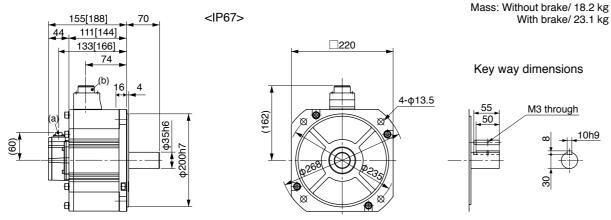
	Radial load P-direction (N)	1862
During assembly	Thrust load A-direction (N)	686
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	294

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## **Specifications**

			AC2	00 V	
N4 - 4		IP65		MGME092GC□	MGME092SC
Motor mod	el *1	IP67		MGME092G1□	MGME092S1
A 1: 1- 1	Mode	A5II, A5	series	MDD<	T5540
Applicable driver	*2 No.	A5IIE, A	5E series	MDD <b>⊘T5540E</b>	-
unver	F	rame sym	bol	D-fr	ame
Power supp	oly capaci	ty	(kVA)	1.	.8
Rated outp	ut		(W)	90	00
Rated torqu	ıe		(N·m)	8.	59
Momentary	Max. pea	ak torque	(N·m)	19.3	
Rated current (A(rms))			7.6		
Max. current (A(o-p))			2	4	
Regenerativ	e brake	Without option		No limit Note)2	
frequency (tir	mes/min) Note	DV0P4284		No limit Note)2	
Rated rotat	ional spe	ed	(r/min)	1000	
Max. rotation	onal spee	d	(r/min)	2000	
Moment of	inertia	Without	brake	6.70	
of rotor (×1	0 <sup>-4</sup> kg·m <sup>2</sup> )	With b	orake	7.99	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times	s or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
	Resoluti	on per sing	le turn	1048576	131072

200 V MGME 0.9 kW [Middle inertia, Middle capacity]

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

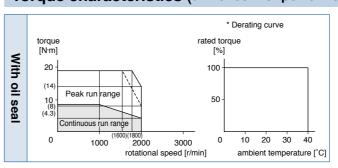
•
13.7 or more
100 or less
50 or less
0.79±10 %
2 or more
24±2.4

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

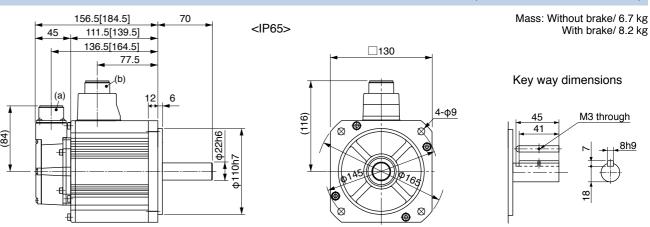
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
docombry	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	686
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

			AC200 V		
		IP65	MGME202GC□	MGME202SC□	
Motor model *1		IP67	MGME202G1□	MGME202S1□	
A so selle a selelle	Model	A5II, A5 series	MFD<	TA390	
Applicable driver *2	No.	A5IIE, A5E series	MFD <b>⊘TA390E</b>	_	
anver	Fr	ame symbol	F-fr	ame	
Power supply	capacit	y (kVA)	3	.8	
Rated output		(W)	20	00	
Rated torque		(N·m)	19	).1	
Momentary Ma	ax. peal	k torque (N·m)	47.7		
Rated current		(A(rms))	17.0		
Max. current		(A(o-p))	60		
Regenerative b	orake	Without option	No lim	t Note)2	
frequency (times/	min) Note)1	DV0P4285×2	No limit Note)2		
Rated rotation	al spee	d (r/min)	1000		
Max. rotationa	ıl speed	(r/min)	2000		
Moment of ine	ertia	Without brake	30.3		
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	35.6		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
R	Resolution per single turn			131072	

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

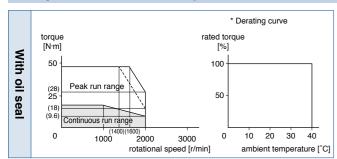
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

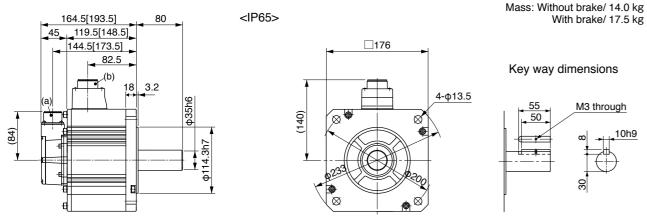
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 
  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

## **Specifications**

					AC2	00 V
Matauaraadal		IP65			MGME302GC□	MGME302SC
Motor mode	€I ∗1		IP67		MGME302G1□	MGME302S1
Amaliaabla		Model	A5II, A5	series	MFD♦	TB3A2
Applicable driver '	*2	No.	A5IIE, A	5E series	MFD <b>⊘TB3A2E</b>	_
211401		Fr	ame sym	bol	F-fra	ame
Power supp	oly c	apacit	y	(kVA)	4.	5
Rated outp	ut			(W)	30	00
Rated torqu	ıe			(N·m)	28	5.7
Momentary	Ma	x. peal	k torque	(N·m)	71.7	
Rated curre	ent		(	A(rms))	22.6	
Max. currer	nt		(	(A(o-p))	8	0
Regenerativ	/e br	ake	Without option		No limi	t Note)2
frequency (tin	nes/mi	in) Note)1	DV0P4285×2		No limit Note)2	
Rated rotat	iona	l spee	d	(r/min)	1000	
Max. rotation	onal	speed		(r/min)	2000	
Moment of	iner	tia	Without brake		48.4	
of rotor (×1	0 <sup>-4</sup> k	(g·m²)	With brake		53.7	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less			
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
Resolution per single turn			le turn	1048576	131072	

200 V MGME 3.0 kW [Middle inertia, Middle capacity]

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

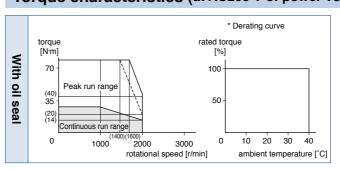
•	
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
assembly	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \ightrightarrow in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### Dimensions

210.5[239.5]

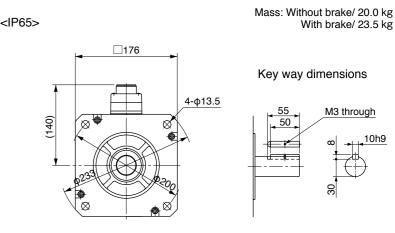
165.5[194.5]

128.5

3.2

190.5[219.5]

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

				AC2	00 V
		IP65		-	-
Motor model *1		IP67		MGME452G1□	MGME452S1
	Model	<b>A5I</b> , <b>A</b> 5 s	eries	MFD♦	TB3A2
Applicable driver *2	No.	A5IIE, A5E series		MFD <b>⊘TB3A2E</b>	_
unver	Fr	ame symb	ol	F-fra	ame
Power supply	capacit	у	(kVA)	7.	.5
Rated output			(W)	45	00
Rated torque			(N·m)	43.0	
Momentary Ma	ax. peal	k torque	(N·m)	107	
Rated current (A(rms))			29.7		
Max. current (A(o-p))			110		
Regenerative brake Without option		option	No limi	t Note)2	
frequency (times/r	nin) Note)1	DV0P4285×2		No limit Note)2	
Rated rotation	al spee	d	(r/min)	1000	
Max. rotationa	l speed		(r/min)	2000	
Moment of ine	rtia	Without I	brake	79.1	
of rotor ( $\times 10^{-4}$	kg·m²)	With br	ake	84.4	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encode	r speci	fications	Note)5	20-bit Incremental	17-bit Absolute
Re	esolutio	n per single	e turn	1048576	131072

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

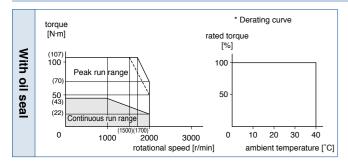
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

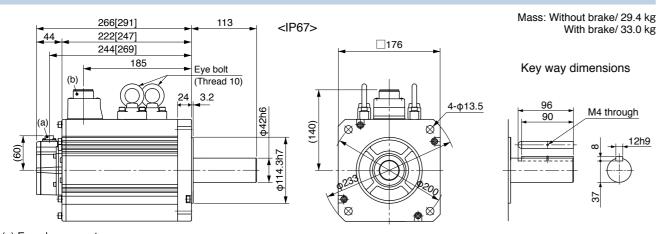
During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During	Radial load P-direction (N)	1470
operation	Thrust load A, B-direction (N)	490

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



(a) Encoder connector

(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## **Specifications**

			AC2	00 V	
Motor mod	-1	IP65		-	_
	*1	IP67		MGME602G1□	MGME602S1
	Model	A5II, A5	series	MGD◇	тсзв4
Applicable driver	*2 No.	A5IIE, A	5E series	_	_
anvoi	F	rame sym	bol	G-fr	ame
Power sup	ply capacit	у	(kVA)	9.	.0
Rated outp	ut		(W)	60	00
Rated torqu	ue		(N·m)	57	7.3
Momentary	Max. pea	k torque	(N·m)	143	
Rated current (A(rms))			38.8		
Max. current (A(o-p))			14	19	
Regenerativ	ve brake	Without	option	No limi	t Note)2
frequency (ti	mes/min) Note)1	DV0P4285×4		No limit Note)2	
Rated rotat	tional spee	d	(r/min)	1000	
Max. rotation	onal speed	l	(r/min)	2000	
Moment of	inertia	Without brake		101	
of rotor (x1	0 <sup>-4</sup> kg·m <sup>2</sup> )	With b	rake	10	07
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times	s or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
	Resolution	n per sing	le turn	1048576	131072

200 V MGME 6.0 kW [Middle inertia, Middle capacity]

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

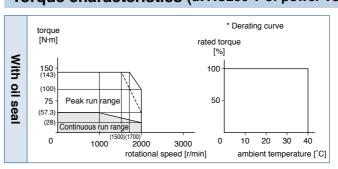
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

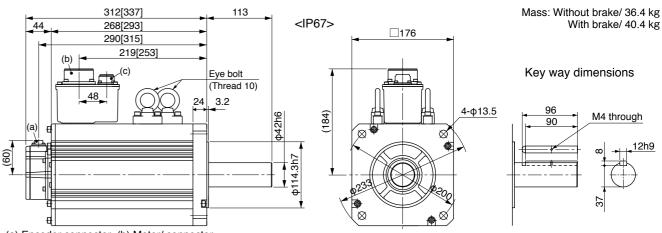
	During assembly	Radial load P-direction (N)	2058
		Thrust load A-direction (N)	980
		Thrust load B-direction (N)	1176
	During	Radial load P-direction (N)	1764
	operation	Thrust load A, B-direction (N)	588

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.46.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



(a) Encoder connector (b) Motor/ connector

(c) Brake connector (only with brake)

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

				AC2	00 V
Motor model		IP65		MHME102GC□	MHME102SC
*1		IP67		MHME102G1□	MHME102S1
Mo	del	A5II, A5 series		MDD<	T3530
Applicable No		A5IIE, A	5E series	MDD <b>⊘T3530E</b>	_
unvei	Fr	ame sym	bol	D-fra	ame
Power supply cap	acity	/	(kVA)	1.	.8
Rated output			(W)	10	00
Rated torque			(N·m)	4.	77
Momentary Max. p	peak	torque	(N·m)	14.3	
Rated current		(	A(rms))	5.7	
Max. current (A(o-p))			2	4	
Regenerative brake	е	Without option		83	
frequency (times/min) N	lote)1	DV0P4284		No limit Note)2	
Rated rotational sp	pee	d	(r/min)	2000	
Max. rotational sp	eed		(r/min)	3000	
Moment of inertia		Without	brake	24.7	
of rotor ( $\times 10^{-4}$ kg·r	m²)	With b	orake	26.0	
Recommended moment of inertia ratio of the load and the rotor Note)3				5 times or less	
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute	
Resol	Resolution per single turn			1048576	131072

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

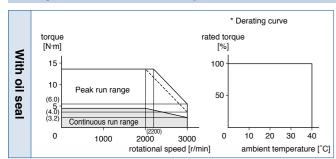
Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

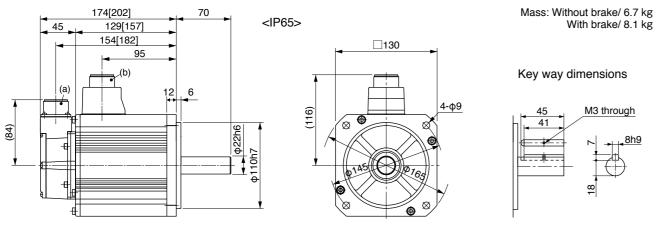
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

### **Specifications**

			AC2	00 V		
M-4		IP65		MHME152GC	MHME152SC	
Motor mode *		IP67		MHME152G1□	MHME152S1	
A II In I .	Model	A5 <b>I</b> I, A5	series	MDD<	T5540	
Applicable driver **	No.	A5IIE, A	5E series	MDD $\diamondsuit$ T5540E	_	
unver	Fr	ame sym	bol	D-fra	ame	
Power suppl	y capacit	y	(kVA)	2.	.3	
Rated outpu	t		(W)	15	00	
Rated torque	Э		(N·m)	7.	16	
Momentary I	Max. peal	k torque	(N·m)	21.5		
Rated currer	nt	(	A(rms))	9.4		
Max. current (A(o-p))			4	0		
Regenerative	e brake	Without	thout option 22		2	
frequency (time	es/min) Note)1	DV0P4284		130		
Rated rotation	onal spee	d	(r/min)	20	2000	
Max. rotation	nal speed		(r/min)	3000		
Moment of in	nertia	Without	brake	37.1		
of rotor (×10	<sup>-4</sup> kg·m²)	With brake		38.4		
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times	or less			
Rotary enco	der speci	fications	Note)5	20-bit Incremental	17-bit Absolute	
Resolution per single turn				1048576	131072	

200 V MHME 1.5 kW [High inertia, Middle capacity]

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

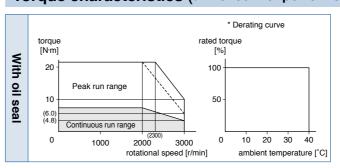
,	,
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

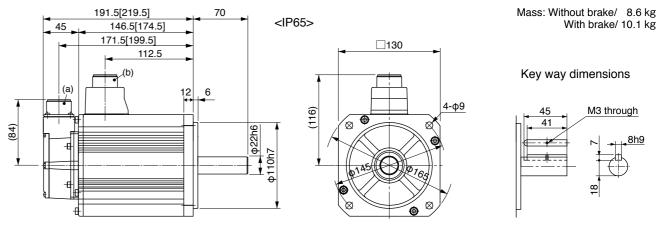
Radial load P-direction (N)	980
Thrust load A-direction (N)	588
Thrust load B-direction (N)	686
Radial load P-direction (N)	490
Thrust load A, B-direction (N)	196
	Thrust load A-direction (N) Thrust load B-direction (N) Radial load P-direction (N)

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

				AC2	00 V
Motor model	IP65		MHME202GC	MHME202SC	
*1		IP67		MHME202G1□	MHME202S1
Amaliaabla	Model	A5II, A5	series	MED<	T7364
Applicable driver *2	No.	A5IIE, A	5E series	MED <b>⊘T7364E</b>	-
unver	Fr	ame sym	bol	E-fra	ame
Power supply	capacit	y	(kVA)	3	.3
Rated output			(W)	20	00
Rated torque			(N·m)	9.	55
Momentary Ma	ax. peal	k torque	(N·m)	28.6	
Rated current (A(rms))		11.1			
Max. current (A(o-p))		47			
Regenerative brake Without option		option	4	5	
frequency (times/r	min) Note)1	DV0P	4285	14	12
Rated rotation	al spee	d	(r/min)	2000	
Max. rotationa	l speed		(r/min)	3000	
Moment of ine	rtia	Without	brake	57.8	
of rotor ( $\times 10^{-4}$	kg·m²)	With b	orake	59.6	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less		
Rotary encode	Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per sing	le turn	1048576	131072

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

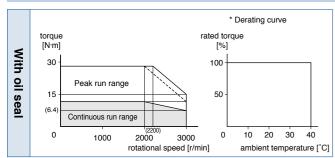
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

During assembly  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)	784
	Thrust load A, B-direction (N)	343

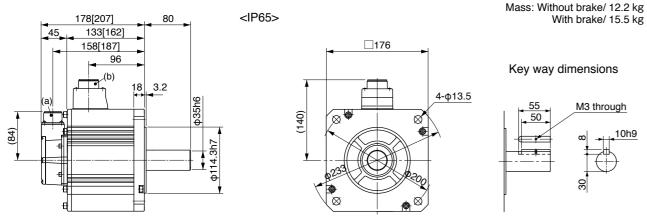
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## **Specifications**

			AC2	00 V	
M-4		IP65		MHME302GC□	MHME302SC
Motor mode	ÐI ⊧1	IP67		MHME302G1□	MHME302S1
	Mode	A5II, A5	series	MFD◇	TA390
Applicable driver	No.	A5IIE, A	5E series	MFD <b>⊘TA390E</b>	_
unven	F	rame sym	ıbol	F-fra	ame
Power supp	oly capac	ity	(kVA)	4.	.5
Rated outpo	ut		(W)	30	00
Rated torqu	ıe		(N·m)	14	.3
Momentary	Max. pe	ak torque	(N·m)	43.0	
Rated curre	ent	(	A(rms))	16.0	
Max. current (A(o-p))		68			
Regenerativ	e brake	Without	option	n 19	
frequency (tin	nes/min) Note	DV0P4	285×2	142	
Rated rotat	ional spe	ed	(r/min)	2000	
Max. rotation	nal spee	d	(r/min)	3000	
Moment of	inertia	Withou	t brake	90.5	
of rotor ( $\times 10^{-4} \text{ kg} \cdot \text{m}^2$ )		With I	orake	92.1	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times	or less		
Rotary encoder specifications Not		Note)5	20-bit Incremental	17-bit Absolute	
Resolutio		on per sind	ale turn	1048576	131072

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

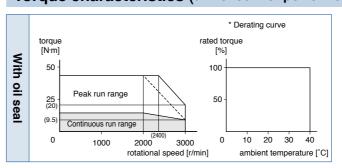
24.5 or more
80 or less
25 or less
1.3±10 %
2 or more
24±2.4

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

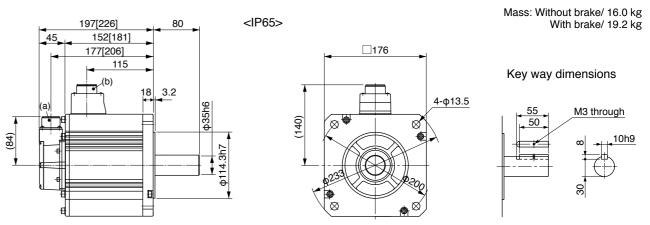
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

			AC2	00 V
Matanasadal		IP65	MHME402GC□	MHME402SC□
Motor model *1		IP67	MHME402G1□	MHME402S1
Amaliaabla	Model	A5II, A5 series	MFD <b>⊘TB3A2</b>	
Applicable driver *2	No.	A5IIE, A5E series	MFD <b>⊘TB3A2E</b>	_
unver	Fr	ame symbol	F-fra	ame
Power supply	capacit	y (kVA)	6.	.0
Rated output		(W)	40	00
Rated torque		(N·m)	19	).1
Momentary Ma	ax. peal	k torque (N·m)	57.3	
Rated current		(A(rms))	21.0	
Max. current (A(o-p))		8	9	
Regenerative brake Without option		Without option	1	7
frequency (times/r	nin) Note)1	DV0P4285×2	125	
Rated rotation	al spee	d (r/min)	2000	
Max. rotationa	l speed	(r/min)	3000	
Moment of ine	rtia	Without brake	112	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	114	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less	
Rotary encode	Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute
R	Resolution per single turn			131072

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

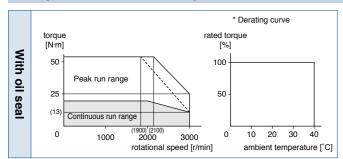
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

During assembly  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)	784
	Thrust load A, B-direction (N)	343

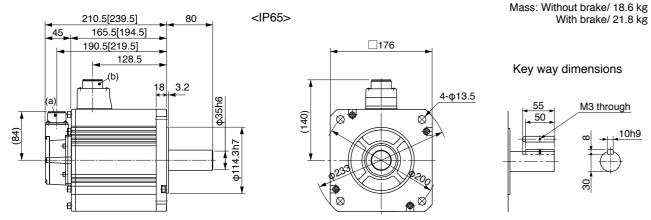
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

#### **Specifications**

			AC2	00 V	
		IP65		MHME502GC□	MHME502SC
Motor mod	ei *1	IP67		MHME502G1□	MHME502S1
	Mode	A5II, A5	series	MFD <b>⊘TB3A2</b>	
Applicable driver	*2 No.	A5IE, A	5E series	MFD <b>⊘TB3A2E</b>	-
unvei		Frame sym	ibol	F-fra	ame
Power sup	ply capac	ity	(kVA)	7.	.5
Rated outp	ut		(W)	50	00
Rated torqu	ue		(N·m)	23	3.9
Momentary	/ Мах. ре	ak torque	(N·m)	71.6	
Rated curre	ent	(	A(rms))	25.9	
Max. current (A(o-p))		110			
Regenerativ	ve brake	Without	option	10	
frequency (tir	mes/min) Note	DV0P4	DV0P4285×2 76		6
Rated rotat	tional spe	ed	(r/min)	2000	
Max. rotation	onal spec	d	(r/min)	3000	
Moment of	inertia	Withou	t brake	162	
of rotor ( $\times 10^{-4} \text{ kg} \cdot \text{m}^2$ )		) With I	orake	164	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times	or less		
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute	
Resolution		ion per sind	ıle turn	1048576	131072

200 V MHME 5.0 kW [High inertia, Middle capacity]

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

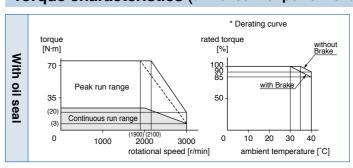
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

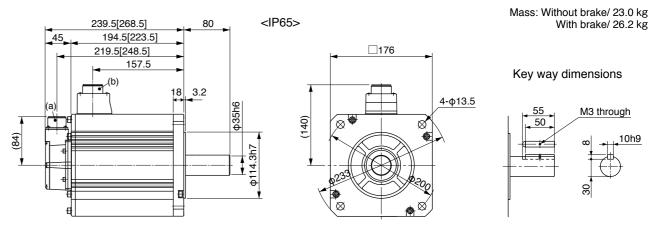
	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N)	784
docombry	Thrust load B-direction (N)	980
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

			AC2	00 V
		IP65	-	-
Motor model *1		IP67	MHME752G1□	MHME752S1
	Model	A5II, A5 series	MGD <b>⊘TC3B</b> 4	
Applicable 42	No.	A5IIE, A5E series	_	_
divei	Fr	ame symbol	G-fr	ame
Power supply	capacit	y (kVA)	1	1
Rated output		(W)	75	00
Rated torque		(N·m)	47	7.8
Momentary Ma	ax. peal	k torque (N·m)	119	
Rated current (A(rms))		44.0		
Max. current (A(o-p))		165		
Regenerative b	rake	Without option	No limit Note)2	
frequency (times/		DV0P4285×4	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	273	
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> ) With b		With brake	279	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less		
Rotary encode	er speci	fications Note)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per single turn	1048576	131072

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

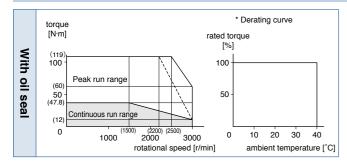
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.41±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

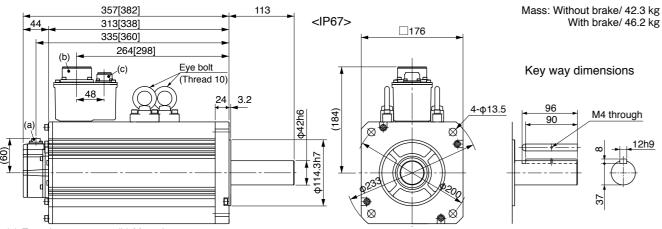
	Radial load P-direction (N)	2058
During assembly	Thrust load A-direction (N)	980
accombiy	Thrust load B-direction (N)	1176
During	Radial load P-direction (N)	1176
operation	Thrust load A, B-direction (N)	490

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.46.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector (b) Motor/ connector
- (c) Brake connector (only with brake)
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## 400 V MSME 750 W [Low inertia, Middle capacity]

**Specifications** 

				AC4	00 V
		IP65		MSME084GC	MSME084SC
Motor model *1		IP67		MSME084G1□	MSME084S1
A 11 11	Model	A5II, A5	series	MDD<	T2412
Applicable driver *2	No.	A5IIE, A	5E series	MDD $\diamondsuit$ T2412E	-
unver	Fr	ame sym	ibol	D-fr	ame
Power supply of	capacity	y	(kVA)	1.	.6
Rated output			(W)	75	50
Rated torque			(N·m)	2.5	39
Momentary Ma	ax. peal	torque	(N·m)	7.16	
Rated current		(	(A(rms))	2.4	
Max. current (A(o-p))		10			
Regenerative b	rake	Without option		No limit Note)2	
frequency (times/m	nin) Note)1	DV0PM20048		No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotational	speed		(r/min)	5000	
Moment of ine	rtia	Withou	t brake	1.61	
of rotor (×10 <sup>-4</sup>	kg·m²)	With I	orake	1.93	
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times	s or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
Re	esolutio	n per sing	gle turn	1048576	131072

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

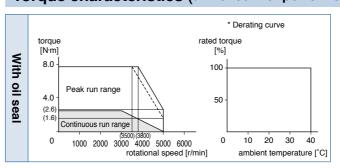
,
2.5 or more
50 or less
15 or less
0.70±10 %
2 or more
24±2.4

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

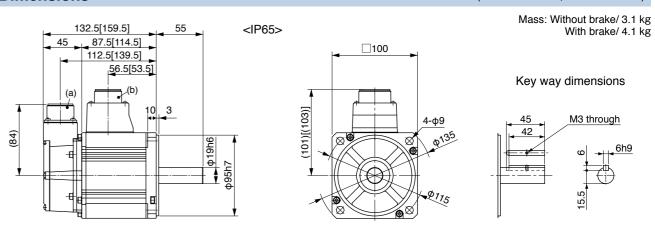
Radial load P-direction (N)	980
Thrust load A-direction (N)	588
Thrust load B-direction (N)	686
Radial load P-direction (N)	490
Thrust load A, B-direction (N)	196
	Thrust load A-direction (N) Thrust load B-direction (N) Radial load P-direction (N)

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

				AC4	00 V
IP65		MSME104GC□	MSME104SC		
Motor model *1		IP67		MSME104G1□	MSME104S1
	Model	A5II, A5 series		MDD<	T3420
Applicable driver *2	No.	A5IIE, A	5E series	MDD <b>⊘T3420E</b>	_
unver	Fr	ame sym	bol	D-fr	ame
Power supply	capacit	у	(kVA)	1	.8
Rated output			(W)	10	00
Rated torque			(N·m)	3.18	
Momentary Ma	ax. peal	k torque	(N·m)	9.55	
Rated current (A(rms))		3.3			
Max. current (A(o-p))			14		
Regenerative brake Without option		option	No limi	t Note)2	
, •		DV0PM20048		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	2.03	
of rotor (×10 <sup>-4</sup>	kg·m²)	With b	orake	2.35	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less		
Rotary encode	er speci	fications	Note)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per sing	le turn	1048576	131072

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

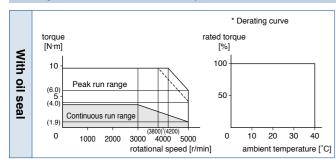
Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

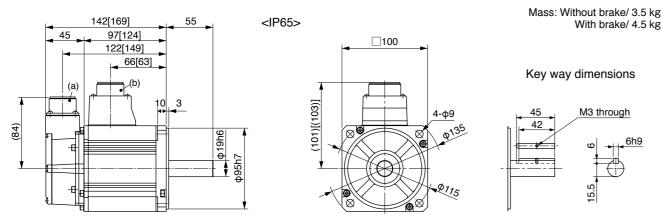
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

#### **Specifications**

					AC4	00 V
		IP65			MSME154GC□	MSME154SC
Motor mod	1 <b>e</b> l *1		IP67		MSME154G1□	MSME154S1
		Model	A5II, A5	series	MDD<	T3420
Applicable driver	*2	No.	A5IIE, A	5E series	MDD <b>⊘T3420E</b>	_
unver	Ì	Fr	ame sym	bol	D-fr	ame
Power sup	ply o	capacity	/	(kVA)	2	.3
Rated outp	out			(W)	15	00
Rated torq	ue			(N·m)	4.	77
Momentary	у Ма	x. peal	torque	(N·m)	14.3	
Rated current (A(rms))				4.2		
Max. current (A(o-p))				18		
Regenerati	ve b	rake	Without	option	No limi	t Note)2
frequency (ti	imes/m	nin) Note)1	DV0PM20048		No limit Note)2	
Rated rota	tiona	al spee	d	(r/min)	3000	
Max. rotati	onal	speed		(r/min)	5000	
Moment of	iner	tia	Without brake		2.84	
of rotor (x1	10-4	kg·m²)	With brake		3.17	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times	s or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
Resolution per single turn			1048576	131072		

400 V MSME 1.5 kW [Low inertia, Middle capacity]

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

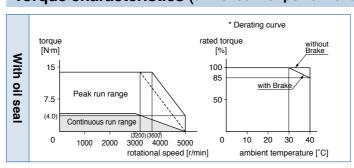
1	,
Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

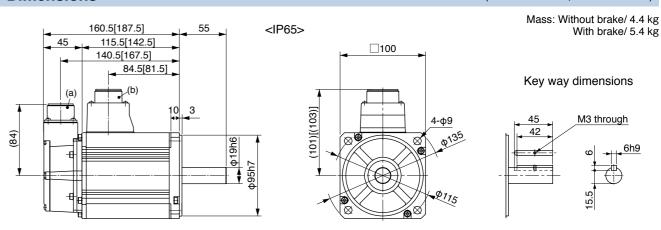
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

**A5 Family** 

## **Specifications**

			AC4	00 V	
Matanasadal		IP65	MSME204GC□	MSME204SC□	
Motor model *1		IP67	MSME204G1□	MSME204S1□	
A mustice a late	Model	A5II, A5 series	MED<	MED <b>⊘</b> T4430	
Applicable *2	No.	A5IE, A5E series	MED <b>⊘T4430E</b>	_	
divoi	Fr	ame symbol	E-fr	ame	
Power supply	capacit	y (kVA)	3	.3	
Rated output		(W)	20	00	
Rated torque		(N·m)	6.	6.37	
Momentary Ma	ax. peal	k torque (N·m)	19.1		
Rated current		(A(rms))	5.7		
Max. current		(A(o-p))	2	24	
Regenerative brake Without option		Without option	No lim	t Note)2	
frequency (times/r	min) Note)1	DV0PM20049	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	3.68		
of rotor (×10 <sup>-4</sup>	kg·m²)	With brake	4.01		
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less		
Rotary encode	Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
R	esolutio	n per single turn	1048576	131072	

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

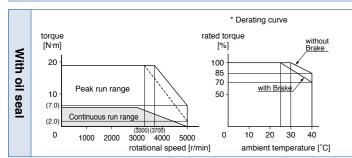
Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

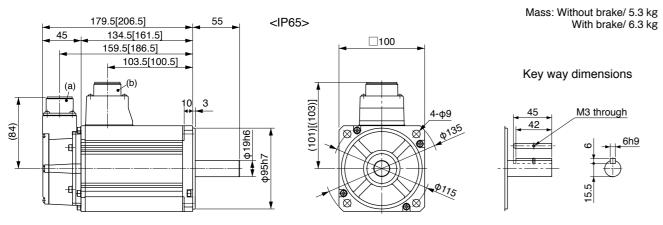
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.

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



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



(a) Encoder connector

**Dimensions** 

- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

### **Specifications**

			AC4	00 V	
M-4		IP65		MSME304GC□	MSME304SC
Motor mode	<b>?I</b> ⊧1	IP67		MSME304G1□	MSME304S1
A I' l. l .	Model	A5 <b>I</b> I, A5	series	MFD◇	T5440
Applicable driver *	No.	A5IIE, A	5E series	MFD $\diamondsuit$ T5440E	_
unven	F	rame sym	bol	F-fra	ame
Power supp	ly capacit	у	(kVA)	4.	.5
Rated outpu	ut		(W)	30	00
Rated torqu	ie		(N·m)	9.	55
Momentary	Max. pea	k torque	(N·m)	28.6	
Rated curre	ent	(	A(rms))	9.2	
Max. current (A(o-p))			3	9	
Regenerativ	e brake	Without	option	No limi	t Note)2
frequency (tim	nes/min) Note)1	DV0PM20049×2		No limit Note)2	
Rated rotati	onal spee	d	(r/min)	3000	
Max. rotatio	nal speed		(r/min)	5000	
Moment of i	inertia	Without brake		6.50	
of rotor (×10	0 <sup>-4</sup> kg·m²)	With brake		6.85	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times	s or less	
Rotary enco	Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
Resolution per single turn			1048576	131072	

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

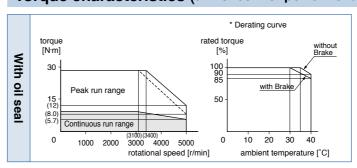
,	,
Static friction torque (N·m)	11.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

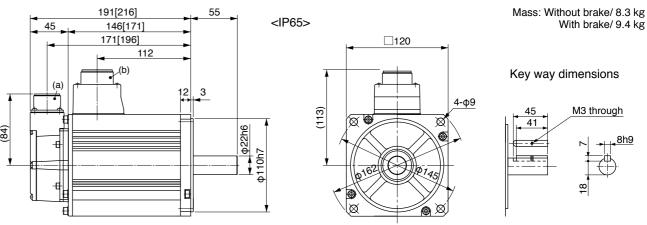
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
docombry	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

			AC4	00 V
Makananalal		IP65	MSME404GC□	MSME404SC
Motor model *1		IP67	MSME404G1□	MSME404S1
	Model	A5II, A5 series	MFD◇	TA464
Applicable driver *2	No.	A5IIE, A5E series	MFD $\diamondsuit$ TA464E	_
unver	Fr	ame symbol	F-fra	ame
Power supply	capacit	y (kVA)	6	.8
Rated output		(W)	40	00
Rated torque		(N·m)	12.7	
Momentary Ma	ax. peal	k torque (N·m)	38.2	
Rated current (A(rms))		9.9		
Max. current (A(o-p))		42		
Regenerative brake Without option		Without option	No limit Note)2	
frequency (times/r	min) Note)1	DV0PM20049×2	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	12.9	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	14.2	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
R	esolutio	n per single turn	1048576	131072

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

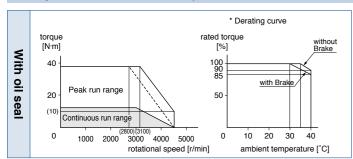
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

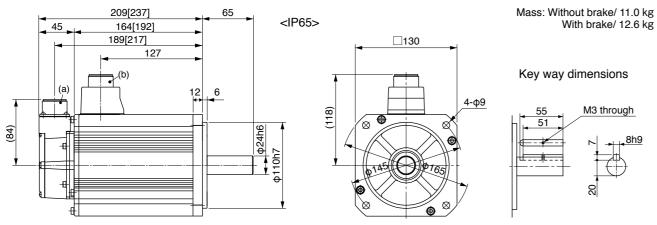
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



(a) Encoder connector

**Dimensions** 

- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

### **Specifications**

			AC4	00 V	
<b>N</b> 4 - 4		IP65		MSME504GC□	MSME504SC
Motor mode	:1	IP67		MSME504G1□	MSME504S1
A	Model	A5 <b>I</b> I, A5	series	MFD◇	TA464
Applicable driver *	No.	A5IIE, A	5E series	MFD $\diamondsuit$ TA464E	_
unvoi	Fi	rame sym	bol	F-fra	ame
Power supp	ly capacit	у	(kVA)	7.	.5
Rated outpu	ut		(W)	50	00
Rated torqu	е		(N·m)	15	5.9
Momentary	Max. pea	k torque	(N·m)	47.7	
Rated curre	nt	(	A(rms))	12.0	
Max. current (A(o-p))			5	1	
Regenerativ	e brake	Without	option	35	57
frequency (tim	nes/min) Note)1	DV0PM20049×2		No limit Note)2	
Rated rotati	onal spee	d	(r/min)	3000	
Max. rotatio	nal speed		(r/min)	4500	
Moment of i	inertia	Without	brake	17.4	
of rotor (×10	0 <sup>-4</sup> kg·m²)	With brake		18.6	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times	s or less	
Rotary enco	Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute
Resolution per single turn			1048576	131072	

400 V MSME 5.0 kW [Low inertia, Middle capacity]

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

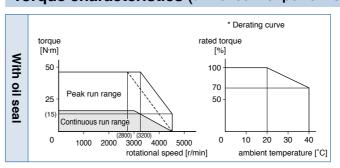
•	
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

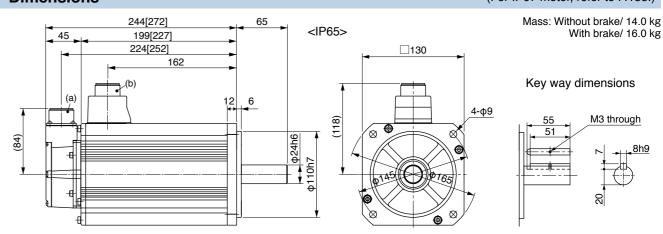
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions** (For IP67 motor, refer to P.138.)



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

				AC4	00 V
		IP65		MDME044GC	MDME044SC
Motor model *1		IP67		MDME044G1	MDME044S1
	Model	A5II, A5	series	MDD<	T2407
Applicable driver *2	No.	A5IIE, A	5E series	MDD <b>⊘T2407E</b>	_
unvei	Fr	ame sym	ıbol	D-fra	ame
Power supply	capacit	y	(kVA)	0.	9
Rated output			(W)	40	00
Rated torque			(N·m)	1.91	
Momentary Max. peak torque (N·m)		5.73			
Rated current (A(rms))		1.2			
Max. current (A(o-p))		4.9			
Regenerative b	rake	Without	option	No limi	t Note)2
frequency (times/r	min) Note)1	DV0PM20048		No limit Note)2	
Rated rotation	al spee	d	(r/min)	2000	
Max. rotationa	l speed		(r/min)	3000	
Moment of ine	rtia	Withou	t brake	1.61	
of rotor ( $\times 10^{-4}$	kg·m²)	With I	orake	1.93	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less			
Rotary encode	er speci	fications	Note)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per sing	le turn	1048576	131072

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

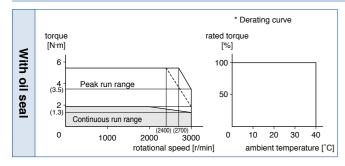
Static friction torque (N·m)	2.5 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.70±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

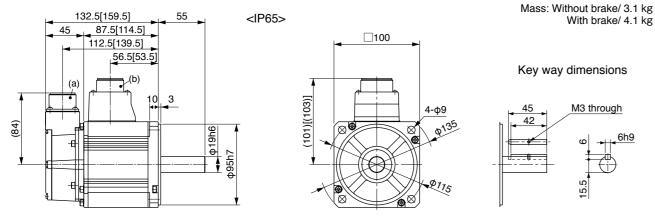
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## **Specifications**

			AC4	00 V	
		IP65		MDME064GC MDME064S	
Motor mode *	•	IP67		MDME064G1	MDME064S1
A	Model	A5II, A5	series	MDD<	T2407
Applicable driver *	No.	A5IIE, A	5E series	MDD <b>⊘T2407E</b>	-
unven	Fi	rame sym	bol	D-fr	ame
Power supp	ly capacit	у	(kVA)	1.	.2
Rated outpu	ıt		(W)	60	00
Rated torqu	е		(N·m)	2.	86
Momentary	Max. pea	k torque	(N·m)	8.	59
Rated curre	nt	(	A(rms))	1.5	
Max. curren	t		(A(o-p))	6.5	
Regenerative	e brake	Without option		No limit Note)2	
frequency (time	es/min) Note)1	DV0PM20048		No limit Note)2	
Rated rotation	onal spee	d	(r/min)	20	00
Max. rotatio	nal speed		(r/min)	30	00
Moment of i	nertia	Without	brake	2.03	
of rotor (×10	) <sup>-4</sup> kg·m²)	With b	orake	2.35	
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times	s or less
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute	
Resolution per single turn				1048576	131072

400 V MDME 600 W [Middle inertia, Middle capacity]

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

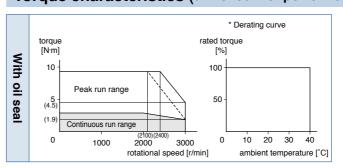
Static friction torque (N·m)	2.5 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.70±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4
Exoluing voltage (BC) (V)	2-1-2

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

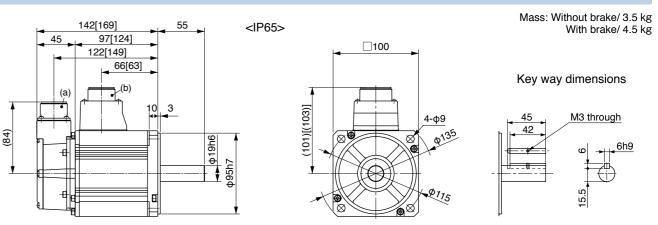
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions** (For IP67 motor, refer to P.138.)



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

			AC4	00 V	
		IP65		MDME104GC	MDME104SC
Motor model *1		IP67		MDME104G1	MDME104S1
Ammliaalala	Model	A5II, A5	series	MDD <b>◇T2412</b>	
Applicable driver *2	No.	A5IIE, A	5E series	MDD $\diamondsuit$ T2412E	-
anver	Fı	ame sym	bol	D-fra	ame
Power supply	capacit	y	(kVA)	1.	.8
Rated output			(W)	10	00
Rated torque			(N·m)	4.	77
Momentary Ma	ax. pea	k torque	(N·m)	14.3	
Rated current		(	A(rms))	2.8	
Max. current (A(o-p))			1	2	
Regenerative brake Without option		option	No limit Note)2		
frequency (times/	min) Note)1	DV0PM	20048	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	4.60	
of rotor ( $\times 10^{-4}$	kg·m²)	With b	rake	5.90	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encoder specifications Note)5			Note)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per sing	le turn	1048576	131072

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

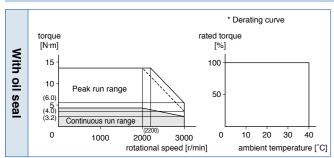
Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

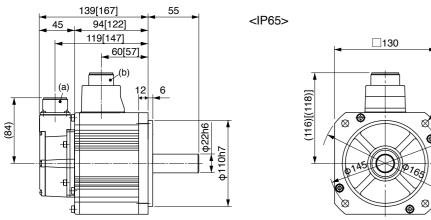
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



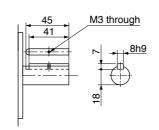
### **Dimensions**



Mass: Without brake/ 5.2 kg With brake/ 6.7 kg

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

Key way dimensions



(a) Encoder connector

(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## **Specifications**

					AC4	00 V	
		IP65		MDME154GC	MDME154SC		
Motor mode	€I ∗1		IP67		MDME154G1□	MDME154S1	
Annlinable		Model	A5II, A5	series	MDD<	T3420	
Applicable driver	*2	No.	A5IIE, A	5E series	MDD <b>⊘T3420E</b>	-	
unven		Fr	ame sym	bol	D-fra	ame	
Power supp	oly c	apacit	y	(kVA)	2.	.3	
Rated outp	ut			(W)	15	00	
Rated torqu	ıe			(N·m)	7.	16	
Momentary	Ма	x. peal	k torque	(N·m)	21	.5	
Rated curre	ent		(	A(rms))	4.7		
Max. currer	nt		(	(A(o-p))	20		
Regenerativ	/e br	ake	Without	option	tion No limit Note)2		
frequency (tir	nes/m	in) Note)1	DV0PM	0PM20048 No limit Note)2		t Note)2	
Rated rotat	iona	l spee	d	(r/min)	2000		
Max. rotation	onal	speed		(r/min)	3000		
Moment of	iner	tia	Without	brake	6.1	70	
of rotor (×1	0 <sup>-4</sup> k	(g·m²)	With b	rake	7.99		
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times	s or less		
Rotary encoder specifications Note)5			Note)5	20-bit Incremental	17-bit Absolute		
Resolution per sing				le turn	1048576	131072	

400 V MDME 1.5 kW [Middle inertia, Middle capacity]

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

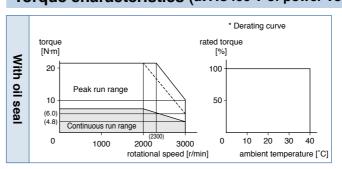
1	,
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

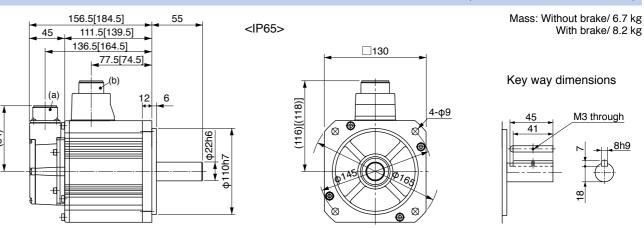
Radial load P-direction (N)	980
Thrust load A-direction (N)	588
Thrust load B-direction (N)	686
Radial load P-direction (N)	490
Thrust load A, B-direction (N)	196
	Thrust load A-direction (N) Thrust load B-direction (N) Radial load P-direction (N)

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions** (For IP67 motor, refer to P.138.)



(a) Encoder connector

(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

				AC4	00 V	
Motor model			MDME204GC□	MDME204SC		
*1		IP67		MDME204G1□	MDME204S1	
Amaliaahla	Model	A5II, A5	series	MED<	T4430	
Applicable driver *2	No.	A5IIE, A	5E series	MED <b>⊘T4430E</b>	_	
anver	Fr	ame sym	ıbol	E-fra	ame	
Power supply	capacit	у	(kVA)	3	.3	
Rated output			(W)	20	00	
Rated torque			(N·m)	9.	55	
Momentary Ma	ax. peal	k torque	(N·m)	28.6		
Rated current		(	(A(rms))	5.9		
Max. current (A(o-p))			25			
Regenerative b	rake	Without	option	No limi	t Note)2	
frequency (times/r	min) Note)1	DV0PN	120049	No limit Note)2		
Rated rotation	al spee	d	(r/min)	2000		
Max. rotationa	l speed		(r/min)	3000		
Moment of ine	rtia	Withou	t brake	8.72		
of rotor ( $\times 10^{-4}$	kg·m²)	With I	orake	10.0		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less			
Rotary encode	er speci	fications	Note)5	20-bit Incremental	17-bit Absolute	
R	esolutio	n per sing	le turn	1048576	131072	

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

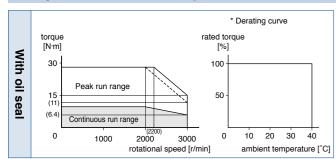
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

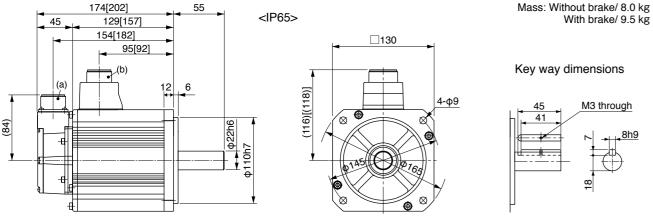
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

## **Specifications**

				AC4	00 V
		IP65		MDME304GC□	MDME304SC
Motor mod	<b>el</b> *1	IP67		MDME304G1	MDME304S1
	Model	A5II, A5	series	MFD⇔	T5440
Applicable driver	*2 No.	A5IIE, A	5E series	MFD $\diamondsuit$ T5440E	-
unven	F	rame sym	bol	F-fra	ame
Power supp	oly capaci	ty	(kVA)	4.	.5
Rated outp	ut		(W)	30	00
Rated torqu	ıe		(N·m)	14	.3
Momentary	Max. pea	k torque	(N·m)	43.0	
Rated curre	ent	(	A(rms))	8.7	
Max. current (A(o-p))			3	7	
Regenerativ	/e brake	Without	option	No limi	t Note)2
frequency (tir	mes/min) Note)	DV0PM20049×2		No limit Note)2	
Rated rotat	ional spec	ed	(r/min)	2000	
Max. rotation	onal speed	t	(r/min)	3000	
Moment of	inertia	Without brake		12.9	
of rotor (×1	0 <sup>-4</sup> kg·m²)	With b	orake	14.2	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times	s or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
Resolutio		on per sing	le turn	1048576	131072

400 V MDME 3.0 kW [Middle inertia, Middle capacity]

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

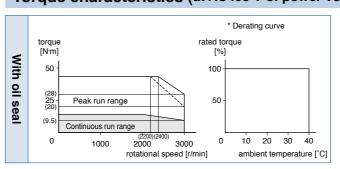
,	,
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

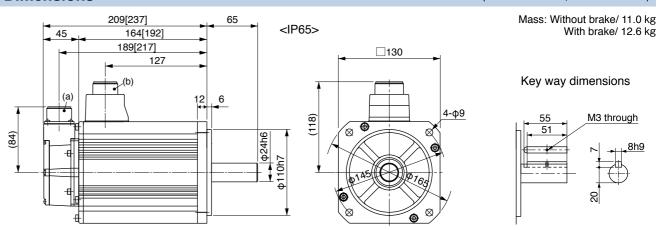
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
docombry	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

115

			AC4	00 V
IP65		IP65	MDME404GC□	MDME404SC
Motor model		IP67	MDME404G1□	MDME404S1
Annlinahla	Model	A5II, A5 series	MFD◇	TA464
Applicable *2	No.	A5IIE, A5E series	MFD $\diamondsuit$ TA464E	_
unver	Fr	ame symbol	F-fra	ame
Power supply of	capacity	y (kVA)	6	.8
Rated output		(W)	40	00
Rated torque		(N·m)	19.1	
Momentary Ma	ax. peal	k torque (N·m)	57.3	
Rated current (A(rms))		10.6		
Max. current (A(o-p))		4	5	
Regenerative b	rake	Without option	No limit Note)2	
frequency (times/m	nin) Note)1	DV0PM20049×2	No limit Note)2	
Rated rotations	al spee	d (r/min)	2000	
Max. rotational	speed	(r/min)	3000	
Moment of ine	rtia	Without brake	37.6	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	42.9	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times	s or less
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
Re	esolutio	n per single turn	1048576	131072

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

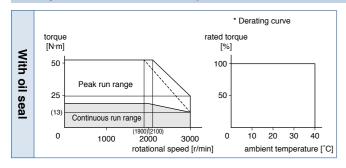
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

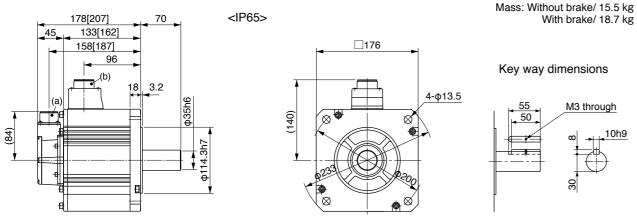
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

#### **Specifications**

			AC4	00 V	
<b>M</b> - <b>t</b> - · · · · · · · · · · · · · · · · · ·		IP65		MDME504GC□	MDME504SC
Motor mode	:1	IP67		MDME504G1□	MDME504S1
A I' l. I .	Model	A5II, A5 series		MFD♦	TA464
Applicable driver *	No.	A5IIE, A	5E series	MFD $\diamondsuit$ TA464E	_
unver	Fr	ame sym	bol	F-fra	ame
Power supp	ly capacit	у	(kVA)	7.	5
Rated outpu	ut		(W)	50	00
Rated torqu	е		(N·m)	23	.9
Momentary	Max. peal	k torque	(N·m)	71.6	
Rated curre	nt	(.	A(rms))	13.0	
Max. current (A(o-p))			5	5	
Regenerativ	e brake	Without	option	120	
frequency (tim	nes/min) Note)1	DV0PM20049×2		No limit Note)2	
Rated rotati	onal spee	d	(r/min)	2000	
Max. rotatio	nal speed		(r/min)	3000	
Moment of i	inertia	Without brake		48.0	
of rotor (×10	0 <sup>-4</sup> kg·m²)	With brake		53.3	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times	s or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
Resolution per sin			le turn	1048576	131072

400 V MDME 5.0 kW [Middle inertia, Middle capacity]

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

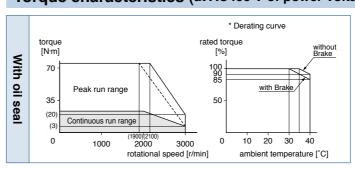
,	,
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

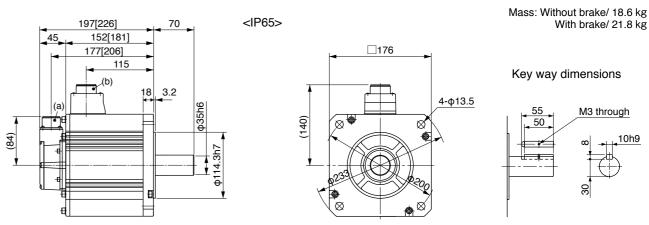
	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N)	784
document	Thrust load B-direction (N)	980
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

				AC4	00 V	
Motor model		-	_			
*1		IP67		MDME754G1□	MDME754S1	
Annlinable	Model	A5II, A5 series		MGD◇	TB4A2	
Applicable driver *2	No.	A5IIE, A5E se	ries	_	_	
anver	Fr	ame symbol		G-fr	ame	
Power supply	capacit	y (k\	/A)	1	1	
Rated output		(	W)	75	00	
Rated torque		(N·	m)	47.8		
Momentary Ma	ax. peal	k torque (N-	m)	119		
Rated current (A(rms))		22				
Max. current (A(o-p))		83				
Regenerative b	rake	Without option	n	No limi	No limit Note)2	
frequency (times/i	min) Note)1	DV0PM20049	)×3	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 brak	е	101		
of rotor ( $\times 10^{-4}$	kg·m²)	With brake		107		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less			
Rotary encode	er speci	fications Not	e)5	20-bit Incremental	17-bit Absolute	
R	esolutio	n per single tur	'n	1048576	131072	

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

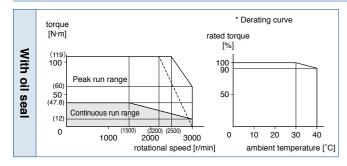
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

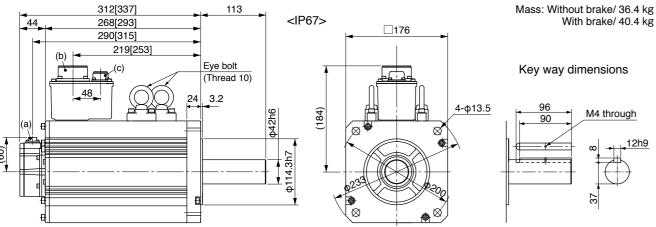
	Radial load P-direction (N)	2058
During assembly	Thrust load A-direction (N)	980
assembly	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.46.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector (b) Motor/ connector
- (c) Brake connector (only with brake)
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

### **Specifications**

			AC4	00 V	
<b>M</b> -4		IP65		-	-
Motor mode	ÐI ⊧1	IP67		MDMEC14G1□	MDMEC14S1
A 1: 1- 1	Model	A5 <b>I</b> I, A5	series	MHD $\diamondsuit$ TB4A2	
Applicable driver	No.	A5IIE, A	5E series	-	-
unven	Fi	ame sym	bol	H-fr	ame
Power supp	oly capacit	y	(kVA)	1	7
Rated outp	ut		(W)	110	000
Rated torqu	ie		(N·m)	7	0
Momentary	Max. pea	k torque	(N·m)	175	
Rated curre	ent	(	A(rms))	27.1	
Max. currer	nt		(A(o-p))	10	)1
Regenerativ	e brake	Without	option	No limit Note)2	
frequency (tin	nes/min) Note)1	DV0PM20059 No limit		t Note)2	
Rated rotat	ional spee	d	(r/min)	1500	
Max. rotation	nal speed		(r/min)	2000	
Moment of	inertia	Without	brake	2-	12
of rotor (×1	0 <sup>-4</sup> kg·m²)	With b	rake	220	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times	s or less		
Rotary encoder specifications Note)5  Resolution per single turn		20-bit Incremental	17-bit Absolute		
		n per sina	le turn	1048576	131072

400 V MDME 11.0 kW [Middle inertia, Middle capacity]

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

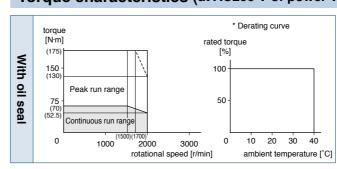
Static friction torque (N·m)	100 or more
Engaging time (ms)	300 or less
Releasing time (ms) Note)4	140 or less
Exciting current (DC) (A)	1.08±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

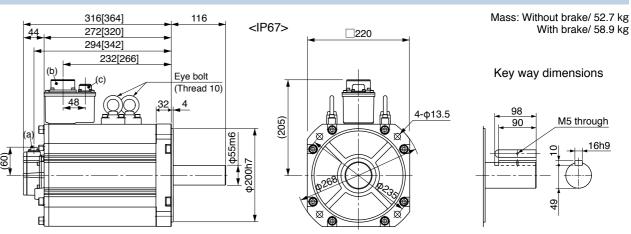
	Radial load P-direction (N)	4508
During assembly	Thrust load A-direction (N)	1470
docombry	Thrust load B-direction (N)	1764
During	Radial load P-direction (N)	2254
operation	Thrust load A, B-direction (N)	686

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.46.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



### **Dimensions**



(a) Encoder connector (b) Motor/ connector

(c) Brake connector (only with brake)

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

		AC4	00 V	
Matar madal	IP65		-	-
Motor model *1		IP67	MDMEC54G1	MDMEC54S1
Amuliaahla	Model	A5II, A5 series	MHD $\bigcirc$ TB4A2	
Applicable 42	No.	A5IIE, A5E series	_	_
dilvei	Fı	ame symbol	H-fr	ame
Power supply	capacit	y (kVA)	2	2
Rated output		(W)	150	000
Rated torque		(N·m)	95	5.5
Momentary Ma	ax. pea	k torque (N·m)	224	
Rated current		(A(rms))	33.1	
Max. current		(A(o-p))	118	
Regenerative b	rake	Without option	No limit Note)2	
frequency (times/	min) Note)1	DV0PM20059	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	302	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	211	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
Resolution per single turn			1048576	131072

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

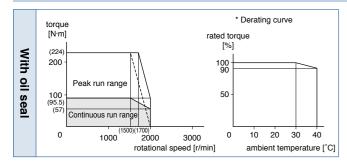
Static friction torque (N·m)	100 or more
Engaging time (ms)	300 or less
Releasing time (ms) Note)4	140 or less
Exciting current (DC) (A)	1.08±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

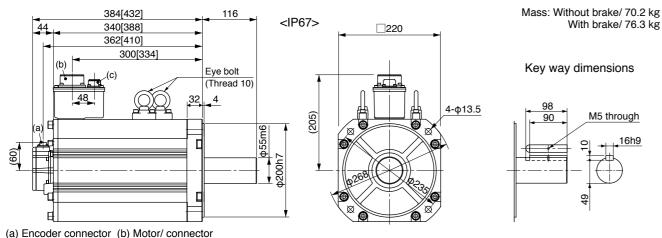
	Radial load P-direction (N)	4508
During assembly	Thrust load A-direction (N)	1470
document	Thrust load B-direction (N)	1764
During	Radial load P-direction (N)	2254
operation	Thrust load A, B-direction (N)	686

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.47.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (c) Brake connector (only with brake)
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

#### **Specifications**

				AC4	00 V
Matanaaala		IP65		-	-
Motor mode	*	IP67		MFME154G1□	MFME154S1
	Model	A5 <b>I</b> I, A5	series	MDD <b>⊘</b> T3420	
Applicable driver *	No.	A5IIE, A	5E series	MDD <b>⊘T3420E</b>	-
unver	Fr	ame sym	bol	D-fr	ame
Power supp	ly capacit	y	(kVA)	2	.4
Rated outpu	ıt		(W)	15	00
Rated torqu	е		(N·m)	7.	16
Momentary	Max. peal	k torque	(N·m)	21.5	
Rated current (A(rms))		3.8			
Max. current (A(o-p))		16			
Regenerative	e brake	Without	option	100	
frequency (tim	es/min) Note)1	DV0PM20048		No limit Note)2	
Rated rotation	onal spee	d	(r/min)	2000	
Max. rotatio	nal speed		(r/min)	3000	
Moment of i	nertia	Without	brake	18.2	
of rotor (×10	) <sup>-4</sup> kg·m²)	With b	orake	23.5	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times	s or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
Resolution		n per sino	le turn	1048576	131072

400 V MFME 1.5 kW Middle inertia, Middle capacity

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

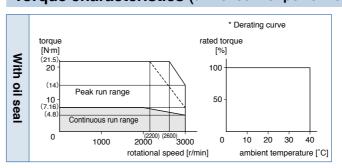
Static friction torque (N·m)	7.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	35 or less
Exciting current (DC) (A)	0.83±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

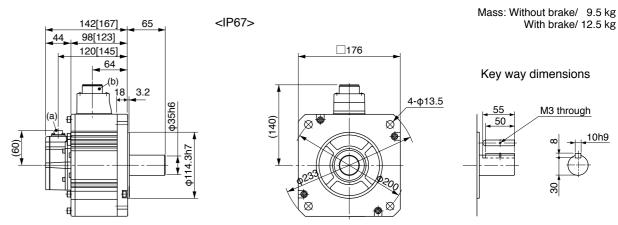
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
document	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

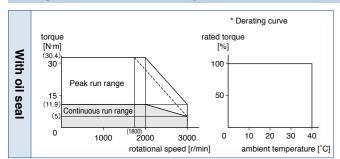
Static friction torque (N·m)	21.6 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	100 or less
Exciting current (DC) (A)	0.75±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

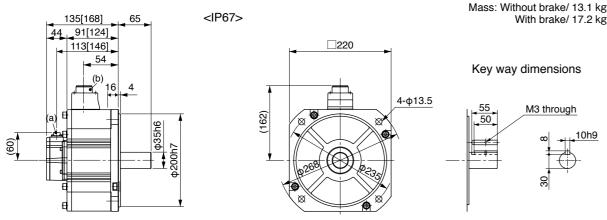
During assembly	Radial load P-direction (N)	1862
	Thrust load A-direction (N)	686
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	294

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

# 400 V MFME 4.5 kW [Middle inertia, Middle capacity]

## **Motor Specifications**

## **Specifications**

			AC4	00 V	
M-4		IP65		-	-
Motor mode	ÐI ⊭1	IP67		MFME454G1□	MFME454S1
	Model	A5II, A5 series		MFD♦	TA464
Applicable driver	No.	A5IIE, A	5E series	MFD $\diamondsuit$ TA464E	-
unven	F	rame sym	bol	F-fra	ame
Power supp	oly capacit	у	(kVA)	6.	.9
Rated outp	ut		(W)	45	00
Rated torqu	ie		(N·m)	21	.5
Momentary	Max. pea	k torque	(N·m)	54.9	
Rated curre	ent	(.	A(rms))	12.4	
Max. currer	nt	(	(A(o-p))	5	3
Regenerativ	e brake	Without	option	67	
frequency (tin	nes/min) Note)1	DV0PM20049×2		375	
Rated rotat	ional spee	d	(r/min)	2000	
Max. rotation	nal speed		(r/min)	3000	
Moment of	inertia	Without	brake	63.1	
of rotor (×1	0 <sup>-4</sup> kg·m²)	With brake		70.9	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times	s or less		
Rotary encoder specifications Note)5  Resolution per single turn		20-bit Incremental	17-bit Absolute		
		n per sing	le turn	1048576	131072

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

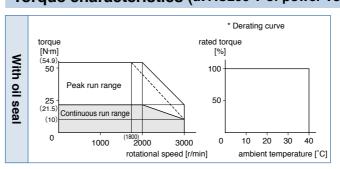
Static friction torque (N·m)	31.4 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	100 or less
Exciting current (DC) (A)	0.75±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

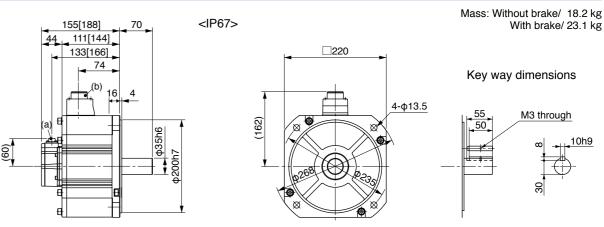
	Radial load P-direction (N)	1862
During assembly	Thrust load A-direction (N)	686
document	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	294

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number,

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



#### **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

please refer to P.16.

			AC4	AC400 V	
Motor model		IP65	MGME094GC□	MGME094SC□	
*1		IP67	MGME094G1□	MGME094S1□	
Amaliaabla	Model	A5II, A5 series	MDD<	T3420	
Applicable *2	No.	A5IIE, A5E series	MDD <b>⊘T3420E</b>	_	
unver	Fr	ame symbol	D-fr	ame	
Power supply of	capacity	y (kVA)	1.	.8	
Rated output		(W)	90	00	
Rated torque		(N·m)	8.59		
Momentary Ma	x. peal	k torque (N·m)	19.3		
Rated current		(A(rms))	3.8		
Max. current		(A(o-p))	12		
Regenerative b	rake	Without option	No limit Note)2		
frequency (times/m	nin) Note)1	DV0PM20048	No limit Note)2		
Rated rotationa	al spee	d (r/min)	1000		
Max. rotational	speed	(r/min)	2000		
Moment of iner	tia	Without brake	6.70		
of rotor ( $\times 10^{-4}$ l	kg·m²)	With brake	7.99		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
Resolution per single turn			1048576	131072	

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

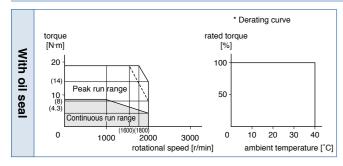
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

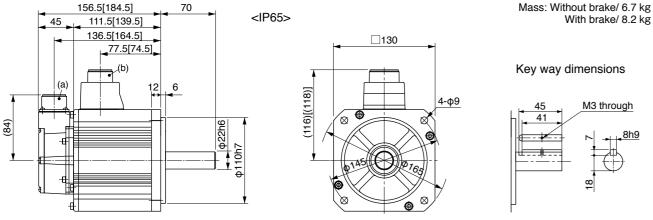
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## **Specifications**

			AC4	00 V		
Motor model		IP65		MGME204GC□	MGME204SC	
		IP67			MGME204G1□	MGME204S1
A I' In I .	М	odel	el A5II, A5 series		MFD <b>◇</b> T5440	
Applicable driver *	k2 N	0.	A5IIE, A5E series		MFD <b>◇T5440E</b>	-
diivei		Fr	ame sym	bol	F-fra	ame
Power supp	oly ca	pacit	y	(kVA)	3	.8
Rated outpo	ut			(W)	20	00
Rated torqu	ıe			(N·m)	19	).1
Momentary	Мах.	peal	k torque	(N·m)	47.7	
Rated curre	ent		(	A(rms))	8.5	
Max. currer	nt			(A(o-p))	30	
Regenerativ	e bral	ке	Without option		No limit Note)2	
frequency (tim	nes/min)	Note)1	DV0PM20049×2		No limit Note)2	
Rated rotati	ional	spee	d	(r/min)	1000	
Max. rotation	nal s	peed		(r/min)	2000	
Moment of	inertia	ì	Without	brake	30.3	
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )		With brake		35.6		
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less				
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
Resolution per single turn		le turn	1048576	131072		

400 V MGME 2.0 kW [Middle inertia, Middle capacity]

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

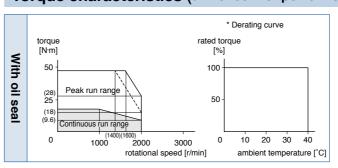
24.5 or more
80 or less
25 or less
1.3±10 %
2 or more
24±2.4

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

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

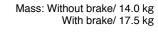
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

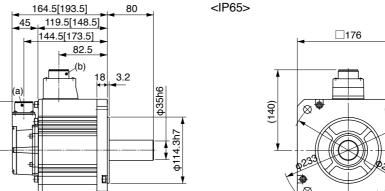
## Torque characteristics (at AC400 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



#### **Dimensions**

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





50

Key way dimensions

- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

Motor model			AC400 V		
		IP65	MGME304GC□	MGME304SC□	
		IP67	MGME304G1□	MGME304S1□	
Amaliaahla	Model	A5II, A5 series	MFD <b>◇TA464</b>		
Applicable driver *2	No.	A5IIE, A5E series	MFD $\diamondsuit$ TA464E	_	
dilvei	Fr	ame symbol	F-fra	ame	
Power supply of	capacity	y (kVA)	4.	.5	
Rated output		(W)	30	00	
Rated torque		(N·m)	28.7		
Momentary Ma	ax. peal	k torque (N·m)	71.7		
Rated current		(A(rms))	11.3		
Max. current		(A(o-p))	40		
Regenerative b	rake	Without option	No limit Note)2		
frequency (times/m	nin) Note)1	DV0PM20049×2	No limit Note)2		
Rated rotations	al spee	d (r/min)	1000		
Max. rotational	speed	(r/min)	2000		
Moment of iner	rtia	Without brake	48.4		
of rotor ( $\times 10^{-4}$ l	kg·m²)	With brake	53.7		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute	
Resolution per single turn			1048576	131072	

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

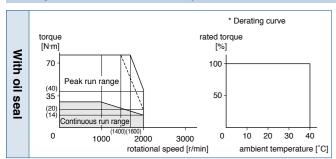
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

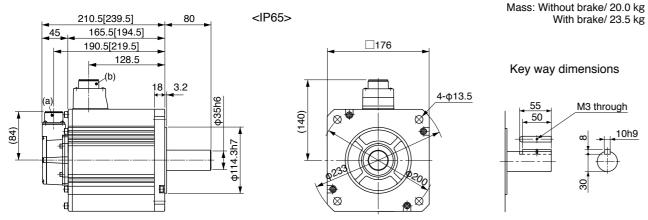
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

## 400 V MGME 4.5 kW [Middle inertia, Middle capacity]

				AC4	00 V
		IP65		-	-
Motor mode	<b>el</b> ⊧1	IP67		MGME454G1□	MGME454S1
	Model	A5II, A5	series	MFD $\diamondsuit$ TA464	
Applicable driver	No.	A5IIE, A	5E series	MFD $\diamondsuit$ TA464E	_
ariver		rame sym	bol	F-fra	ame
Power supp	oly capaci	ty	(kVA)	7.	5
Rated outpo	ut		(W)	45	00
Rated torqu	ie		(N·m)	43	.0
Momentary	Max. pea	k torque	(N·m)	107	
Rated curre	ent	(	A(rms))	14.8	
Max. currer	nt		(A(o-p))	55	
Regenerativ	e brake	Without	option	No limit Note)2	
		DV0PM2	)V0PM20049×2		t Note)2
Rated rotati	ional spec	ed	(r/min)	1000	
Max. rotation	nal speed	t	(r/min)	2000	
Moment of	inertia	Without	brake	79	.1
of rotor (×10	0 <sup>-4</sup> kg·m²)	With brake		84.4	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less			
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute	
Resolution per s			le turn	1048576	131072

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

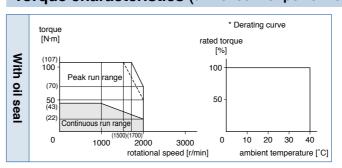
,	,
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
assembly	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

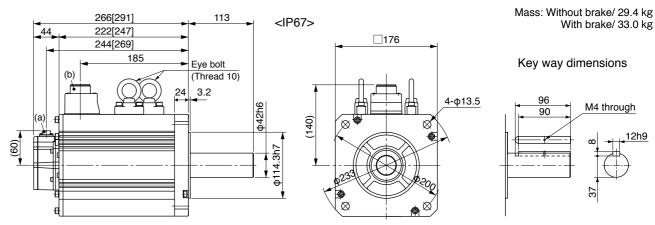
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

**Specifications** 



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

**A5 Family** 

				AC400 V	
Motor model		IP65		-	-
*1		IP67		MGME604G1□	MGME604S1
	Model	A5II, A5 series		MGD <b>⊘TB4A2</b>	
Applicable driver *2	No.	A5IIE, A5E series		-	-
dilvei	Fr	ame sym	bol	G-fr	ame
Power supply	capacit	y	(kVA)	9	.0
Rated output			(W)	60	00
Rated torque			(N·m)	57.3	
Momentary Ma	ax. peal	k torque	(N·m)	143	
Rated current		(.	A(rms))	19.4	
Max. current		(	(A(o-p))	74	
Regenerative b	rake	Without	option	No limit Note)2	
frequency (times/r	min) Note)1	DV0PM2	0049×3	No limit Note)2	
Rated rotation	al spee	d	(r/min)	1000	
Max. rotationa	l speed		(r/min)	2000	
Moment of ine	rtia	Without	brake	101	
of rotor (×10 <sup>-4</sup>	kg·m²)	With b	rake	107	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute	
Resolution per single turn			le turn	1048576	131072

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

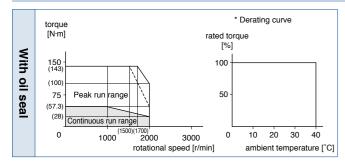
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

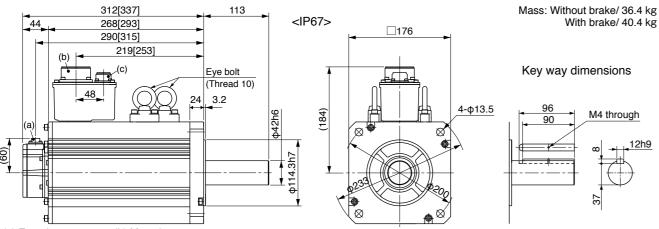
During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1764
	Thrust load A, B-direction (N)	588

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.46.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



- (a) Encoder connector (b) Motor/ connector
- (c) Brake connector (only with brake)
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## **Specifications**

			AC4	00 V	
		IP65		MHME104GC	MHME104SC
Motor mode	:1	IP67		MHME104G1□	MHME104S1
	Model	A5II, A5 series		MDD <b>◇T2412</b>	
Applicable driver *	No.	A5IIE, A	5E series	MDD $\diamondsuit$ T2412E	_
unver	Fr	ame sym	bol	D-fr	ame
Power supp	ly capacit	y	(kVA)	1.	.8
Rated outpu	ıt		(W)	10	00
Rated torqu	е		(N·m)	4.	77
Momentary	Max. peal	k torque	(N·m)	14.3	
Rated curre	nt	(	A(rms))	2.9	
Max. curren	t	(	(A(o-p))	12	
Regenerativ	e brake	Without option		83	
frequency (tim		DV0PM20048		No limit Note)2	
Rated rotati	onal spee	d	(r/min)	2000	
Max. rotatio	nal speed		(r/min)	3000	
Moment of i	nertia	Without brake		24.7	
of rotor (×10	0 <sup>-4</sup> kg·m²)	With brake		26.0	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times	or less		
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute	
Resolution per single			le turn	1048576	131072

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

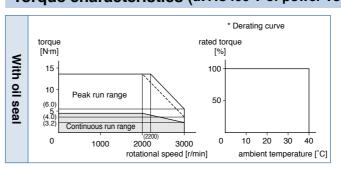
,	,
Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

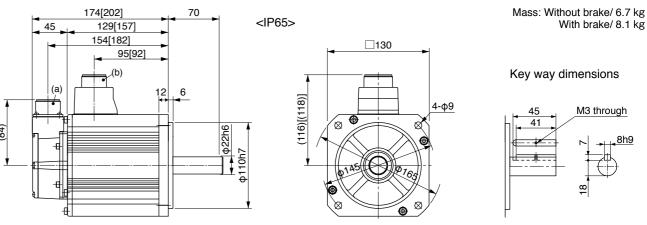
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

			AC400 V	
		IP65	MHME154GC	MHME154SC
Motor model *1		IP67	MHME154G1□	MHME154S1
Amalianda	Model	A5II, A5 series	MDD<	T3420
Applicable 42	No.	A5IIE, A5E series	MDD <b>⊘T3420E</b>	_
divei	Fr	ame symbol	D-fr	ame
Power supply	capacit	y (kVA)	2	.3
Rated output		(W)	15	00
Rated torque		(N·m)	7.16	
Momentary Ma	ax. peal	k torque (N·m)	21.5	
Rated current		(A(rms))	4.7	
Max. current		(A(o-p))	20	
Regenerative b	rake	Without option	22	
frequency (times/r	min) Note)1	DV0PM20048	130	
Rated rotation	al spee	d (r/min)	2000	
Max. rotationa	l speed	(r/min)	3000	
Moment of ine	rtia	Without brake	37.1	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	38.4	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
R	esolutio	n per single turn	1048576	131072

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

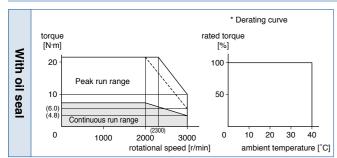
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

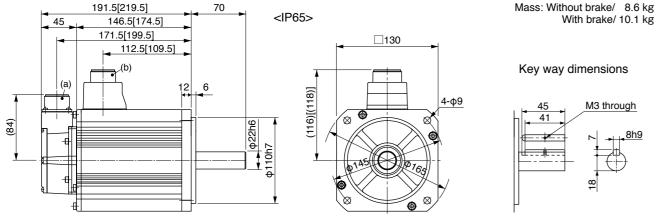
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\bigcirc$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### Dimensions

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

<a href="#"><Cautions></a>
Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. 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**

			AC4	00 V		
		IP65			MHME204GC	MHME204SC
Motor mod	1 <b>e</b> i *1		IP67		MHME204G1□	MHME204S1
	N	Model	A5II, A5 series		MED<	T4430
Applicable driver	*2 N	No.	A5IIE, A5E series		MED⇔T4430E	-
unver		Fr	ame sym	bol	E-fra	ame
Power sup	ply ca	apacity	/	(kVA)	3	.3
Rated outp	out			(W)	20	00
Rated torq	ue			(N·m)	9.	55
Momentary	у Мах	. peal	torque	(N·m)	28.6	
Rated current (A(rms))			5.5			
Max. curre	nt		(	(A(o-p))	24	
Regenerati	ve bra	ake	Without	option	45	
frequency (ti	imes/min	) Note)1	DV0PM20048		142	
Rated rota	tional	spee	d	(r/min)	2000	
Max. rotati	onal s	speed		(r/min)	3000	
Moment of	inerti	ia	Without	brake	57.8	
of rotor (x1	10 <sup>-4</sup> kį	g·m²)	With b	rake	59.6	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times	or less		
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
Resolution per single turn			1048576	131072		

400 V MHME 2.0 kW [High inertia, Middle capacity]

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

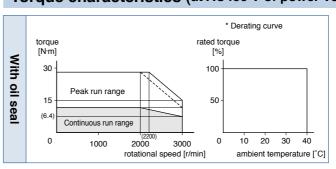
,
24.5 or more
80 or less
25 or less
1.3±10 %
2 or more
24±2.4

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

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

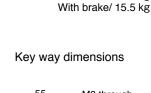
- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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

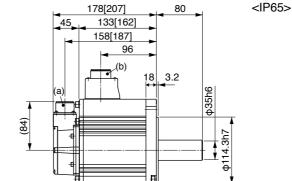


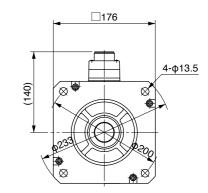
#### Dimensions

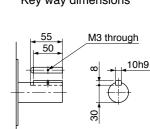
(For IP67 motor, refer to P.140.)



Mass: Without brake/ 12.2 kg







- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

			AC400 V		
		IP65		MHME304GC	MHME304SC
Motor model *1		IP67		MHME304G1□	MHME304S1
	Model	A5II, A5 series A5IIE, A5E series		MFD <b>◇</b> T5440	
Applicable driver *2	No.			MFD $\diamondsuit$ T5440E	-
unver	Fr	ame symb	ol	F-fra	ame
Power supply	capacit	y	(kVA)	4.	.5
Rated output			(W)	30	00
Rated torque			(N·m)	14	.3
Momentary Ma	ax. peal	k torque	(N·m)	43.0	
Rated current		(A	(rms))	8.0	
Max. current		(/	۹(o-p))	34	
Regenerative b	rake	Without o	option	19	
frequency (times/i	min) Note)1	DV0PM20	049×2	142	
Rated rotation	al spee	d	(r/min)	2000	
Max. rotationa	l speed		(r/min)	3000	
Moment of ine	rtia	Without I	brake	90.5	
of rotor ( $\times 10^{-4}$	kg·m²)	With br	ake	92.1	
Recommended moment of inertia ratio of the load and the rotor Note)3				5 times or less	
Rotary encoder specifications Note)5			Note)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per single	e turn	1048576	131072

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

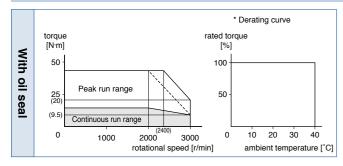
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

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

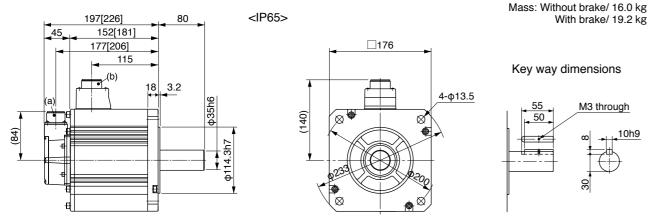
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

## **Specifications**

			AC4	00 V	
<b>M</b> - <b>t</b> - · · · · · · · · · · · · · · · · · ·		IP65		MHME404GC	MHME404SC
Motor mode	:1	IP67		MHME404G1	MHME404S1
	Model	A5II, A5 series		MFD⇔TA464	
Applicable driver *	No.	A5IIE, A5E series		MFD $\diamondsuit$ TA464E	-
unven	Fr	ame sym	bol	F-fra	ame
Power supp	ly capacit	y	(kVA)	6	8
Rated outpu	ıt		(W)	40	00
Rated torqu	е		(N·m)	19	.1
Momentary	Max. peal	k torque	(N·m)	57.3	
Rated curre	nt	(	A(rms))	10.5	
Max. curren	t	(	(A(o-p))	45	
Regenerativ	e brake	Without	option	17	
frequency (tim	es/min) Note)1	DV0PM20049×2		125	
Rated rotati	onal spee	d	(r/min)	2000	
Max. rotatio	nal speed		(r/min)	3000	
Moment of i	nertia	Without brake		112	
of rotor (×10	0 <sup>-4</sup> kg·m²)	With brake		114	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times	or less	
Rotary encoder specifications Note)5  Resolution per single turn			20-bit Incremental	17-bit Absolute	
			le turn	1048576	131072

400 V MHME 4.0 kW [High inertia, Middle capacity]

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

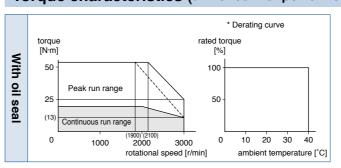
24.5 or more
80 or less
25 or less
1.3±10 %
2 or more
24±2.4

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

	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N)	784
docombry	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 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



3.2

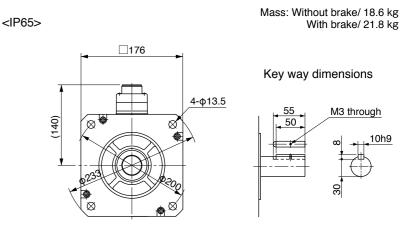
#### **Dimensions**

210.5[239.5]

190.5[219.5]

165.5[194.5]

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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

			AC400 V		
		IP65		MHME504GC	MHME504SC
Motor model *1		IP67		MHME504G1	MHME504S1
Ammliaabla	Model	A5II, A5 series A5IIE, A5E series		MFD $\diamondsuit$ TA464	
Applicable driver *2	No.			MFD $\diamondsuit$ TA464E	_
divei	Fı	ame symbol		F-fr	ame
Power supply	capacit	y (k	VA)	7	.5
Rated output			(W)	50	00
Rated torque		(N	·m)	23	3.9
Momentary Ma	ax. pea	k torque (N	·m)	71.6	
Rated current		(A(rn	າຣ))	13.0	
Max. current		(A(o	-p))	55	
Regenerative b	rake	Without opti	on	1	0
frequency (times/r	min) Note)1	DV0PM2004	9×2	76	
Rated rotation	al spee	d (r/n	nin)	2000	
Max. rotationa	l speed	(r/n	nin)	3000	
Moment of ine	rtia	Without bra	ke	162	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	Э	164	
Recommended moment of inertia ratio of the load and the rotor Note)3				5 times or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute	
Resolution per single turn			rn	1048576	131072

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

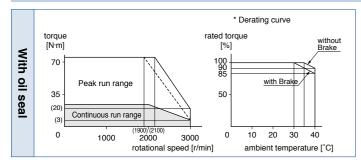
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

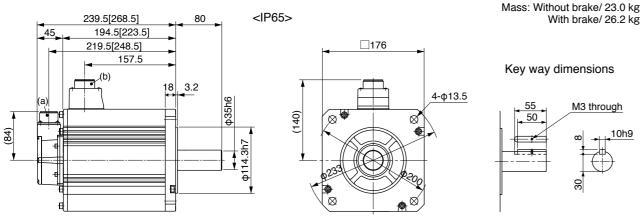
	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N)	784
document	Thrust load B-direction (N)	980
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3  $\diamondsuit$  in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



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



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

### **Specifications**

				AC4	00 V
Mataumaada		IP65		-	-
Motor mode *	.	IP67		MHME754G1	MHME754S1
A	Model	A5 <b>I</b> I, A5	series	MGD♦	TB4A2
Applicable driver *	No.	A5IIE, A	5E series	_	_
diivoi	Fr	ame sym	bol	G-fr	ame
Power supp	ly capacit	y	(kVA)	9	.0
Rated outpu	t		(W)	75	00
Rated torque	е		(N·m)	47	'.8
Momentary	Max. peal	k torque	(N·m)	119	
Rated curre	nt	(	A(rms))	22.0	
Max. current (A(o-p))		83			
Regenerative	e brake	Without	option	No limi	t Note)2
frequency (time	Jency (times/min) Note)1 DV0PM20049×3		No limi	t Note)2	
Rated rotation	onal spee	d	(r/min)	1500	
Max. rotation	nal speed		(r/min)	3000	
Moment of in	nertia	Without	brake	273	
of rotor (×10	) <sup>-4</sup> kg·m²)	With b	orake	27	79
Recommend ratio of the le			tia Note)3	5 times	or less
Rotary enco	der speci	fications	Note)5	20-bit Incremental	17-bit Absolute
	Resolutio	n per sing	le turn	1048576	131072

400 V MHME 7.5 kW [High inertia, Middle capacity]

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

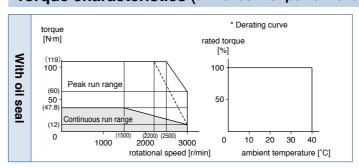
Static friction torque (N·m)	58.8 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	1.4±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

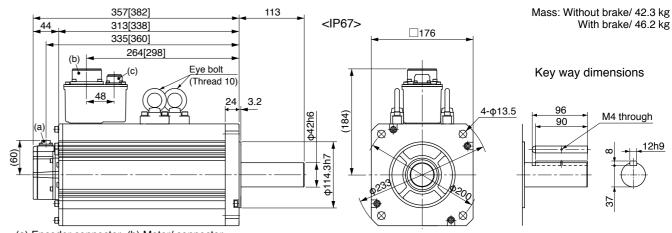
	Radial load P-direction (N)	2058
During assembly	Thrust load A-direction (N)	980
docombry	Thrust load B-direction (N)	1176
During	Radial load P-direction (N)	1176
operation	Thrust load A, B-direction (N)	490

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.46.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.16.
- \*3 \(\triangle\) in number of applicable driver represents the series. For more information about the part number, please refer to P.16.

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



#### **Dimensions**



(a) Encoder connector (b) Motor/ connector

(c) Brake connector (only with brake)

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

• MDME044 □ 1 \*

(a) Encoder connector

MDME10□□1\*

(b) Motor/Brake connector

131.5[158.5]

87.5[114.5]

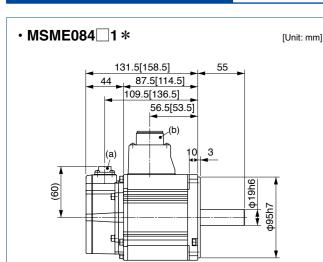
56.5[53.5]

109.5[136.5]

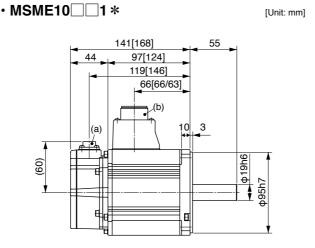
A5 Family

[Unit: mm]

[Unit: mm]

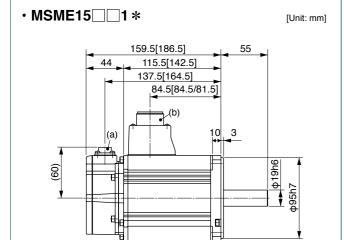


- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

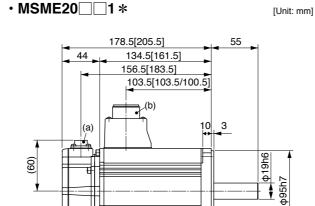


IP67 motor (MSME 200 V/ 400 V type)

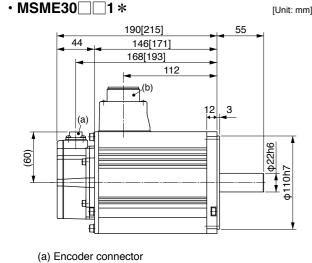
- (a) Encoder connector (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake. If you find two figures in [ ], left figure is for 200 V and right figure is for 400 V.



- (a) Encoder connector (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake. If you find two figures in [ ] ,left figure is for 200 V and right figure is for 400 V.



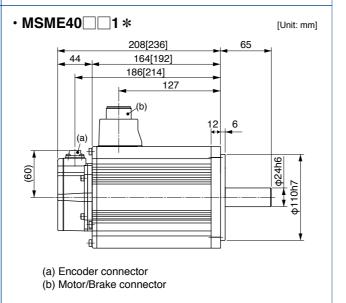
- (a) Encoder connector (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake. If you find two figures in [ ] ,left figure is for 200 V and right figure is for 400 V.



- (b) Motor/Brake connector

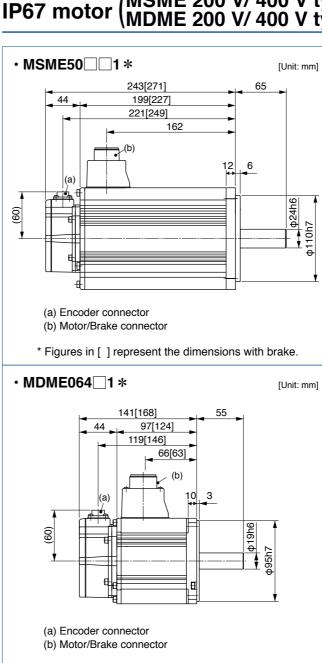
\* For motor specifications, refer to IP65 motor page.

\* Figures in [ ] represent the dimensions with brake.

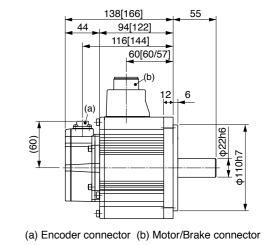


\* Figures in [ ] represent the dimensions with brake.

137

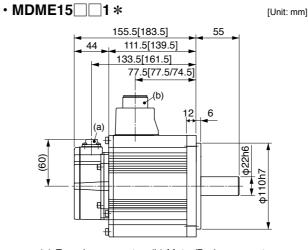


\* Figures in [ ] represent the dimensions with brake.

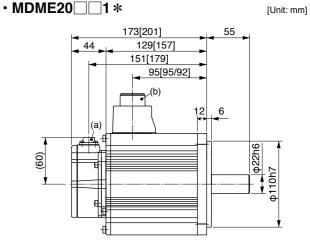


\* Figures in [ ] represent the dimensions with brake.

\* Figures in [ ] represent the dimensions with brake. If you find two figures in [ ] ,left figure is for 200 V and right figure is for 400 V.



- (a) Encoder connector (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake. If you find two figures in [ ],left figure is for 200 V and right figure is for 400 V.



- (a) Encoder connector (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake. If you find two figures in [ ] ,left figure is for 200 V and right figure is for 400 V.

<sup>\*</sup> For motor specifications, refer to IP65 motor page.

173[201]

177[206]

133[162]

96

3.2

155[184]

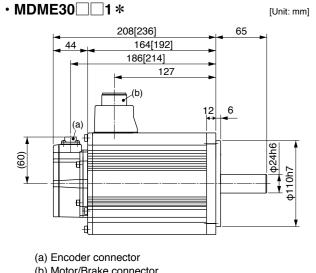
129[157]

95[95/92]

151[179]

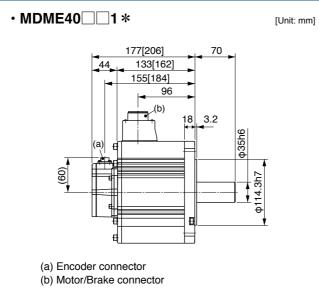
[Unit: mm]

[Unit: mm]

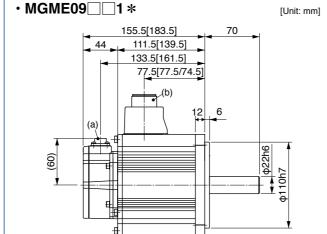


(b) Motor/Brake connector \* Figures in [ ] represent the dimensions with brake. MDME50□□1 \* [Unit: mm] 196[225] 152[181] 174[203] 115

- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake

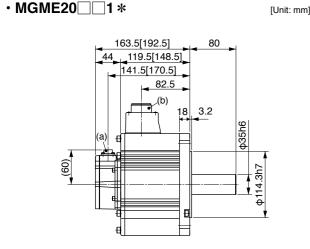


IP67 motor (MDME 200 V/ 400 V type) MGME 200 V/ 400 V type)



\* Figures in [ ] represent the dimensions with brake.

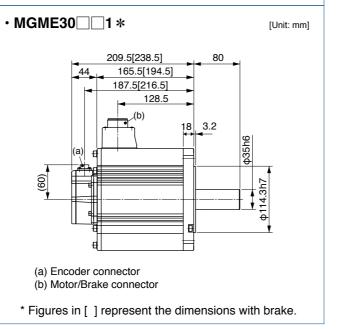
- (a) Encoder connector (b) Motor/Brake connector \* Figures in [ ] represent the dimensions with brake.
- If you find two figures in [ ] ,left figure is for 200 V and right figure is for 400 V.



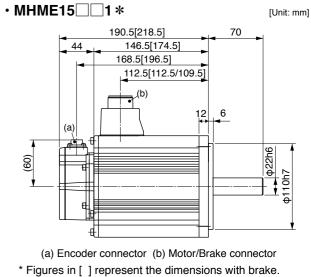
- (a) Encoder connector
- (b) Motor/Brake connector

\* For motor specifications, refer to IP65 motor page.

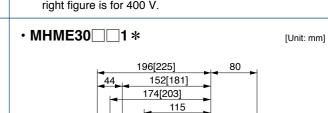
\* Figures in [ ] represent the dimensions with brake.

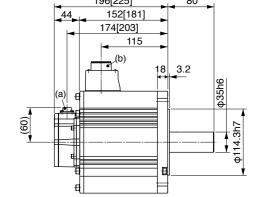


# • MHME10□□1 \* 00 (a) Encoder connector (b) Motor/Brake connector \* Figures in [ ] represent the dimensions with brake. If you find two figures in [ ], left figure is for 200 V and right figure is for 400 V. MHME20□□1\* (a) Encoder connector (b) Motor/Brake connector \* Figures in [ ] represent the dimensions with brake. MHME40 □ □ 1 \*



If you find two figures in [ ] ,left figure is for 200 V and right figure is for 400 V.

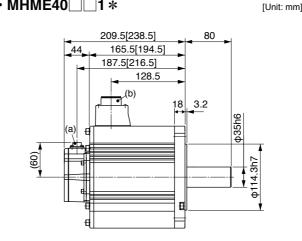




- (a) Encoder connector
  - (b) Motor/Brake connector

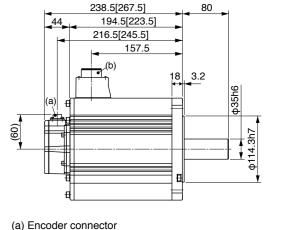
(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

• MHME50 □ □ 1 \* [Unit: mm]



\* Figures in [ ] represent the dimensions with brake.

- \* For motor specifications, refer to IP65 motor page

## **Motor Types with Gear Reducer**

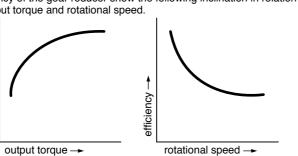


**Type and Specifications** 

Reduction		Motor ou	tput (W)		Type of
ratio	100	200	400	750	reducer
1/5	•	•	•	•	
1/9	•	•	•	•	For high
1/15	•	•	•	•	precision
1/25	•	•	•	•	

<sup>\*</sup> MHMD 100 W is not prepared.

Efficiency of the gear reducer show the following inclination in relation
to output torque and rotational speed



## **Specifications of Motor with Gear Reducer**

Items		Specifications	
	Backlash	3 minutes or smaller (initial value) at output shaft of the reducer	
	Composition of gear	Planetary gear	
	Gear efficiency	65 % to 85 %	
Caarraduaar	Lubrication	Grease lubrication	
Gear reducer	Rotational direction at output shaft	Same direction as the motor output shaft	
	Mounting method	Flange mounting	
Per	Permissible moment of inertia of the load (conversion to the motor shaft)	10 times or smaller than rotor moment of inertia of the motor	
	Protective structure	IP44 (at gear reducer)	
	Ambient temperature	0 °C to 40 °C (free from condensation)	
Environment	Ambient humidity	85 %RH (free from condensation) or less	
Environment	Vibration resistance	49 m/s² or less (at motor frame)	
	Impact resistance	98 m/s² or less	

# M S M

#### Motor rated output Type 100 W Low inertia

MSMD 100 W to 750 W Low inertia MSME 100 W to 750 W High inertia MHMD 200 W to 750 W

**Model Designation** 

Symbol Specifications 02 200 W 04 400 W 08 750 W

Voltage specifications

Symbol	Rated output
1	100 V
2	200 V

oder specifica	tions ———		
odor opcomod	10110		
Format	Pulse counts	Resolution	Wire
	2011		_

Rotary encoder specifications ————————————————————————————————————						
Symbol	Format	Pulse counts	Resolution	Wire		
G	Incremental	20-bit	1048576	5		
S	Absolute	17-bit	131072	7		

<sup>\*</sup> S: can be used in incremental.

#### Motor types with gear reducer

· ·						
Symbol	Reduction	Motor output (W)				Type of
	ratio	100	200	400	750	reducer
1N	1/5	•	•	•	•	For high precision
2N	1/9	•	•	•	•	
3N	1/15	•	•	•	•	
4N	1/25	•	•	•	•	

<sup>\*</sup> MHMD 100 W is not prepared.

#### **Motor structure**

Symbol	Shaft	Holding	Holding brake	
Symbol	Key way	without	with	
3	•	•		
4	•		•	

## The Combination of the Driver and the Motor with gear reducer

	100	v	200 V		
Motor output	Part No. of motor	Single phase, 100 V	Part No. of motor	Single/3-phase, 200 V	
	with gear reducer	Part No. of driver	with gear reducer	Part No. of driver	
100 W	MSME011□□□N	MADHT1107 MADKT1107	MSME012□□□N	MADHT1505 MADKT1505	
100 W	MSMD011□□□N	MADHT1107E MADKT1107E	MSMD012□□□N	MADHT1505E MADKT1505E	
000 W	MSME021 ON	MBDHT2110 MBDKT2110	MSME022 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	MADHT1507 MADKT1507	
200 W	MSMD021□□□N MHMD021□□□N	MBDHT2110E MBDKT2110E		MADHT1507E MADKT1507E	
400 W	MSME041 □ □ N MSMD041 □ □ N	MCDHT3120 MCDKT3120	MSME042	MBDHT2510 MBDKT2510	
400 W	MHMD041 N	MCDHT3120E MCDKT3120E	MSMD042	MBDHT2510E MBDKT2510E	
750 W			MSME082 N MSMD082 N MHMD082 N	MCDHT3520 MCDKT3520	
750 44				MCDHT3520E MCDKT3520E	

<sup>\*</sup> Motor specifications enter to  $\square \square \square$  of the motor model number. Refer to "Model designation".

# **Torque Characteristics of Motor**

# **Table of Motor Specifications**

	Model	Motor Output	Reduction ratio	Output	Rated speed	Max. speed	Rated torque	Peak max. torque	(motor + conv to moto	of inertia reducer/ erted or shaft)		ISS	Permissible radial load	Permissible thrust load
		(W)		(W)	(r/min)	(r/min)	(N·m)	(Nam)	J(×10 <sup>-4</sup>		w/o brake (k		(N)	(N)
	MSME01	(W)	1/5	75	600	1200	1.18	3.72	0.091	0.094	1.0	1.2	490	245
	MSME01  2N		1/9	80	333	666	2.25	6.86	0.0853	0.0883	1.0	1.2	588	294
	MSME01  3N	100	1/15	80	200	400	3.72	11.4	0.086	0.089	1.15	1.35	784	392
	MSME01  4N		1/25	80	120	240	6.27	19.0	0.0885	0.003	2.15	2.35	1670	833
	MSME02  1N		1/5	170	600	1200	2.65	8.04	0.258	0.0313	1.5	1.92	490	245
_	MSME02  2N		1/9	132	333	666	3.72	11.3	0.408	0.428	2.48	2.9	1180	588
MSME	MSME02  3N	200	1/15	132	200	400	6.27	18.8	0.44	0.46	2.88	3.3	1470	735
	MSME02		1/25	140	120	240	11.1	33.3	0.428	0.448	2.88	3.3	1670	833
MO	MSME04  1N		1/5	340	600	1200	5.39	16.2	0.623	0.643	2.9	3.3	980	490
Low inertia	MSME04  2N		1/9	332	333	666	9.51	28.5	0.528	0.548	2.9	3.3	1180	588
rtia	MSME04  3N	400	1/15	332	200	400	15.8	47.5	0.56	0.58	3.3	3.7	1470	735
	MSME04  4N		1/25	332	120	240	26.4	79.2	0.56	0.58	4.4	4.8	2060	1030
	MSME082  1N		1/5	672	600	1200	10.7	32.1	1.583	1.683	4.4	5.2	980	490
	MSME082  2N		1/9	635	333	666	18.2	54.7	1.52	1.62	5.7	6.5	1470	735
	MSME082  3N	750	1/15	635	200	400	30.4	91.2	1.57	1.67	6.1	6.9	1760	882
	MSME082  4N		1/25	635	120	240	50.7	152	1.52	1.62	6.1	6.9	2650	1320
	MSMD01		1/5	75	600	1000	1.18	3.72	0.091	0.094	1.02	1.23	490	245
	MSMD01  2N		1/9	80	333	555	2.25	6.86	0.0853	0.0883	1.02	1.23	588	294
	MSMD01  3N	100	1/15	80	200	333	3.72	11.4	0.086	0.089	1.17	1.38	784	392
	MSMD01		1/25	80	120	200	6.27	19.0	0.0885	0.0915	2.17	2.38	1670	833
	MSMD02		1/5	170	600	1000	2.65	8.04	0.258	0.278	1.54	2.02	490	245
3	MSMD02  2N		1/9	132	333	555	3.72	11.3	0.408	0.428	2.52	3	1180	588
MSMD	MSMD02  3N	200	1/15	132	200	333	6.27	18.8	0.44	0.46	2.92	3.4	1470	735
	MSMD02  4N		1/25	140	120	200	11.1	33.3	0.428	0.448	2.92	3.4	1670	833
.ow	MSMD04		1/5	340	600	1000	5.39	16.2	0.623	0.643	2.9	3.4	980	490
Low iner	MSMD04 🗆 🗆 2N		1/9	332	333	555	9.51	28.5	0.528	0.548	2.9	3.4	1180	588
rtia	MSMD04 🗆 🗆 3N	400	1/15	332	200	333	15.8	47.5	0.56	0.58	3.3	3.8	1470	735
	MSMD04 🗆 🗆 4N		1/25	332	120	200	26.4	79.2	0.56	0.58	4.4	4.9	2060	1030
	MSMD082 □□ 1N		1/5	672	600	900	10.7	32.1	1.583	1.683	4.4	5.2	980	490
	MSMD082 □□ 2N		1/9	635	333	500	18.2	54.7	1.52	1.62	5.7	6.5	1470	735
	MSMD082 □□ 3N	750	1/15	635	200	300	30.4	91.2	1.57	1.67	6.1	6.9	1760	882
	MSMD082 □□ 4N		1/25	635	120	180	50.7	152	1.52	1.62	6.1	6.9	2650	1320
	MHMD02 🗆 🗆 1N		1/5	170	600	1000	2.65	8.04	0.538	0.568	1.68	2.12	490	245
	MHMD02 🗆 🗆 2N	000	1/9	132	333	555	3.72	11.3	0.688	0.718	2.66	3.1	1180	588
	MHMD02 🗆 🗆 3N	200	1/15	132	200	333	6.27	18.8	0.72	0.75	3.06	3.5	1470	735
록	MHMD02 🗆 🗆 4N		1/25	140	120	200	11.1	33.3	0.708	0.738	3.06	3.5	1670	833
¥	MHMD04 🗆 🗆 1N		1/5	340	600	1000	5.39	16.2	1.033	1.063	3.1	3.5	980	490
H	MHMD04 🗆 🗆 2N	400	1/9	332	333	555	9.51	28.5	0.938	0.968	3.1	3.5	1180	588
igh	MHMD04 🗆 🗆 3N	400	1/15	332	200	333	15.8	47.5	0.97	1.0	3.5	3.9	1470	735
MHMD High inertia	MHMD04 🗆 🗆 4N		1/25	332	120	200	26.4	79.2	0.97	1.0	4.6	5.0	2060	1030
tia	MHMD082 □□ 1N		1/5	672	600	900	10.7	32.1	2.223	2.323	4.6	5.4	980	490
	MHMD082 □□ 2N	750	1/9	635	333	500	18.2	54.7	2.16	2.26	5.9	6.7	1470	735
	MHMD082 □□ 3N	750	1/15	635	200	300	30.4	91.2	2.21	2.31	6.3	7.1	1760	882
	MHMD082 □□ 4N		1/25	635	120	180	50.7	152	2.16	2.26	6.3	7.1	2650	1320

**Table of Motor Specifications** 

MSM	E series	(100 W to 750 W)			
Supply voltage to driver	Reduction ratio Motor output	1/5	1/9	1/15	1/25
	100 W	MSME011 1N  torque [N·m] 4.0 Peak run range Continuous run range 0 500 1000 rotational speed [r/min]	MSME011 2N torque [N-m] 8.0 Peak run range Continuous run range 0 400 800 rotational speed [r/min]	MSME011 3N torque [N.m] 16.0 Peak run range Continuous run range 0 200 400 rotational speed [r/min]	MSME011 4N torque [N-m] 20 Peak run range 10 Continuous run range 0 200 rotational speed [r/min]
100 V	200 W	MSME021 1N  torque [N·m] 8.0 Peak run range Continuous run range 0 500 1000 rotational speed [r/min]	MSME021 2N torque [N-m] 16.0 Peak run range Continuous run range 400 800 rotational speed [r/min]	MSME021 3N torque [N-m] 20 Peak run range Continuous run range 0 200 400 rotational speed [r/min]	MSME021 4N torque [N-m] 40 Peak run tange 20 Continuous run range 0 200 rotational speed [r/min]
	400 W	MSME041 1N  torque [N·m] 20 Peak rur range Continuous run range 0 500 1000 rotational speed [r/min]	MSME041 2N torque [N·m] 40 Peak run range 0 400 800 rotational speed [r/min]	MSME041 3N torque [N·m] 60 Peak run range Continuous run range 0 200 400 rotational speed [r/min]	MSME041 4N torque [N·m] 80 Peak rur range 40 Continuous run tange 0 100 200 rotational speed [r/min]
	100 W	MSME012 1N  torque [N-m] 4.0 Peak run range 2.0 Continuous run tange 0 500 1000 rotational speed [r/min]	MSME012 2N  torque [N·m]  8.0  Peak run range 4.0  Continuous run range 0 400 800 rotational speed [r/min]	MSME012 3N torque [N·m] 16.0 Peak rur range 0 200 400 rotational speed [r/min]	MSME012 4N torque [N·m] 20 Peak run range 10 Continuous run range 0 100 200 rotational speed [r/min]
	200 W	MSMEO22 1N torque [N·m] 8.0 Peak run range 4.0 Continuous run tange 0 500 1000 rotational speed [r/min]	MSME022 2N torque [N·m] 16.0 Peak run range Continuous run range 0 400 800 rotational speed [r/min]	MSME022 3N torque [N·m] 20 Peak rur range 10 Continuous run range 0 200 400 rotational speed [r/min]	MSME022 4N torque [N-m]  Peak run range  Continuous fun range  Continuous fun range  o 100 200 rotational speed [r/min]
200 V	400 W	MSME042 1N torque [N·m] 20 Peak run range Continuous run range o 500 1000 rotational speed [r/min]	MSME042 2N torque [N-m] 40 Peak run range Continuous run range 0 400 800 rotational speed [r/min]	MSME042 3N torque [N·m] 60 Peak run range Continuous run range 0 200 400 rotational speed [r/min]	MSME042 4N torque [N-m]  80  Peak run range  Continuous run range  0 100 200 rotational speed [r/min]
	750 W	MSME082 1N torque [N·m] 40 Peak run range Continuous run range 0 500 1000 rotational speed [r/min]	MSME082 2N torque [N-m] 80 Peak run range Continuous run range 0 400 800 rotational speed [r/min]	MSME082 3N torque [N·m] 120 Peak run tange Continuous run range 0 200 400 rotational speed [r/min]	MSME082 4N  torque [N·m] 160 Peak run range  Continuous run range 0 100 200 rotational speed [r/min]

Dotted line represents the torque at 10 % less supply voltage.

<sup>\*</sup> Motor specifications enter to  $\square \square \square$  of the motor model number. Refer to "Model designation".

# MSMD series (100 W to 750 W) Supply voltage to driver Motor output 1/5 1/9 1/15 1/25 MSMD011□□1N MSMD011□□2N MSMD011□□3N MSMD011 □ □ 4N 100 W MSMD021□□2N $MSMD021 \square \square 1N$ MSMD021□□3N MSMD021□□4N 100 V 200 W MSMD041□□1N MSMD041□□2N MSMD041□□3N MSMD041 □ □ 4N 400 W MSMD012 1N MSMD012 2N MSMD012 3N MSMD012 4N 100 W MSMD022□□3N MSMD022□□1N MSMD022 2N MSMD022 4N 200 W 200 V MSMD042□□2N MSMD042 3N MSMD042□□1N MSMD042 4N 400 W $MSMD082 \square \square 3N$ MSMD082□□4N MSMD082□□2N MSMD082□□1N 750 W

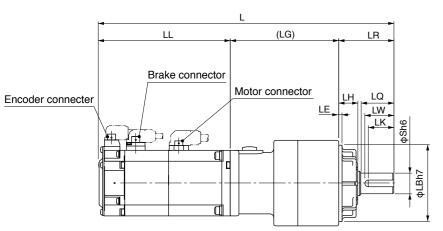
145

Dotted line	represents	the torque	e at 10	) % less	supply	voltage.

MHM	D series	(200 W to 750 W)	)		
Supply voltage to driver	Reduction ratio Motor output	1/5	1/9	1/15	1/25
100 V	200 W	MHMD021 1N  torque [N·m] 8.0 Peak run range 0 500 1000 rotational speed [r/min]	MHMD021 2N  torque [N-m] 16.0  Peak run tange Continuous run tange 0 400 800 rotational speed [r/min]	MHMD021 3N  torque [N·m] 20 Peak run range Contiruous run range 0 200 400 rotational speed [r/min]	MHMD021 4N  torque [N-m]  40  Peak run range  Continuous run range  0 100 200  rotational speed [r/min]
100 V	400 W	MHMD041 1N  torque [N·m] 20 Peak run range Continuous run range 0 500 1000 rotational speed [r/min]	MHMD041 2N  torque [N·m]  40  Peak  Continuous run range 0 400 800 rotational speed [r/min]	MHMD041 3N  torque [N-m]  60  Peak run range  Continuous run range  200 400 rotational speed [r/min]	MHMD041 4N  torque [N·m]  80  Peak run range  Continuous run range  0 100 200  rotational speed [r/min]
	200 W	MHMD022 1N torque [N·m] 8.0 Peak run range 4.0 Continuous run range 0 500 1000 rotational speed [r/min]	MHMD022 2N  torque [N·m] 16.0 Peak run range Continuous run range 0 400 800 rotational speed [r/min]	MHMD022 3N  torque [N-m] 20 Peak run tange Contifuous run range 0 200 400 rotational speed [r/min]	MHMD022 4N torque [N·m] 40 Peak run range Continuous run range 0 100 200 rotational speed [r/min]
200 V	400 W	MHMD042 1N torque [N·m] 20 Peak run range Continuous run range 0 500 1000 rotational speed [r/min]	MHMD042 2N  torque [N·m]  40  Peak run range Continuous run range 0 400 800 rotational speed [r/min]	MHMD042 3N  torque [N·m] 60  Peak run range Continuous run range 0 200 400 rotational speed [r/min]	MHMD042 4N torque [N·m] 80 Peak run range Continuous run range 0 100 200 rotational speed [r/min]
	750 W	MHMD082 1N torque [N·m] 40 Peak run range Continuous run range	MHMD082 2N torque [N·m] 80 Pelak 1 run range 1	MHMD082 3N  torque [N·m] 120 60 Peak run range Continuous run range	MHMD082 4N torque [N·m] 160 Peak run range Continuous run range

Dotted line represents the torque at 10 % less supply voltage.

[Unit: mm]



 $\ensuremath{^{\star}}$  The figure represents the dimensions with brake.

Model	Motor output (W)	Reduction ratio	L	LL	LR	LQ	LC	LB	LA	s	LH	LZ	LW	(LG)	LE	Key way B×H×LK	т			
MSME01		1 /E	191.5	92																
		1/5	221.5	122										67.5						
MSME01		1/9	191.5	92	32	20	52	50	60	12	10	M5 Depth	18	07.5		4×4×16	2.5			
MONEOTZIV	100	175	221.5	122	02	20	32	30	00	12	10	12	10			727210	2.5			
MSME01 3N	100	1/15	202	92										78						
MOMEOT BOOK		1,10	232	122										, 0						
MSME01 4N		1/25	234	92	50	30	78	70	90	19	17	M6 Depth	26	92		6×6×22	3.5			
		.,_0	264	122			. 0					20				ONON	0.0			
MSME02 1N		1/5	184	79.5	32	20	52	50	60	12	10	M5 Depth	18	72.5		4×4×16	2.5			
			220.5	116								12								
MSME02 2N		1/9	219	79.5										89.5	3					
	200	-	255.5	116																
MSME02 3N		1/15	229.5	79.5																
			266	116										100						
MSME02□□□4N			1/25	229.5	79.5								M6							
			266	116	50	30	78	70	70 90	90	19	17	Depth	26			6×6×22	3.5		
MSME04					1/5	238.5 99 275 135.5									20				0.00.22	
			275	99										89.5						
MSME04□□□2N		1/9	275	135.5																
	400	400																		
MSME04□□□3N		1/15	249 99 285.5 135.5										100							
			264	99								M8								
MSME04□□□4N		1/25	300.5	135.5	61	40	98	90	115	24	18	Depth 20	35	104	5	8×7×30	4			
			255.7	112.2								M6								
MSME082□□1N		1/5	291.7	148.2	50	30	78	70	90	19	17	Depth 20	26	93.5	3	6×6×22	3.5			
			270.7	112.2																
MSME082□□2N		1/9	306.7	148.2										97.5						
	750		283.2	112.2								M8			_		) 4			
MSME082□□3N		1/15	319.2	148.2	61	1 40	98	90	115	24	18	Depth 20	35	440	5	8×7×30				
MONTOOO TO		1/25	283.2	112.2											110					
MSME082□□4N			319.2	148.2																

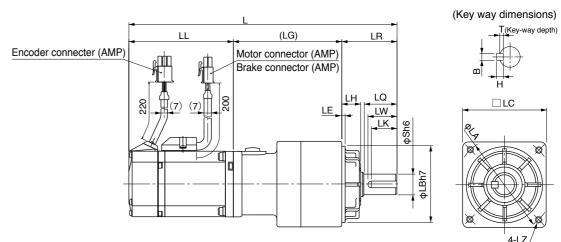
Upper column: without brake [Lower column: with brake [

MSMD series

[Unit: mm]

(Key way dimensions)

□LC



Model	Motor output (W)	Reduction ratio	L	LL	LR	LQ	LC	LB	LA	s	LH	LZ	LW	(LG)	LE	Key way B×H×LK	Т				
MSMD01		1/5	191.5	92																	
MICHIDOT		1/3	221.5	122										67.5							
MSMD01□□□2N		1/9	191.5	92	32	20	52	50	60	12	10	M5 Depth	18	07.0		4×4×16	2.5				
	100		221.5	122	02		52					12					0				
MSMD01□□□3N		1/15	202	92										78							
			232	122								M6									
MSMD01□□□4N		1/25	234	92	50	30	78	70	90	19	17	Depth	26	92		6×6×22	3.5				
			264	122								20 M5									
MSMD02□□□1N		1/5	184 220.5	79.5 116	32	20	52	50	60	12	10	Depth 12	18	72.5		4×4×16	2.5				
			219	79.5								12									
MSMD02□□□2N		1/9	255.5	116										89.5	3						
	200		229.5	79.5																	
MSMD02 3N		1/15	266	116																	
			229.5	79.5					70 90					100							
MSMD02		1/25	266	116			70	70		90 19	4-7	M6					0.5				
MCMD04DDJ1N					4/5	238.5	99	50	30	78	70	90	19	17	Depth 20	26			6×6×22	3.5	
MSMD04		1/5	275	135.5										89.5							
MSMD04□□□2N		1/0	238.5	99										69.5							
WISWIDU4ZIV	400	1/9	275	135.5																	
MSMD04□□□3N	400	1/15	249	99										100							
			285.5	135.5																	
MSMD04		1/25	264	99	61	40	98	90	115	24	18	M8 Depth	35	104	5	8×7×30	4				
			300.5	135.5								20		-							
MSMD082□□1N		1/5	255.7	112.2	50	30	78	70	90	19	17	M6 Depth	26	93.5	3	6×6×22	3.5				
			292.7	149.2								20									
MSMD082□□2N		1/9	270.7	112.2										97.5							
	750		307.7	149.2								M8									
MSMD082□□3N		1/15	283.2	112.2	61	40	98	90	115	24	18	Depth	35		5	8×7×30	0 4				
			320.2	149.2	61	1 40		90 115	113 24	. 7   10	20		110			7					
MSMD082□□4N		1/25	283.2	112.2 149.2																	
	:MD082□□4N	1/25	320.2	149.2																	

Upper column: without brake

Lower column: with brake

# MHMD series

Encoder connecter (AMP)

Brake connector (AMP)

Brake connector (AMP)

Brake connector (AMP)

(Key way dimensions)

T(Key-way depth)

H

LC

[Unit: mm]

<sup>\*</sup> The figure represents the dimensions without brake.

Model	Motor output (W)	Reduction ratio	L	LL	LR	LQ	LC	LB	LA	s	LH	LZ	LW	(LG)	LE	Key way B×H×LK	т			
			203.5	99								M5								
MHMD02 1N		1/5	240	135.5	32	20	52	50	60	12	10	Depth 12	18	72.5		4×4×16	2.5			
MUMDOOFFON		1/9	238.5	99										89.5						
MHMD02 D2N	200	1/9	275	135.5										89.5						
MHMD02 3N	200	1/15	249	99																
MILIMIDO5		1/15	285.5	135.5										100						
MHMD02		1/25	249	99										100	3					
		1/25	285.5	135.5	50	30	78	70	90	19	17	M6 Depth	26			6×6×22	3.5			
MHMD04		1/5	258	118.5	30	30	70	/0	30	13	''	20	20			UNUNZZ	0.0			
		.,,0	294.5	155										89.5						
MHMD04 2N	400	400	1/9	258	118.5										00.0					
			400	400		294.5	155													
MHMD04					400	1/15	268.5	118.5										100		
		1/15	305	155																
MHMD04		1/25	283.5	118.5	61	40	98	90	115	24	18	M8 Depth	35	104	5	8×7×30	4			
		1720	320	155	0.	10			110		.0	20	00		Ŭ	ON NOO	·			
		4 /5	270.7	127.2			70	70		40		M6								
MHMD082 1N		1/5	307.7	164.2	50	30	78	70	90	19	17	Depth 20	26	93.5	3	6×6×22	3.5			
		4 /0	285.7	127.2																
MHMD082□□2N	750	1/9	322.7	164.2										97.5						
MUMDOOOTTON	750 □	4/45	298.2	127.2		40	00	00	445	04	10	M8	0.5		_	0700	,			
MHMD082 3N		1/15	335.2	164.2	61	40	98	90	115	115 24	24 18	Depth 20	35	110	5	8×7×30	4			
MUMDOOOTTAN		2	298.2	127.2												110				
MHMD082□□4N		1/25	335.2	164.2																

Upper column: without brake	
Lower column: with broke	

MEMO

# **Features**

- Line-up IP65 motor: 200 W to 5.0 kW
- Max speed: 5000 r/min (MSMJ, MHMJ)
- · Low inertia (MSME) to High inertia (MHME)
- 20-bit incremental encoder (1048576 pulse)
- 17-bit absolute encoder (131072 pulse).

# [Please note]

Motors displayed at P.151 to P.181 are Special Order Product. Please contact us for more information.

# **Motor Lineup**



# Low inertia

Max. speed : 5000 r/min

: 4500 r/min (750 W) Rated speed: 3000 r/min

Rated output: 200 W to 750 W Enclosure : IP65



# High inertia

Max. speed : 5000 r/min

: 4500 r/min (750 W)

Rated speed: 3000 r/min Rated output: 200 W to 750 W Enclosure : IP65



# Low inertia

Max. speed : 5000 r/min

: 4500 r/min (from 4.0 kW)

Rated speed: 3000 r/min Rated output: 1.0 kW to 5.0 kW

Enclosure : IP65

Middle capacity



### MGMF (Low speed/ High torque type) High inertia

Max. speed : 2000 r/min Rated speed: 1000 r/min

Rated output: IP65 0.9 kW to 3.0 kW

Enclosure : IP65



# Middle inertia

Max. speed : 3000 r/min Rated speed: 2000 r/min

Rated output: IP65 1.0 kW to 5.0 kW

Enclosure : IP65



# MHME High inertia

Max. speed : 3000 r/min Rated speed: 2000 r/min

Rated output: IP65 1.0 kW to 5.0 kW

Enclosure : IP65

**Special Order Product Motor Contents** 

MSMJ (200 V)

200 W to 750 W.... . P.155

1.0 kW to 5.0 kW ..... P.158

MGME (200 V)

MHMJ (200 V)

200 W to 750 W .....

1.0 kW to 5.0 kW ..... P.176

MSME (200 V)

MDME (200 V)

1.0 kW to 5.0 kW ..... P.164

0.9 kW to 3.0 kW ..... P.170

.. P.173

MHME (200 V)

# Symbol

### \* S: can be used in incremental.

**Model Designation** 

Type

Low inertia (200 W to 750 W)

Low inertia (1.0 kW to 5.0 kW)

High inertia (0.9 kW to 3.0 kW)

High inertia (200 W to 750 W)

MHME High inertia (1.0 kW to 5.0 kW)

200 W

400 W

750 W

0.9 kW

1.0 kW

1.5 kW

2.0 kW

3.0 kW

4.0 kW

5.0 kW

Rotary encoder specifications

Format

Incremental

Absolute

Middle inertia (1.0 kW to 5.0 kW)

Voltage specifications

2: 200 V

Pulse counts Resolution Wires

1048576

131072

5

7

M A D K T 1 5 0 5

M A D K T 1 5 0 5 E \*\*

**Servo Motor** 

Symbol

MSMJ

MSMF

MDMF

MGMF

MHMJ

02

04

08

09

10

15

20

30

40

50

G

S

Motor rated output Symbol Rated output

# <Cautions>

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

20-bit

17-bit

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

# M S M E 5 0 2 G C C M \* **Special specifications**

MSMJ, MHMJ **Special specifications** MSME, MDME, MGME, MHME

M: Special Order Product

#### **Motor specifications** MSMJ, MHMJ

	Sh	aft	Holding	g brake	Oil seal		
Symbol	Round	Key-way, center tap	without	with	without	with	
Α	•		•		•		
В	•			•	•		
С	•		•			•	
D	•			•		•	
S		•	•		•		
T		•		•	•		
U		•	•			•	
V		•		•		•	

# MSME, MDME, MGME, MHME

Symbol	Sh	aft	Holding	g brake	Oil seal		
Syllibol	Round	Key-way	without	with	without	with	
С	•		•			•	
D	•			•		•	
G		•	•			•	
Н		•		•		•	

# Design order

•	
Symbol	Specifications
С	IP65 motor (MSME, MDME, MGME, MHME)
1	IP65 motor (MSMJ, MHMJ)

- Only position control

# **Servo Driver**

Speed, Position, Torque, Full-closed type

Position control type

Frame symbol * ———						
Symbol	Frame					
MAD	Frame A					
MBD	Frame B					
MCD	Frame C					
MDD	Frame D					
MED	Frame E					
MFD	Frame F					

001100		
Symbol	Velocity, Position, Torque, Full-Closed type	Position control type
K	A5 II series	A5 II E series

#### Specifications Symbol 3-phase, 200 V Single/3-phase, 200 V

# Power device Max. current rating

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

#### Symbol Specifications Supply voltage specifications

#### 07 7.5 A 10 10 A 20 20 A 30 30 A 40 40 A 64 64 A 90 90 A A2 120 A

**Special specifications** 

**Special specifications** 

**Current detector current rating** 

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

# **Table of Part Numbers and Options:** Special Order Product 0.2 kW to 5.0 kW

			Motor	or Driver Power				Power	Optional parts									
					Rating/	A5II series Part No.	A5IIE series Part No.		capacity	Encode	er Cable	Mot	or Cable	Brake Cable	External	Reactor	Noise Filter	
M	otor series	Power supply	Output (W)	<b>Part No.</b> Note) 1	Spec. (page)	Speed, Position, Torque,  Full-Closed type		Frame	(rated load ) (kVA)	20-bit Incremental Note) 3	17-bit Absolute Note) 2,3	without Brake Note) 3	with Brake Note) 3	Note) 3	Regenerative Resistor	Regenerative   /Single phase		
	MSMJ		200	MSMJ022	155	MADKT1507	MADKT1507E	A-frame	Approx. 0.5							DV0P227	DV0P4170	
	(Leadwire)		400	MSMJ042 □ 1 *	156	MBDKT2510	MBDKT2510E	R from a	Approx. 0.9	MFECA	MFECA	MFMCA	_	MFMCB	DV0P4283	DV0P220	DV0PM2004	
	3000 r/min	Single phase/	750	MSMJ082 □ 1 *	157	MCDKT3520	MCDKT3520E			0**0EAM	0**0EAE Note) 4	0**0EED	<b>'</b>	0**0GET		DV0P228 DV0P220	DV0PM200	
_		3-phase 200 V	1000	MSME102 □ C * M	158	MDDKT5540	MDDKT5540E	O-lialile	Approx. 1.8	prox. 1.8						DV0P228	D VOI IVIZOO	
l ow inertia			1500	MSME152 □ C * M	159	MDDKT5540	MDDKT5540E	D-frame	Approx. 2.3				MFMCD 0**2ECD			DV0P4284	DV0P222 DV0PM20047 DV0P222	DV0P422
<u>n</u> .	MSME 3000 r/min		2000	MSME202 □ C * M	160	MEDKT7364	MEDKT7364E	E-frame	Approx. 3.3					_	DV0P4285 Note) 5	DV0P223	DV0PM200	
		3-phase	3000	MSME302 □ C * M	161	MFDKTA390	MFDKTA390E		Approx. 4.5							DV0P224		
		200 V	4000	MSME402 ☐ C * M	162	MFDKTB3A2	MFDKTB3A2E	F-frame	Approx. 6			MFMCA 0**3ECT			DV0P4285 ×2 in parallel	DV0P225	DV0P341	
			5000	MSME502 □ C * M	163	MFDKTB3A2	MFDKTB3A2E		Approx. 7.5							Note) 6		
		Single phase/	1000	MDME102 □ C * M	164	MDDKT3530	MDDKT3530E	D-frame	Approx. 1.8						DV0P4284	DV0P228 DV0P222	DV0P422	
Middle Mi	3-phase 200 V		1500	MDME152 □ C * M	165	MDDKT5540	MDDKT5540E	Dilano	Approx. 2.3	MFECA 0**0ESD	MFECA 0**0ESE	MFMCE 0**2ECE			D) (0D 100	DV0PM20047 DV0P222	370. 12.	
<u>.</u>	MDME 2000 r/min		2000	MDME202 □ C * M	166	MEDKT7364	MEDKT7364E	E-frame	Approx. 3.3						DV0P4285 Note) 5	DV0P223	DV0PM20	
in particular in the control of the		3-phase	3000	MDME302 □ C * M	167	MFDKTA390	MFDKTA390E		Approx. 4.5	6 .5					D) / D / D - D	DV0P224		
		200 V	4000	MDME402 □ C * M	168	MFDKTB3A2	MFDKTB3A2E	F-frame	Approx. 6				MFMCA 0**3ECT	MFMCA 0**3FCT	_	DV0P4285 ×2 in parallel	DV0P225	DV0P341
			5000	MDME502 □ C * M	169	MFDKTB3A2	MFDKTB3A2E		Approx. 7.5							Note) 6		
	MGME  Low speed/\  High torque	Single phase/ 3-phase 200 V	900	MGME092 □ C * M	170	MDDKT5540	MDDKT5540E	D-frame App	Approx. 1.8		3		MFMCE 0**2ECE			DV0P4284	DV0P228 DV0P221	DV0P422
	type /	3-phase	2000	MGME202 □ C * M	171	MFDKTA390	MFDKTA390E	E frama	Approx. 3.8	Approx. 3.8			MFMCA			DV0P4285	DV0P223	DV0P34
	1000 r/min	200 V	3000	MGME302 □ C * M	172	MFDKTB3A2	MFDKTB3A2E	I -liaille	Approx. 4.5			0**3EC	0**3FCT		×2 in parallel	DV0P224	DV01 341	
	MHMJ /Leadwire\		200	MHMJ022 □ 1 *	173	MADKT1507	MADKT1507E	A-frame	Approx. 0.5	MFECA	MFECA	MFMCA		MFMCB		DV0P227 DV0P220	DV0P417	
Ē	type /	Single	400	MHMJ042 ☐ 1 *	174	MBDKT2510	MBDKT2510E	B-frame	Approx. 0.9	0**0EAM	0**0EAE	0**0EED		0**0GET	DV0P4283	DV0P228	DV0PM20	
<u>2</u>	3000 r/min	phase/ 3-phase	750	MHMJ082  ☐ 1 *	175	MCDKT3520	MCDKT3520E	C-frame	frame Approx. 1.3	Note) 4					DV0P220	DV0PM200		
3000 r/min	200 V	1000	MHME102 □ C * M	176	MDDKT3530	MDDKT3530E	D-frame	Approx. 1.8			MFMCC			DV0P4284	DV0P228 DV0P222	DV0P422		
		1500	MHME152 □ C * M	177	MDDKT5540	MDDKT5540E		Approx. 2.3			0**2ECI	0**2FCD			DV0PM20047 DV0P222			
	MHME 2000 r/min		2000	MHME202 □ C * M	178	MEDKT7364	MEDKT7364E	E-frame	Approx. 3.3	MFECA 0**0ESD	MFECA 0**0ESE	MFMCE 0**2ECI		_	DV0P4285 Note) 5	DV0P223	DV0PM20	
		3-phase	3000	MHME302 □ C * M	179	MFDKTA390	MFDKTA390E		Approx. 4.5							DV0P224		
		200 V	4000	MHME402 □ C * M	180	MFDKTB3A2	MFDKTB3A2E	F-frame	Approx. 6			MFMCA 0**3ECT			DV0P4285 ×2 in parallel	DV0P225	DV0P34	
		5000	MHME502 □ C * M	181	MFDKTB3A2	MFDKTB3A2E		Approx. 7.5							Note) 6			

Note) 1 Rotary encoder specifications: ☐ Motor specification: \* (refer to P.152)

**A5 Family** 

	Title		Part No.
Interface Cable			DV0P4360
			DV0P4120
		DV0P4121	
Interface Conve	DV0P4130		
			DV0P4131
			DV0P4132
Connector Kit		Single row type	DV0PM20032
for Power Supply Input	to D-frame	Double row type	DV0PM20033
Connection	E-frame	21	DV0PM20044
Connector Kit	A-frame t	o D-frame	DV0PM20034
for Motor	E-frame		DV0PM20046
Connection Connector Kit for Regenerative			DV0PM20045
Resistor	Litamo		
			DV0P4290
			DV0P4310
Connector Kit fo	-		DV0P4320
Motor/Encoder (	onnection	ı	DV0P4330
			DV0P4340
	1		DV0P4380
	RS485, F	RS232	DV0PM20024
	Safety		DV0PM20025
Connector Kit	Interface		DV0P4350
	External S	Scale	DV0PM20026
	Encoder		DV0PM20010
		onitor Signal	DV0PM20031
Battery For Abso	olute Enco	der	DV0P2990
Battery Box			DV0P4430
	A-frame		DV0PM20027
Mounting	B-frame		DV0PM20028
Bracket	C-frame		DV0PM20029
	D-frame		DV0PM20030
		_	MFECA0**0EAD
	without B	attery Box	MFECA0**0EAM
Encoder Cable			MFECA0**0ESD
	with Batte	ery Box	MFECA0**0EAE
		,	MFECA0**0ESE
			MFMCA0**0EED
	without B	rake	MFMCD0**2ECE
Motor Cable			MFMCE0**2ECD
			MFMCA0**3ECT
	with Brak	е	MFMCA0**2FCD
Proko Cabla			MFMCA0**3FCT
Brake Cable	A frame		MFMCB0**0GET
	A-frame B-frame		DV0P4283
External	C-frame		D V OI 4200
Regenerative	D-frame		DV0P4284
Resistor	E-frame		D V OI 4204
	F-frame		DV0P4285
Reactor	DV0P220 DV0P223	), DV0P221, b, DV0P224,	DV0P225,
		', DV0P228, '0, DV0PM2	DV0PM20047 0042
Noise Filter		0, DV0PM2	
	DV0P341	0	
Surge Absorber	Single ph	ase	DV0P4190
	2 phoop		DV0P1450
Noise Filter for S	3-phase		DV0P1460

Note) 2 Because A5IIE series drivers (dedicated for position control) do not support the 17-bit absolute specification, only 20-bit incremental type can be used in combination.

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

Note) 4 When you use a 17-bit absolute encoder as an incremental encoder, please use the encoder cable MFECA0\*\*0EAD.

Note) 5 Other combinations exist, and refer to P.210 for details.

Note) 6 Reactor should be prepared by the user.

<sup>&</sup>lt;a href="cautions"></a> Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

			AC2	00 V		
Motor model	IP65			MSMJ022G1□	MSMJ022S1□	
*1		IP67		-	-	
Amalianda	Model	A5II series	S	MADKT1507		
Applicable driver *2	No.	A5IIE seri	ies	MADKT1507E	-	
anver	Fr	ame sym	bol	A-fra	ame	
Power supply	capacit	y	(kVA)	0.	.5	
Rated output			(W)	20	00	
Rated torque			(N·m)	0.	64	
Momentary Ma	ax. peal	k torque	(N·m)	1.91		
Rated current		(,	A(rms))	1.6		
Max. current		(	(A(o-p))	6.9		
Regenerative b	rake	Without	option	No limit Note)2		
frequency (times/r	nin) Note)1	DV0P4283		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	0.14		
of rotor ( $\times 10^{-4}$	kg·m²)	With b	rake	0.16		
Recommended moment of inertia ratio of the load and the rotor Note)3				30 times or less		
Rotary encoder specifications Note)5			Note)5	20-bit Incremental	17-bit Absolute	
Re	esolutio	n per sing	le turn	1048576	131072	

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

Please contact us for more information.

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

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

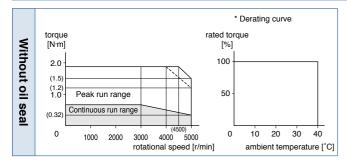
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During	Radial load P-direction (N)	245
operation	Thrust load A, B-direction (N)	98

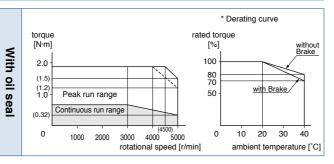
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:

200 V MSMJ 200 W [Low inertia, Small capacity]

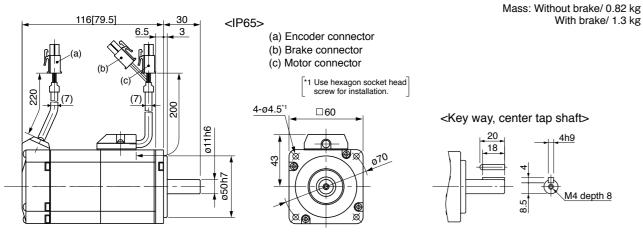
\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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





# **Dimensions**



\* Figures in [ ] represent the dimensions without brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

# **Specifications**

**Special Order Product** 

			AC200 V			
Mata:		IP65		MSMJ042G1□	MSMJ042S1	
Motor mode *	.	IP67		-	-	
Annlinable	Model	A5II serie	s	MBDK	T2510	
Applicable driver *	No.	A5IIE ser	ies	MBDKT2510E	_	
unver	Fi	rame sym	bol	B-fra	ame	
Power supp	ly capacit	у	(kVA)	0	.9	
Rated outpu	it		(W)	40	00	
Rated torqu	е		(N·m)	1.	3	
Momentary	Max. pea	k torque	(N·m)	3.8		
Rated curre	nt	(	A(rms))	2.6		
Max. curren	t		(A(o-p))	11.0		
Regenerative	e brake	Without option		No limit Note)2		
frequency (time	es/min) Note)1	DV0P4283		No limit Note)2		
Rated rotation	onal spee	d	(r/min)	3000		
Max. rotatio	nal speed		(r/min)	5000		
Moment of i	nertia	Without brake		0.26		
of rotor (×10	) <sup>-4</sup> kg·m²)	With brake		0.28		
Recommended moment of inertia ratio of the load and the rotor Note)3				30 times	s or less	
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute		
Resolution per single t				1048576	131072	

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

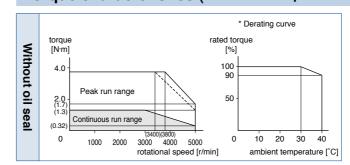
1.27 or more
50 or less
15 or less
0.36
1 or more
24±1.2

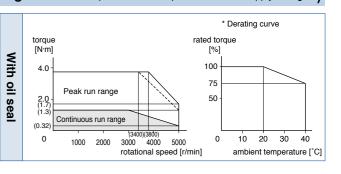
#### • Permissible load (For details, refer to P.183)

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

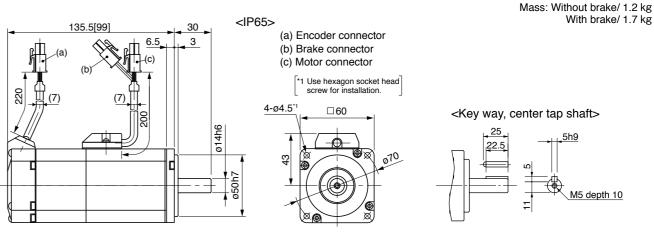
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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





# **Dimensions**



\* Figures in [ ] represent the dimensions without brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

				AC2	00 V
IP65		IP65		MSMJ082G1□	MSMJ082S1□
Motor model		IP67		-	-
Amaliaalala	Model	A5II series		MCDK	T3520
Applicable driver *2	No.	A5IIE serie	s	MCDKT3520E	_
divoi	Fr	ame symb	ol	C-fr	ame
Power supply	capacit	y	(kVA)	1.	.3
Rated output			(W)	75	50
Rated torque			(N·m)	2.4	
Momentary Max. peak torque (N·m)				7.1	
Rated current		(A	(rms))	4.0	
Max. current		(A	(o-p))	17.0	
Regenerative I	orake	Without o	ption	No limi	t Note)2
frequency (times/	min) Note)1	DV0P4	V0P4283 No limit Note)2		t Note)2
Rated rotation	Rated rotational speed (r/min)		d (r/min) 3000		00
Max. rotationa	al speed	(	r/min)	4500	
Moment of ine	ertia	Without b	orake	0.87	
of rotor (×10 <sup>-4</sup>	kg·m²)	With bra	ake	0.97	
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less		
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute	
F	Resolutio	n per single	turn	1048576	131072

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

Please contact us for more information.

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

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

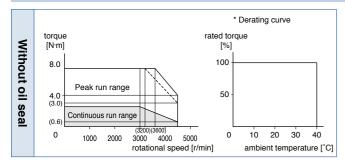
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

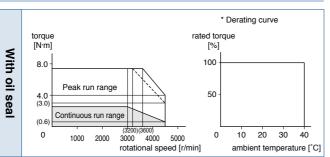
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:

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

\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

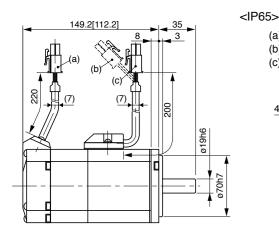
# Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)





# **Dimensions**

<Cautions>



(a) Encoder connector

- (b) Brake connector (c) Motor connector

4-ø6\*

1 Use hexagon socket head

<Key way, center tap shaft>

Mass: Without brake/ 2.3 kg

With brake/ 3.1 kg

[Unit: mm]

\* Figures in [ ] represent the dimensions without brake.

Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. 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. **Special Order Product** 

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

Please contact us for more information

# **Specifications**

				AC2	00 V	
M-4		IP65		MSME102GC□M	MSME102SC□N	
Motor mode	€I ∗1		IP67		-	-
Annlinabla		Model	A5II serie	s	MDDK	T5540
Applicable driver	*2	No.	A5IIE ser	ies	MDDKT5540E	-
anvoi		Fr	ame sym	bol	D-fr	ame
Power supp	oly o	capacity	y	(kVA)	1.	.8
Rated outp	ut			(W)	10	00
Rated torqu	ıe			(N·m)	3.	18
Momentary	Ма	x. peal	k torque	(N·m)	9.55	
Rated curre	ent		(	A(rms))	6.6	
Max. currer	nt		(	(A(o-p))	28	
Regenerativ	/e b	rake	Without option		No limit Note)2	
frequency (tin	nes/m	nin) Note)1	DV0P	4284	No limit Note)2	
Rated rotat	iona	al spee	d	(r/min)	3000	
Max. rotation	onal	speed		(r/min)	5000	
Moment of	iner	tia	Without	brake	2.03	
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )		With brake		2.35		
Recommended moment of inertia ratio of the load and the rotor Note)3				15 times or less		
Rotary encoder specifications Note)5				20-bit Incremental	17-bit Absolute	
Resolution per single turn				le turn	1048576	131072

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

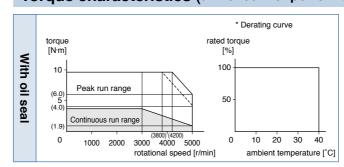
7.8 or more
50 or less
15 or less
0.81±10 %
2 or more
24±2.4

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

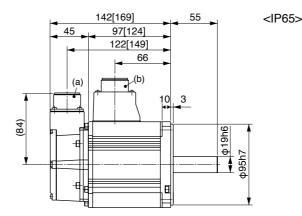
	During assembly	Radial load P-direction (N)	980
		Thrust load A-direction (N)	588
aooon	ibiy	Thrust load B-direction (N)	686
During	During operation	Radial load P-direction (N)	490
operat		Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



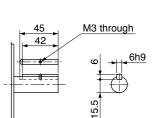
# **Dimensions**



**100** 

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

Key way dimensions



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. 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.

			AC2	00 V	
Motor model		IP65	MSME152GC□M	MSME152SC□M	
*1		IP67	_	_	
A U a a la la	Model	A5II series	MDDK	T5540	
Applicable driver *2	No.	A5IIE series	MDDKT5540E	_	
unven	Fr	ame symbol	D-fr	ame	
Power supply	capacit	y (kVA	2	.3	
Rated output		(W	15	600	
Rated torque		(N·m	4.	4.77	
Momentary M	ax. peal	k torque (N·m	14.3		
Rated current		(A(rms)	8.2		
Max. current		(A(o-p)	3	35	
Regenerative I	orake	Without option	No lim	No limit Note)2	
frequency (times/min) Note)1		DV0P4284	No limit Note)2		
Rated rotation	nal spee	d (r/min	3000		
Max. rotationa	al speed	(r/min	5000		
Moment of ine	ertia	Without brake	2.84		
of rotor (×10 <sup>-2</sup>	kg·m²)	With brake	3.17		
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less		
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute	
F	Resolutio	n per single turn	1048576	131072	

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

Please contact us for more information.

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

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

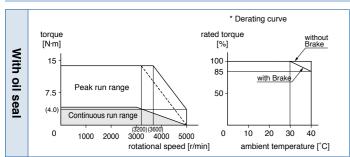
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
accombiy	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:

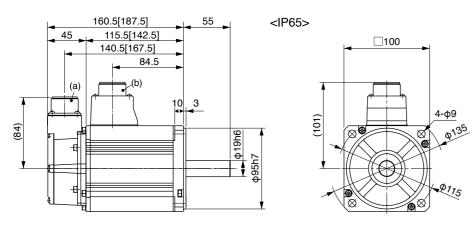
200 V MSME 1.5 kW [Low inertia, Middle capacity]

\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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

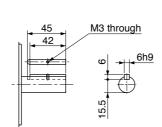


# **Dimensions**



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

Key way dimensions



[Unit: mm]

(a) Encoder connector

(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

**Special Order Product** 

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

Please contact us for more information

# **Specifications**

				AC2	00 V	
		IP65			MSME202GC□M	MSME202SC□
Motor mod	1 <b>C</b> I *1		IP67		-	-
	N	Model	A5II serie	s	MEDK	T7364
Applicable driver	*2	No.	A5IIE series		MEDKT7364E	_
unven		Fr	ame sym	bol	E-fr	ame
Power sup	ply ca	apacity	y	(kVA)	3	.3
Rated outp	out			(W)	20	00
Rated torq	ue			(N·m)	6.:	37
Momentary	у Мах	. peal	c torque	(N·m)	19.1	
Rated curr	ent		(	A(rms))	11.3	
Max. curre	nt			(A(o-p))	48	
Regenerati	ve bra	ake	Without	option	No limit Note)2	
frequency (ti	imes/mir	n) Note)1	DV0P4285 No limit No		Note)2	
Rated rota	tional	spee	d	(r/min)	3000	
Max. rotati	onal	speed		(r/min)	5000	
Moment of	inert	ia	Without brake		3.68	
of rotor (x1	10 <sup>-4</sup> k	g·m²)	With b	orake	4.0	01
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times	s or less		
Rotary encoder specifications Note)5			20-bit Incremental	17-bit Absolute		
	Res	solutio	n per sing	le turn	1048576	131072

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

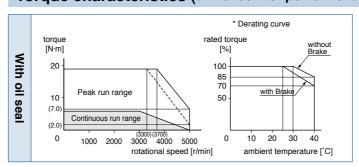
Static friction torque (N·m)	7.8 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

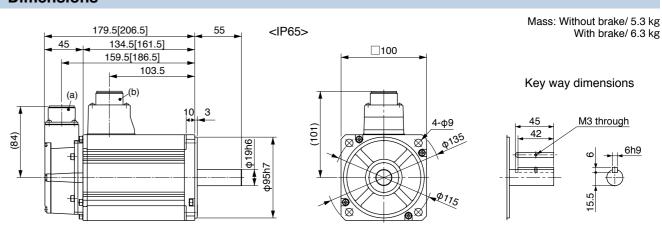
	During assembly  During operation	Radial load P-direction (N)	980
		Thrust load A-direction (N)	588
		Thrust load B-direction (N)	686
		Radial load P-direction (N)	490
		Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.44.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

160

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

200 V MSME 4.0 kW [Low inertia, Middle capacity]

**Motor Specifications** 

Please contact us for more information

# **Specifications**

			AC200 V	
Motor model		IP65	MSME302GC□M	MSME302SC□M
*1		IP67	-	_
A	Model	A5II series	MFDK	TA390
Applicable *2	No.	A5IIE series	MFDKTA390E	_
anver	Fr	ame symbol	F-fra	ame
Power supply	capacit	y (kVA)	4.	.5
Rated output		(W)	30	00
Rated torque		(N·m)	9.55	
Momentary Ma	ax. peal	k torque (N·m)	28.6	
Rated current		(A(rms))	18.1	
Max. current (A(o-p))		77		
Regenerative b	rake	Without option	No limit Note)2	
frequency (times/n	nin) Note)1	DV0P4285×2	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	6.50	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	7.85	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
Resolution per single turn			1048576	131072

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

Please contact us for more information.

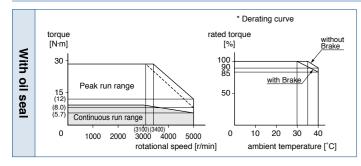
Static friction torque (N·m)	11.8 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

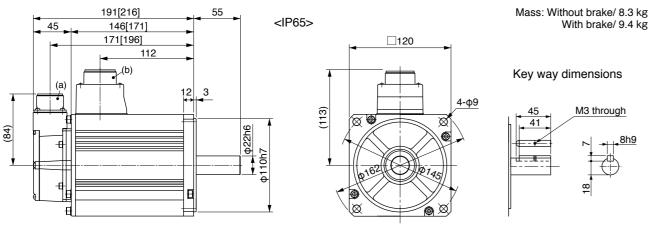
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

# **Specifications**

**Special Order Product** 

			AC2	00 V		
Motor model		IP65		MSME402GC□M	MSME402SC□N	
Motor mod	1 <b>C</b> I *1		IP67		-	-
A 1: 1-1		Model	A5II series		MFDKTB3A2	
Applicable driver	*2	No.	A5IIE ser	ies	MFDKTB3A2E	_
diivoi		Fr	ame sym	bol	F-fra	ame
Power sup	ply	capacity	y	(kVA)	6	.0
Rated outp	out			(W)	40	00
Rated torq	ue			(N·m)	12	2.7
Momentary	у Ма	ax. peal	k torque	(N·m)	38.2	
Rated current (A(rms))			19.6			
Max. current (A(o-p))			8	3		
Regenerati	ve b	rake	Without	option	No limi	t Note)2
frequency (ti	imes/n	nin) Note)1	DV0P4285×2		No limit Note)2	
Rated rota	tion	al spee	d	(r/min)	3000	
Max. rotati	ona	l speed		(r/min)	4500	
Moment of	ine	rtia	Without	brake	12.9	
of rotor (×10 <sup>-4</sup> kg·m²) With brak		rake	14.2			
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less			
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
	Resolution per sing		le turn	1048576	131072	

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

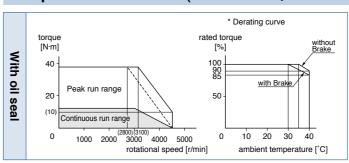
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

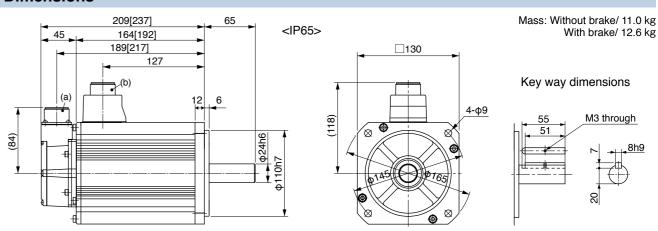
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
docombry	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

			AC200 V	
Motor model		IP65	MSME502GC□M	MSME502SC□M
*1		IP67	-	-
	Model	A5I series	MFDKTB3A2	
Applicable driver *2	No.	A5IE series	MFDKTB3A2E	-
divei	Fr	ame symbol	F-fra	ame
Power supply	capacit	y (kVA)	7.	.5
Rated output		(W)	50	00
Rated torque		(N·m)	15	5.9
Momentary M	ax. peal	k torque (N·m)	47.7	
Rated current		(A(rms))	24.0	
Max. current		(A(o-p))	102	
Regenerative b	rake	Without option	35	57
frequency (times/	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	17.4	
of rotor (×10 <sup>-4</sup>	kg·m²)	With brake	18.6	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less	
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
Resolution per single turn			1048576	131072

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

Please contact us for more information.

•	
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

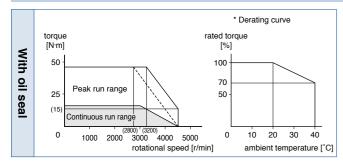
During assembly  During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:

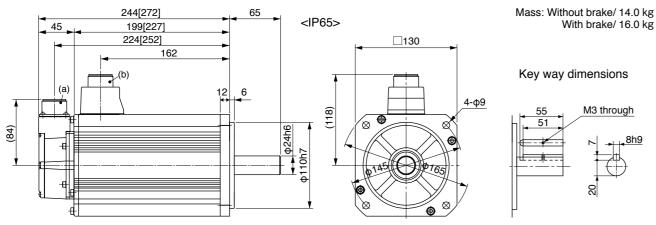
200 V MSME 5.0 kW [Low inertia, Middle capacity]

\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

163

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

**Special Order Product** 

200 V MDME 1.0 kW [Middle inertia, Middle capacity]

Please contact us for more information

# **Specifications**

				AC2	00 V
		IP65		MDME102GC□M	MDME102SC
Motor mode	el *1	IP67		-	-
A I' l. I .	Mode	A5II serie	s	MDDKT3530	
Applicable driver	*2 No.	A5IIE ser	ries	MDDKT3530E	-
unvei	I	rame sym	ibol	D-fr	ame
Power supp	oly capac	ity	(kVA)	1.	.8
Rated outp	ut		(W)	10	00
Rated torqu	ıe		(N·m)	4.	77
Momentary	Max. pe	ak torque	(N·m)	14.3	
Rated curre	ent	(	A(rms))	5.7	
Max. current (A(o-p))		24			
Regenerativ	e brake	Without	option	No limi	t Note)2
frequency (tir	nes/min) Note	DV0P	4284	No limit Note)2	
Rated rotat	ional spe	ed	(r/min)	2000	
Max. rotation	onal spee	d	(r/min)	3000	
Moment of	inertia	Without	t brake	4.60	
of rotor (×1	0 <sup>-4</sup> kg·m <sup>2</sup>	With b	orake	5.90	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times	s or less	
Rotary encoder specifications Note)5  Resolution per single turn		20-bit Incremental	17-bit Absolute		
		on per sind	ıle turn	1048576	131072

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

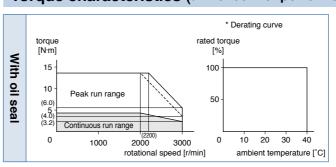
Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

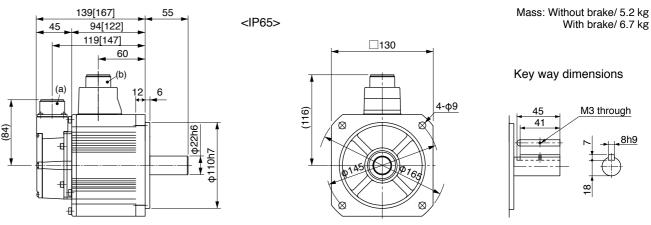
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

			AC200 V		
				MDME152GC□M	MDME152SC□M
Motor model *1		IP67		-	_
	Model	A5II series		MDDK	T5540
Applicable driver *2	No.	A5IIE series		MDDKT5540E	_
divei	Fr	ame syml	ool	D-fr	ame
Power supply	capacit	y	(kVA)	2	.3
Rated output			(W)	15	00
Rated torque			(N·m)	7.16	
Momentary Ma	ax. peal	k torque	(N·m)	21.5	
Rated current		(/	A(rms))	9.4	
Max. current (A(o-p))			40		
Regenerative b	rake	Without	option	No limi	t Note)2
frequency (times/	min) Note)1	DV0P4	1284	No limit Note)2	
Rated rotation	al spee	d	(r/min)	2000	
Max. rotationa	ıl speed		(r/min)	3000	
Moment of ine	rtia	Without	brake	6.70	
of rotor (×10 <sup>-4</sup>	kg·m²)	With b	rake	7.99	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encoder specifications Note)5			Note)5	20-bit Incremental	17-bit Absolute
Resolution per single turn			e turn	1048576	131072

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

Please contact us for more information.

13.7 or more
100 or less
50 or less
0.79±10 %
2 or more
24±2.4

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

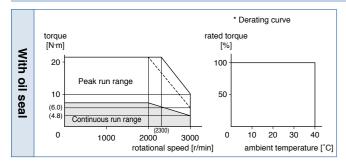
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:

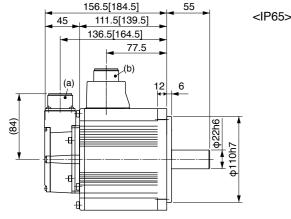
200 V MDME 1.5 kW [Middle inertia, Middle capacity]

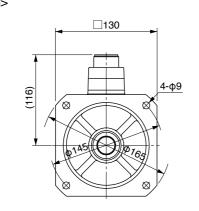
\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



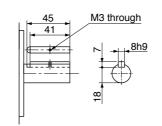
# **Dimensions**





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

Key way dimensions



(a) Encoder connector

(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

**Special Order Product** 

# 200 V MDME 2.0 kW [Middle inertia, Middle capacity]

# Please contact us for more information

# **Specifications**

					AC200 V		
Matanasalal		IP65		MDME202GC□M	MDME202SC□N		
Motor mode	€I ∗1		IP67		-	-	
		Model	A5II serie	S	MEDK	T7364	
Applicable driver	*2	No.	A5IIE series		MEDKT7364E	_	
unven		Fr	ame sym	bol	E-fra	ame	
Power supp	oly c	apacit	y	(kVA)	3	.3	
Rated outp	ut			(W)	20	00	
Rated torqu	ıe			(N·m)	9.	55	
Momentary	Ма	x. peal	k torque	(N·m)	28.6		
Rated curre	ent		(	A(rms))	11.5		
Max. currer	nt		(	(A(o-p))	49		
Regenerativ	/e br	ake	Without option		No limit Note)2		
frequency (tin	nes/m	in) Note)1	DV0P4285		No limit Note)2		
Rated rotat	iona	al spee	d	(r/min)	2000		
Max. rotation	onal	speed		(r/min)	3000		
Moment of	iner	tia	Without brake		8.72		
of rotor ( $\times 10^{-4} \text{ kg} \cdot \text{m}^2$ )		With brake		10.0			
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less				
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute			
Resolution per single tu			le turn	1048576	131072		

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

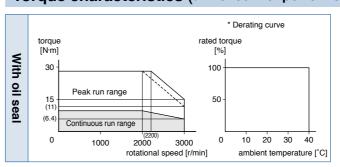
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

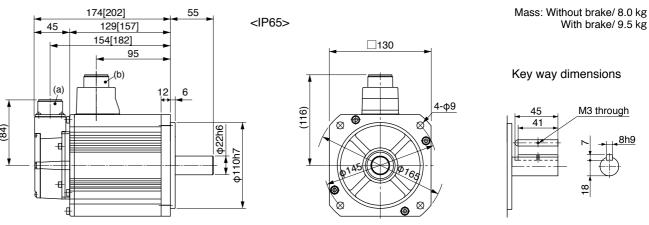
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
docombry	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

**AC200 V** MDME302GC M MDME302SC M IP65 Motor model IP67 Model A5I series MFDKTA390 Applicable A5IIE series MFDKTA390E driver Frame symbol F-frame Power supply capacity (kVA) 4.5 (W) 3000 Rated output Rated torque (N·m) 14.3 Momentary Max. peak torque (N·m) 43.0 17.4 (A(rms)) Rated current 74 Max. current (A(o-p)) Without option No limit Note)2 Regenerative brake frequency (times/min) Note)1 DV0P4285×2 No limit Note)2 Rated rotational speed (r/min) 2000 Max. rotational speed 3000 (r/min) Without brake 12.9 Moment of inertia of rotor (×10<sup>-4</sup> kg·m<sup>2</sup>) With brake 14.2 Recommended moment of inertia 10 times or less ratio of the load and the rotor 20-bit 17-bit Rotary encoder specifications Absolute Incremental Resolution per single turn 1048576 131072

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

Please contact us for more information.

16.2 or more
110 or less
50 or less
0.90±10 %
2 or more
24±2.4

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

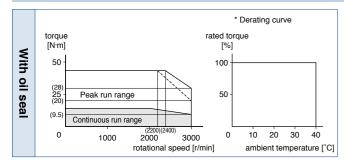
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
accombiy	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:

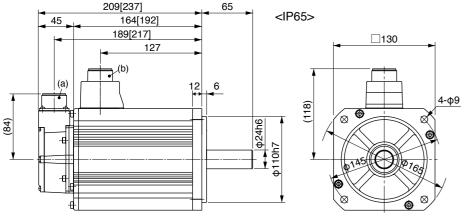
200 V MDME 3.0 kW [Middle inertia, Middle capacity]

\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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

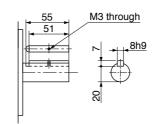


# **Dimensions**



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

Key way dimensions



(a) Encoder connector

(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

167

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

**Special Order Product** 

200 V MDME 4.0 kW [Middle inertia, Middle capacity]

Please contact us for more information

# **Specifications**

				AC200 V			
Motor model		IP65			MDME402GC□M	MDME402SC N	
	ÐI ∗1		IP67		-	-	
A II l. l .		Model	del A5II series		MFDK	TB3A2	
Applicable driver *	<b>*</b> 2	No.	A5IIE series		MFDKTB3A2E	_	
unven		Fr	ame sym	bol	F-fr	ame	
Power supp	oly c	apacit	y	(kVA)	6	.0	
Rated outpo	ut			(W)	40	00	
Rated torqu	ıe			(N·m)	19	).1	
Momentary	Ма	x. peal	torque	(N·m)	57.3		
Rated curre	ent		(	A(rms))	21.0		
Max. currer	nt			(A(o-p))	89		
Regenerativ	e br	ake	Without option No limit Note)2		it Note)2		
frequency (tin	nes/m	in) Note)1	DV0P4285×2		No limit Note)2		
Rated rotat	iona	l spee	d	(r/min)	2000		
Max. rotation	onal	speed		(r/min)	3000		
Moment of	iner	tia	Without brake		37.6		
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )		With b	orake	38	3.6		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less				
Rotary encoder specifications Note)5  Resolution per single turn			20-bit Incremental	17-bit Absolute			
			n per sino	le turn	1048576	131072	

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

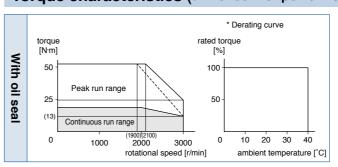
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

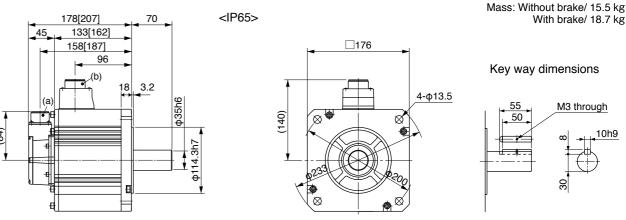
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
accombiy	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

			AC200 V		
Motor model		IP65	MDME502GC□M	MDME502SC□M	
*1		IP67	-	-	
Amaliaahla	Model	A5I series	MFDKTB3A2		
Applicable *2	No.	A5IIE series	MFDKTB3A2E	_	
divei	Fr	ame symbol	F-fra	ame	
Power supply	capacity	y (kVA)	7.	.5	
Rated output		(W)	50	00	
Rated torque		(N·m)	23.9		
Momentary Ma	ax. peal	k torque (N·m)	71.6		
Rated current		(A(rms))	25.9		
Max. current		(A(o-p))	11	110	
Regenerative b	rake	Without option	12	20	
frequency (times/i	nin) 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	48.0		
of rotor (×10 <sup>-4</sup>	kg·m²)	With brake	48.8		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encode	Rotary encoder specifications Note)5			17-bit Absolute	
R	Resolution per single turn			131072	

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

Please contact us for more information.

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

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

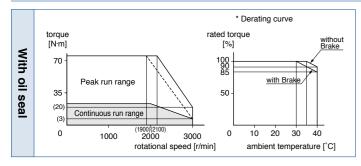
	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N)	784
accombiy	Thrust load B-direction (N)	980
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:

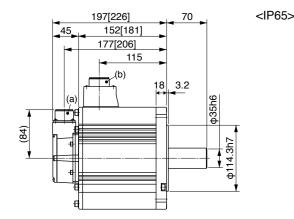
200 V MDME 5.0 kW [Middle inertia, Middle capacity]

\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



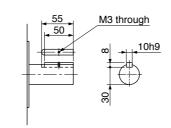
# **Dimensions**



4-φ13.5

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

Key way dimensions



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

**Special Order Product** 

200 V MGME 0.9 kW [Middle inertia, Middle capacity]

Please contact us for more information

# **Specifications**

				AC2	00 V
Materia	-1	IP65		MGME092GC□M	MGME092SC□N
Motor mode	el *1	IP67		-	-
A I' l. l .	Mod	el A5II serie	es .	MDDK	T5540
Applicable driver	*2 No.	A5IIE se	ries	MDDKT5540E	-
unvei		Frame sym	ibol	D-fr	ame
Power supp	oly capa	city	(kVA)	1	.8
Rated outp	ut		(W)	90	00
Rated torqu	ıe		(N·m)	8.	59
Momentary	Max. pe	ak torque	(N·m)	19	).3
Rated curre	ent	(	(A(rms))	7.6	
Max. currer	nt		(A(o-p))	24	
Regenerativ	e brake	Without	option	No limit Note)2	
frequency (tin	nes/min) No	e)1 DV0P	DV0P4284 No limit Note		t Note)2
Rated rotat	ional sp	eed	(r/min)	1000	
Max. rotation	onal spe	ed	(r/min)	2000	
Moment of	inertia	Withou	t brake	6.70	
of rotor (×1	0 <sup>-4</sup> kg·m	2) With I	orake	7.99	
Recommended moment of inertia ratio of the load and the rotor		rtia Note)3	10 times or less		
Rotary enco	oder spe	cifications	Note)5	20-bit Incremental	17-bit Absolute
	Resolu	tion per sind	ale turn	1048576	131072

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

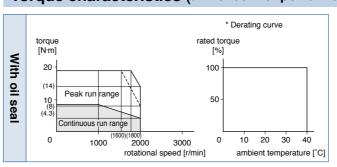
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

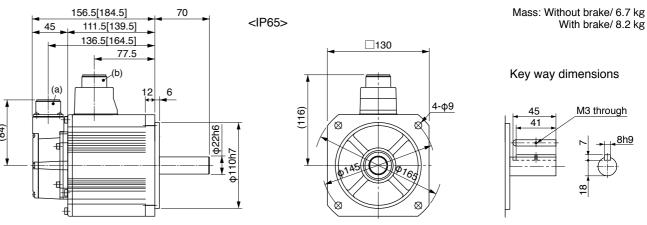
		Radial load P-direction (N)	980
	During assembly During operation	Thrust load A-direction (N)	588
		Thrust load B-direction (N)	686
		Radial load P-direction (N)	686
		Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

200 V MGME 2.0 kW [Middle inertia, Middle capacity]

Please contact us for more information.

# **Specifications**

			AC2	00 V
		IP65	MGME202GC□M	MGME202SC□M
Motor model		IP67	-	-
A 15 1-1	Model	A5I series	MFDK	TA390
Applicable driver *2	No.	A5IE series	MFDKTA390E	_
divei	Fr	ame symbol	F-fra	ame
Power supply	capacit	y (kVA)	3	.8
Rated output		(W)	20	00
Rated torque		(N·m)	19	).1
Momentary Ma	ax. peal	k torque (N·m)	47.7	
Rated current		(A(rms))	17.0	
Max. current		(A(o-p))	60	
Regenerative b	rake	Without option	No limi	t Note)2
frequency (times/	min) Note)1	DV0P4285×2	No limit Note)2	
Rated rotation	al spee	d (r/min)	1000	
Max. rotationa	l speed	(r/min)	2000	
Moment of ine	rtia	Without brake	30.3	
of rotor (×10 <sup>-4</sup>	kg·m²)	With brake	31.4	
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less		
Rotary encode	er speci	fications Note)5	20-bit Incremental	17-bit Absolute
R	esolutio	n per single turn	1048576	131072

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

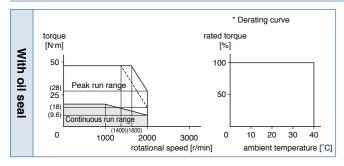
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

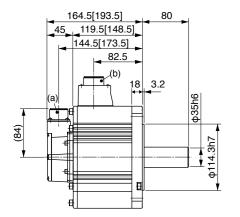
	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N)	784
accombiy	Thrust load B-direction (N)	980
During	Radial load P-direction (N)	1176
operation	Thrust load A, B-direction (N)	490

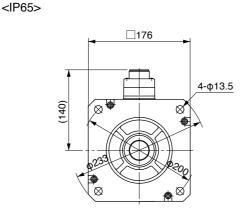
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



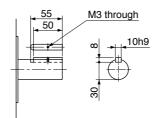
# **Dimensions**





Mass: Without brake/ 14.0 kg With brake/ 17.5 kg

Key way dimensions



- (a) Encoder connector
- (b) Motor/Brake connector
- $^{\star}$  Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

171

# **Special Order Product**

# 200 V MGME 3.0 kW [Middle inertia, Middle capacity]

# A5 Family

Motor Specifications

• Please contact us for more information

# **Specifications**

				AC2	00 V	
		IP65		MGME302GC□M	MGME302SC□N	
Motor mode	:1	IP67		-	-	
A 1: 1-1	Model	A5II serie	S	MFDK	ТВЗА2	
Applicable driver *	No.	A5IIE ser	ies	MFDKTB3A2E	_	
unven	Fr	ame sym	bol	F-fra	ame	
Power supp	ly capacit	y	(kVA)	4.	.5	
Rated outpu	ut		(W)	30	00	
Rated torqu	е		(N·m)	28	3.7	
Momentary	Max. peal	k torque	(N·m)	71	71.7	
Rated curre	nt	(	A(rms))	22.6		
Max. curren	t	(	(A(o-p))	80		
Regenerative	e brake	Without	Without option No limit Note)2		t Note)2	
frequency (tim	es/min) Note)1	DV0P4285×2		No limit Note)2		
Rated rotati	onal spee	d	(r/min)	1000		
Max. rotatio	nal speed		(r/min)	2000		
Moment of i	nertia	Without	brake	48	3.4	
of rotor (×10	) <sup>-4</sup> kg·m²)	With b	rake	49.2		
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times	s or less			
Rotary enco	der speci	fications	Note)5	20-bit Incremental	17-bit Absolute	
Resolution		n per sing	le turn	1048576	131072	

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

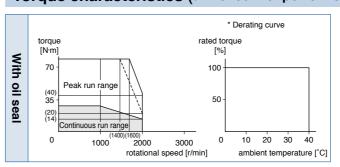
,
58.8 or more
150 or less
50 or less
1.4±10 %
2 or more
24±2.4

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

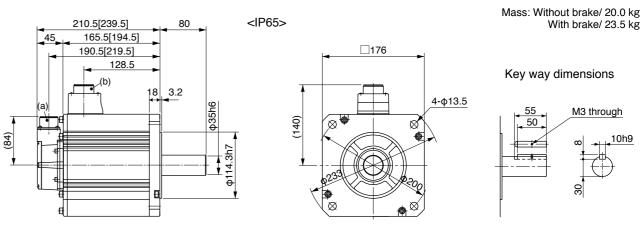
<b>.</b>	Radial load P-direction (N)	2058
During assembly	Thrust load A-direction (N)	980
assembly	Thrust load B-direction (N)	1176
During	Radial load P-direction (N)	1470
operation	Thrust load A, B-direction (N)	490

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

172

A5 Family

Series

Inform

200 V MHMJ 400 W [High inertia, Small capacity]

# **Specifications**

				AC2	00 V	
Matanasalal		IP65		MHMJ022G1□	MHMJ022S1□	
Motor model *1		IP67		-	-	
A U a a la la	Model	A5II series	;	MADK	T1507	
Applicable driver *2	No.	A5IIE seri	es	MADKT1507E	_	
unvoi	Fr	ame symb	ool	A-fr	ame	
Power supply	capacit	y	(kVA)	0	.5	
Rated output			(W)	20	00	
Rated torque			(N·m)	0.	64	
Momentary M	ax. peal	k torque	(N·m)	1.91		
Rated current		(/	A(rms))	1.6		
Max. current		(	A(o-p))	6.9		
Regenerative I	orake	Without	option	No limit Note)2		
frequency (times/	min) Note)1	DV0P4	1283	No limit Note)2		
Rated rotation	nal spee	d	(r/min)	30	3000	
Max. rotationa	al speed		(r/min)	5000		
Moment of ine	ertia	Without	brake	0.42		
of rotor (×10 <sup>-4</sup>	kg·m²)	With b	rake	0.45		
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less				
Rotary encode	er speci	fications	Note)5	20-bit Incremental	17-bit Absolute	
F	Resolutio	n per singl	e turn	1048576	131072	

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

Please contact us for more information.

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

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

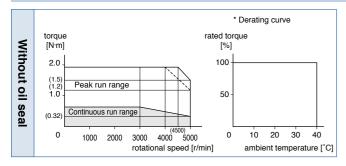
During assembly During	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
	Radial load P-direction (N)	245
operation	Thrust load A, B-direction (N)	98

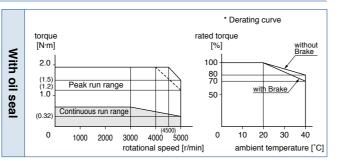
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:

200 V MHMJ 200 W [High inertia, Small capacity]

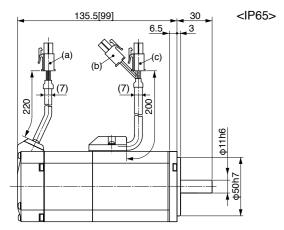
\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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





# **Dimensions**



(a) Encoder connector

(b) Brake connector

(c) Motor connector

<Key way, center tap shaft>

\* Figures in [ ] represent the dimensions without brake.

[Unit: mm]

Mass: Without brake/ 0.96 kg

With brake/ 1.4 kg

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

**Special Order Product** 

Please contact us for more information

# **Specifications**

			AC2	00 V	
Matanaaa		IP65		MHMJ042G1□	MHMJ042S1
Motor mode	el *1	IP67		-	-
	Mod	A5II serie	s	MBDK	T2510
Applicable driver	*2 No.	A5IIE se	ries	MBDKT2510E	_
unven		Frame sym	ibol	B-fra	ame
Power supp	oly capa	city	(kVA)	0	.9
Rated outp	ut		(W)	40	00
Rated torqu	ıe		(N·m)	1.	.3
Momentary	Max. pe	ak torque	(N·m)	3.8	
Rated curre	ent	(	(A(rms))	2.6	
Max. current (A(o-p))		11.0			
Regenerativ	e brake	Without	option	No limit Note)2	
frequency (tir	nes/min) Not	DV0P	4283	No limit Note)2	
Rated rotat	ional spe	ed	(r/min)	3000	
Max. rotation	onal spe	ed	(r/min)	5000	
Moment of	inertia	Withou	t brake	0.67	
of rotor (×1	0 <sup>-4</sup> kg·m	With b	orake	0.70	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times	s or less		
Rotary encoder specifications  Resolution per single		Note)5	20-bit Incremental	17-bit Absolute	
		ion per sinc	ale turn	1048576	131072

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

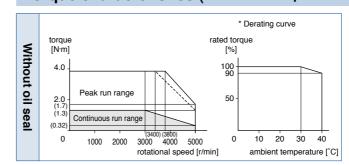
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2
3 3 3 3 5 5 6 7 7	

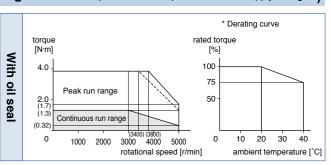
#### • Permissible load (For details, refer to P.183)

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

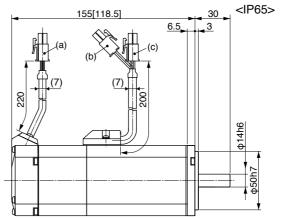
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.42.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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





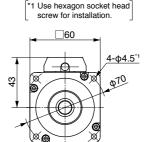
# **Dimensions**



(a) Encoder connector

(b) Brake connector

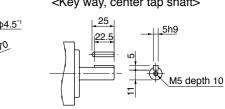
(c) Motor connector



<Key way, center tap shaft>

Mass: Without brake/ 1.4 kg

With brake/ 1.8 kg



\* Figures in [ ] represent the dimensions without brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

200 V MHME 1.0 kW [High inertia, Middle capacity]

Please contact us for more information

# **Specifications**

				AC2	00 V
		MHMJ082G1□	MHMJ082S1□		
Motor model *1		IP67		-	-
A U a a la la	Model	A5II series		MCDKT3520	
Applicable driver *2	No.	A5IIE seri	ies	MCDKT3520E	_
unven	Fr	ame sym	bol	C-fr	ame
Power supply	capacit	y	(kVA)	1.	.3
Rated output			(W)	75	50
Rated torque			(N·m)	2	.4
Momentary Max. peak torque (N·m)		7.1			
Rated current (A(rms))		4.0			
Max. current (A(o-p))		17.0			
Regenerative brake Without option		No limit Note)2			
frequency (times/	min) Note)1	DV0P	4283 No limit Note)2		t Note)2
Rated rotation	nal spee	d	(r/min)	3000	
Max. rotationa	al speed		(r/min)	4500	
Moment of ine	ertia	Without	brake	1.51	
of rotor (×10 <sup>-4</sup>	kg·m²)	With b	rake	1.61	
Recommended moment of inertia ratio of the load and the rotor Note)3		20 times or less			
Rotary encode	er speci	fications	Note)5	20-bit Incremental	17-bit Absolute
F	Resolutio	n per sing	le turn	1048576	131072

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

Please contact us for more information.

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

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

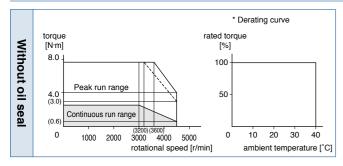
During assembly During	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
	Radial load P-direction (N)	392
operation	Thrust load A, B-direction (N)	147

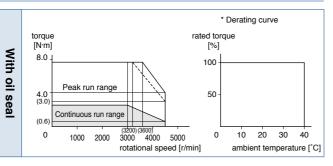
- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:

200 V MHMJ 750 W [High inertia, Small capacity]

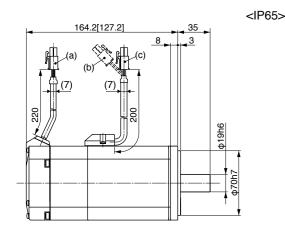
\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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





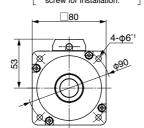
# **Dimensions**

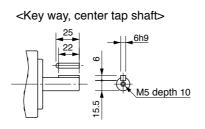


(a) Encoder connector

- (b) Brake connector
- (c) Motor connector

1 Use hexagon socket head screw for installation.





Mass: Without brake/ 2.5 kg

With brake/ 3.5 kg

\* Figures in [ ] represent the dimensions without brake.

[Unit: mm]

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products. Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan. **Special Order Product** 

# **Specifications**

				AC2	00 V	
Motor mode	, I	IP65		MHME102GC□M	MHME102SC□M	
	:1	IP67		-	_	
A 1: 1-1 -	Model	A5II serie	A5II series		DDKT3530	
Applicable driver *	No.	A5IIE ser	ies	MDDKT3530E	-	
divoi	Fi	rame sym	bol	D-fr	ame	
Power supp	ly capacit	у	(kVA)	1.	.8	
Rated outpu	ut		(W)	10	00	
Rated torqu	е		(N·m)	4.	77	
Momentary	Max. pea	k torque	(N·m)	14.3		
Rated curre	nt	(	A(rms))	5.7		
Max. current (A(o-p))		24				
Regenerativ	e brake	Without	option	83		
frequency (tim	nes/min) Note)1	DV0P4284		No limit Note)2		
Rated rotati	onal spee	d	(r/min)	2000		
Max. rotatio	nal speed		(r/min)	3000		
Moment of i	inertia	Without	brake	24.7		
of rotor (×10 <sup>-4</sup> kg·m <sup>2</sup> )		With b	orake	26.0		
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times	or less			
Rotary encoder specifications Note)5		Note)5	20-bit Incremental	17-bit Absolute		
	Resolutio	n per sing	le turn	1048576	131072	

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

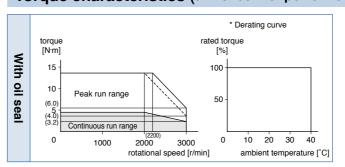
Static friction torque (N·m)	4.9 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	70 or less
Exciting current (DC) (A)	0.59±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

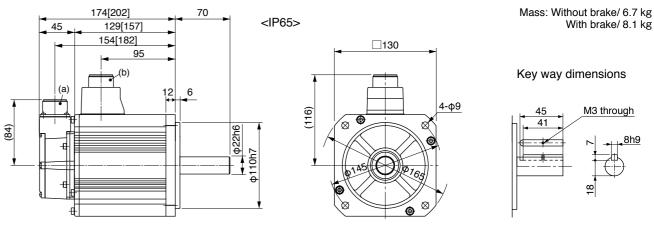
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
accombiy	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

				AC2	00 V
Motor model			MHME152GC□M	MHME152SC□M	
*1		IP67		-	_
Amaliaalala	Model	A5II series		MDDKT5540	
Applicable driver *2	No.	A5IIE series		MDDKT5540E	_
unvoi	Fr	ame symbol		D-fr	ame
Power supply	capacit	y (kVA	١)	2	.3
Rated output		(V)	/)	15	00
Rated torque		(N·m	1)	7.	16
Momentary Max. peak torque (N·m)		1)	21.5		
Rated current (A(rms))		))	9.4		
Max. current (A(o-p))		))	40		
Regenerative b	orake	Without option	ı	22	
frequency (times/	min) Note)1	DV0P4284		130	
Rated rotation	al spee	d (r/mir	1)	2000	
Max. rotationa	al speed	(r/mir	1)	3000	
Moment of ine	ertia	Without brake	:	37.1	
of rotor (×10 <sup>-4</sup>	kg·m²)	With brake		38.4	
Recommended moment of inertia ratio of the load and the rotor Note)3		3	5 times or less		
Rotary encode	er speci	fications Note)	5	20-bit Incremental	17-bit Absolute
R	esolutio	n per single turn		1048576	131072

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

Please contact us for more information.

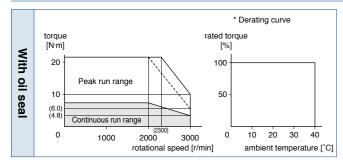
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

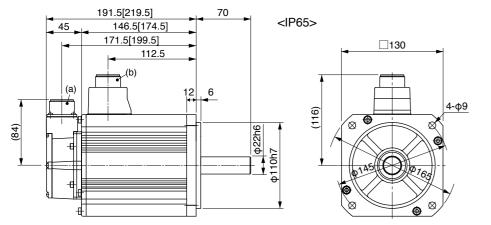
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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

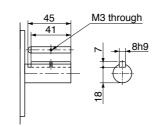


# **Dimensions**



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

Key way dimensions



(a) Encoder connector

(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

# **Special Order Product**

# **Specifications**

			AC2	00 V		
Mataumanda		IP65		MHME202GC□M	MHME202SC M	
Motor mode		IP67		-	-	
A II I- I -	Model	A5II series	S	MEDK	T7364	
Applicable driver *	No.	A5IIE ser	ies	MEDKT7364E	_	
diivei	Fr	ame sym	bol	E-fra	ame	
Power supp	ly capacit	y	(kVA)	3	.3	
Rated outpu	ıt		(W)	20	00	
Rated torqu	е		(N·m)	9.	55	
Momentary	Max. peal	k torque	(N·m)	28	28.6	
Rated curre	nt	(.	A(rms))	11.1		
Max. curren	t	(	(A(o-p))	4	7	
Regenerative	e brake	Without	option	45		
frequency (tim	es/min) Note)1	DV0P4285		142		
Rated rotation	onal spee	d	(r/min)	2000		
Max. rotatio	nal speed		(r/min)	3000		
Moment of i	nertia	Without	brake	57.8		
of rotor (×10	) <sup>-4</sup> kg·m²)	With b	rake	59.6		
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times	or less			
Rotary enco	Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute		
	Resolutio	n per sing	le turn	1048576	131072	

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

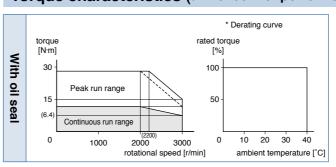
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

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

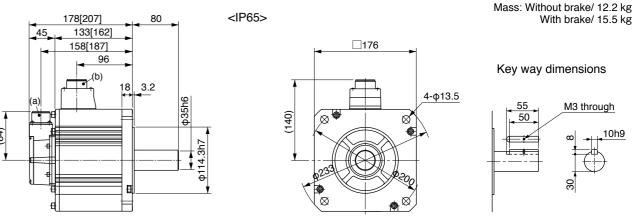
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
accombiy	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.43.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

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



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

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

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

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

**A5 Family** 

**Motor Specifications** 

# **Specifications**

			AC2	00 V
Motor model		MHME302GC□M	MHME302SC□M	
*1		IP67	-	-
Amaliaalala	Model	A5II series	MFDK	TA390
Applicable *2	No.	A5IIE series	MFDKTA390E	_
divei	Fr	ame symbol	F-fra	ame
Power supply	capacity	y (kVA)	4.	.5
Rated output		(W)	30	00
Rated torque		(N·m)	14	.3
Momentary Max. peak torque (N·m)		43.0		
Rated current (A(rms))		16.0		
Max. current (A(o-p))		68		
Regenerative b	rake	Without option	19	
frequency (times/n	nin) Note)1	DV0P4285×2	142	
Rated rotation	al spee	d (r/min)	2000	
Max. rotationa	speed	(r/min)	3000	
Moment of ine	rtia	Without brake	90.5	
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	92.1	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less		
Rotary encoder specifications Note)5		fications Note)5	20-bit Incremental	17-bit Absolute
Re	esolutio	n per single turn	1048576	131072

• Brake specifications (For details, refer to P.183) /This brake will be released when it is energized.) Do not use this for braking the motor in motion.

Please contact us for more information.

1	,
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

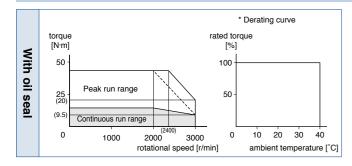
During assembly Thr  During Rac	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:

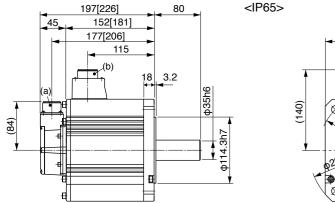
200 V MHME 3.0 kW [High inertia, Middle capacity]

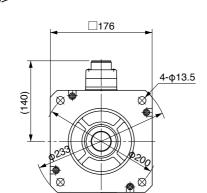
\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

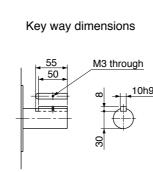
# Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



# **Dimensions**







Mass: Without brake/ 16.0 kg

With brake/ 19.2 kg

(a) Encoder connector

(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

Reduce the moment of inertia ratio if high speed response operation is required. <Cautions> Dimensions are subject to change without notice. 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. **Special Order Product** 

200 V MHME 4.0 kW [High inertia, Middle capacity]

Please contact us for more information

# **Specifications**

				AC2	00 V	
		IP65		MHME402GC□M	MHME402SC I	
Motor mod	*1		IP67		-	-
	Mod	del	A5II serie	S	MFDK	ТВЗА2
Applicable driver	*2 No.		A5IIE ser	ies	MFDKTB3A2E	-
unven		Fr	ame sym	bol	F-fra	ame
Power sup	ply capa	acity	/	(kVA)	6	.0
Rated outp	out			(W)	40	00
Rated torq	ue			(N·m)	19	).1
Momentary	у Мах. р	eak	torque	(N·m)	57.3	
Rated curr	ent		(	A(rms))	21.0	
Max. current (A(o-p))			89			
Regenerati	ve brake	,	Without	option	17	
frequency (ti	imes/min) No	ote)1	DV0P4285×2		125	
Rated rota	tional sp	ee	d	(r/min)	2000	
Max. rotati	onal spe	eed		(r/min)	3000	
Moment of	inertia		Without	brake	112	
of rotor (x1	IO <sup>-4</sup> kg∙n	n²)	With b	orake	114	
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times	or less			
Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute			
Resolution per single turn				le turn	1048576	131072

• Brake specifications (For details, refer to P.183) /This brake will be released when it is energized.\ Do not use this for braking the motor in motion.

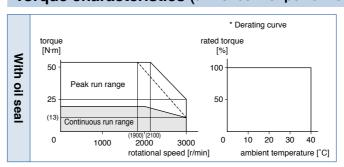
Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.183)

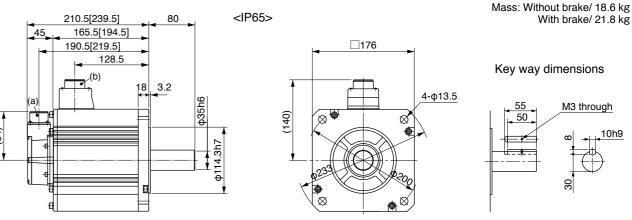
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:
- \*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

# Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



# **Dimensions**



(a) Encoder connector

(b) Motor/Brake connector

\* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

**Motor Specification** Description

# **Specifications**

			AC2	00 V	
Motor model			MHME502GC□M	MHME502SC□M	
WIOTOT MODE!		IP67	-	-	
Mode		A5II series	MFDKTB3A2		
Applicable driver *2	No.	A5IIE series	MFDKTB3A2E	-	
unver	Fr	ame symbol	F-fra	ame	
Power supply	Power supply capacity (kVA)			.5	
Rated output		(W)	50	00	
Rated torque		(N·m)	23	3.9	
Momentary Ma	Momentary Max. peak torque (N·m)			71.6	
Rated current		(A(rms))	25.9		
Max. current		(A(o-p))	110		
Regenerative b	rake	Without option	10		
frequency (times/i	min) Note)1	DV0P4285×2	76		
Rated rotation	al spee	d (r/min)	2000		
Max. rotationa	l speed	(r/min)	3000		
Moment of ine	rtia	Without brake	162		
of rotor ( $\times 10^{-4}$	kg·m²)	With brake	164		
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less			
Rotary encode	Rotary encoder specifications Note)5		20-bit Incremental	17-bit Absolute	
R	esolutio	n per single turn	1048576	131072	

• Brake specifications (For details, refer to P.183) This brake will be released when it is energized. Do not use this for braking the motor in motion.

Please contact us for more information.

Static friction torque (N·m)	24.5 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.3±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

Permissible load (For details, refer to P.183)

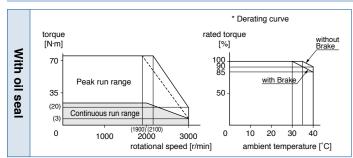
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note 1 to Note 5, refer to P.182, P.183.
- · Dimensions of Driver, refer to P.45.
- \*1 Motor specifications:

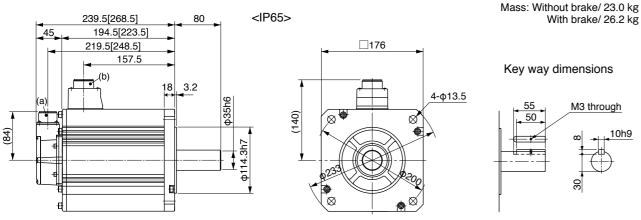
200 V MHME 5.0 kW [High inertia, Middle capacity]

\*2 The product that the end of driver model designation has "E" is "Position control type". Detail of model designation, refer to P.152.

# Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



# **Dimensions**



- (a) Encoder connector
- (b) Motor/Brake connector
- \* Figures in [ ] represent the dimensions with brake.

[Unit: mm]

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

# Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

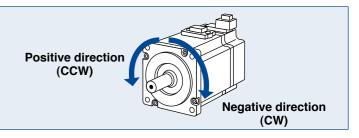
# **Environmental Conditions**

Item		Conditions	
Ambient ter	mperature *1	0 °C to 40 °C (free from freezing)	
Ambient hu	midity	20 % to 85 % RH (free from condensation)	
Storage ten	nperature *2	-20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation <sup>⁺5</sup> )	
Storage hu	midity	20 % to 85 % RH (free from condensation <sup>-5</sup> )	
Vibration Motor only		50 W to 5.0 kW : Lower than 49 m/s² (5 G) at running, 24.5 m/s² (2.5 G) at stall 6.0 kW to 15.0 kW : Lower than 24.5 m/s² (2.5 G) at running, 24.5 m/s² (2.5 G) at stall	
Impact Motor only Lower than 98 m/s² (10 G)		Lower than 98 m/s <sup>2</sup> (10 G)	
		MSMD, MHMD, MSMJ, MHMJ (except rotating portion of output shaft and readwire end.)	
Enclosure rating (Motor	IP65 *3	M * ME (IP65 motor: 0.9 kW or more) (except rotating portion of output shaft and connecting pin part of the motor connector and the encoder connector)	
only)	IP67 *3*4	M * ME IP67 motor  (except rotating portion of output shaft and connecting pin part of the motor connector and the encoder connector)	
Altitude		Lower than 1000 m	

- \*1 Ambient temperature to be measured at 5 cm away from the motor.
- \*2 Permissible temperature for short duration such as transportation.
- \*3 These motors conform to the test conditions specified in EN standards (EN60529, EN60034-5). Do not use these motors in application where water proof performance is required such as continuous wash-down operation.
- \*4 This condition is applied when the connector mounting screw are tightened to the recommended tightening torque.
- \*5 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

#### <Note>

Initial setup of rotational direction: positive = CCW and negative = CW. Pay an extra attention.



# Notes on [Motor specification] page

# Note) 1. [At AC100 V of power voltage]

Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defines as 1/(m+1), where m=load moment of inertia/ rotor moment of inertia.
- When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is AC115 V (at 100 V of the main voltage). If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.
- · When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

### [At AC200 V of power voltage]

Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defines as 1/(m+1), where m=load moment of inertia/ rotor moment of inertia.
- · When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is AC230 V (at 200 V of the main voltage). If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.
- · When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

# A5 Family Motor Specification

Description

# [At AC400 V of power voltage]

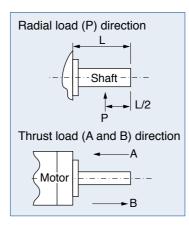
Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defines as 1/(m+1), where m=load moment of inertia/ rotor moment of inertia.
- When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is AC460 V (at 400 V of the main voltage). If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/460) relative to the value in the table.
- When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
- Note) 2. If the effective torque is within the rated torque, there is no limit in generative brake.
- Note) 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
- Note) 4. Releasing time values represent the ones with DC-cutoff using a varistor.
- Note) 5. The 17-bit absolute encoder can also be used as a 17-bit incremental encoder.

# **Permissible Load at Output Shaft**

The radial load is defined as a load applied to the output shaft in the right-angle direction. This load is generated when the gear head is coupled to the machine using a chain, belt, etc., but not when the gear head is directly connected to the coupling. As shown in the right figure, the permissible value is determined based on the load applied to the L/2 position of the output shaft. The thrust load is defined as a load applied to the output shaft in the axial direction.

Because the radial load and thrust load significantly affect the life of the bearing, take care not to allow the load during operation to exceed the permissible radial load and thrust load shown in the table below.



# **Built-in Holding Brake**

In the applications where the motor drives the vertical axis, this brake would be used to hold and prevent the work (moving load) from falling by gravity while the power to the servo is shut off.

Use this built-in brake for "Holding" purpose only, that is to hold the stalling status. Never use this for "Brake" purpose to stop the load in motion.

# Output Timing of BRK-OFF Signal

- For the brake release timing at power-on, or braking timing at Servo-OFF/Servo-Alarm while the motor is in motion, refer to the Operating Instructions (Overall).
- With the parameter, Pr4.38 (Setup of mechanical brake action while the motor is in motion), you can set up a time between when the motor enters to a free-run from energized status and when BRK-OFF signal turns off (brake will be engaged), when the Servo-OFF or alarm occurs while the motor is in motion. For details, download a copy of the instruction manual from our website.

#### -Notos

- 1. The lining sound of the brake (chattering and etc.) might be generated while running the motor with built-in brake, however this does not affect any functionality.
- 2. Magnetic flux might be generated through the motor shaft while the brake coil is energized (brake is open). Pay an extra attention when magnetic sensors are used nearby the motor.

183

# · Specifications of Built-in Holding Brake

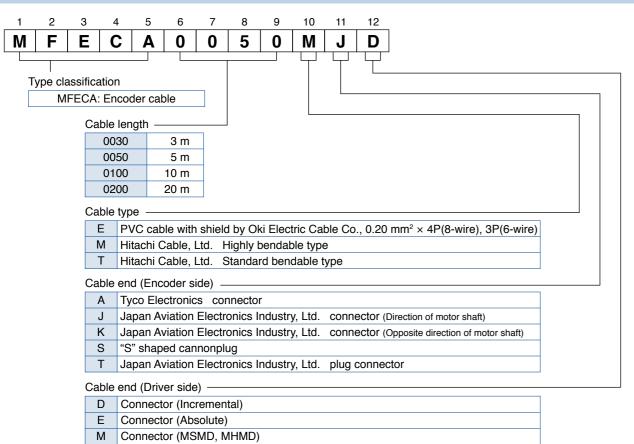
Motor series	Motor output	Static friction torque N·m	Rotor inertia × 10 <sup>-4</sup> kg·m²	Engaging time ms	Releasing time ms	Exciting current DC A (at cool-off)	Releasing voltage DC V Exciting voltage DC V	Permissible work (J) per one braking	Permissible total work × 10³ J	Permissible angular acceleration rad/s <sup>2</sup>	
	50 W, 100 W	0.29 or more	0.002	35 or less	20 or less	0.3		39.2	4.9		
MSMD	200 W, 400 W	1.27 or more	0.018	50 or less	15 or less	0.36	1 V or more	137	44.1	30000	
	750 W	2.45 or more	0.075	70 or less	20 or less	0.42	24 ±1.2	196	147		
	50 W, 100 W	0.29 or more	0.002	35 or less	20 or less	0.3		39.2	4.9		
	200 W, 400 W	1.27 or more	0.018	50 or less	15 or less	0.36	1 V or more	137	44.1	30000	
	750 W(200 V)	2.45 or more	0.075	70 or less	20 or less	0.42	24 ±1.2	196	147		
	750 W(400 V)	2.5 or more				0.7					
MSME	1.0 kW, 1.5 kW, 2.0 kW	7.8 or more	0.33	50 or less	15 or less (100)	0.81	2 V or more	392	490	10000	
	3.0 kW	11.8 or more		80 or less			24 ±2.4			10000	
	4.0 kW, 5.0 kW	16.2 or more	1.35	110 or less	50 or less (130)	0.9		1470	2200		
	400 W(400 V), 600 W(400 V)	2.5 or more		50 or less	15 or less	0.7		392	490		
	1.0 kW	4.9 or more	1.35	80 or less	70 or less (200)	0.59	2 V or more 24 ±2.4	588	780	10000	
	1.5 kW, 2.0 kW	13.7 or more		100 or less	50 or less	0.79		1176	1500		
MDME	3.0 kW	16.2 or more		110 or less	(130)	0.9		1470	2200		
	4.0 kW, 5.0 kW	24.5 or more	4.7	80 or less	25 or less (200)	1.3		1372	2900	5440	
	7.5 kW	58.8 or more		150 or less	50 or less	1.4				5000	
	11.0 kW, 15.0 kW	100 or more	7.1	300 or less	140 or less	1.08		2000	4000	3000	
	1.5 kW	7.8 or more	4.7	80 or less	35 or less	0.83	2 V or more	1372	2900		
MFME	2.5 kW	21.6 or more	8.75	150 or less	100 or less	0.75	24 ±2.4	1470	1500	10000	
	4.5 kW	31.4 or more	0.75	100 01 1033	100 01 1033	0.73	24 ±2.4	24 ±2.4 1	1470	2200	
	0.9 kW	13.7 or more	1.35	100 or less	50 or less (130)	0.79		1176	1500	10000	
MGME	2.0 kW	24.5 or more		80 or less	25 or less (200)	1.3	2 V or more			5440	
	3.0 kW	58.8 or more	4.7	150 or less	50 or less (130)	1.4	24 ±2.4	1372	2900	<del>944</del> 0	
	4.5 kW, 6.0 kW				50 or less					5000	
MHMD MSMJ	200 W, 400 W	1.27 or more	0.018	50 or less	15 or less	0.36	1 V or more	137	44.1	30000	
MHMJ	750 W	2.45 or more	0.075	70 or less	20 or less	0.42	24 ±1.2	196	147		
	1.0 kW	4.9 or more	1.35	80 or less	70 or less (200)	0.59		588	780	10000	
МНМЕ	1.5 kW	13.7 or more	1.00	100 or less	50 or less (130)	0.79	2 V or more	1176	1500	10000	
	2.0 kW~5.0 kW	24.5 or more	4.7	80 or less	25 or less (200)	1.3	24 ±2.4	1372	2900	5440	
	7.5 kW	58.8 or more		150 or less	50 or less	1.4				5000	

- Releasing time values represent the ones with DC-cutoff using a varistor.
   Values in ( ) represent those measured by using a diode (V03C by Hitachi, Ltd.)
- · Above values (except static friction torque, releasing voltage and excitation current) represent typical values.
- Backlash of the built-in holding brake is kept ±1° or smaller at ex-factory point.
- Service life of the number of acceleration/deceleration with the above permissible angular acceleration is more than 10 million times. (Life end is defined as when the brake backlash drastically changes.)

<Connector for brake>

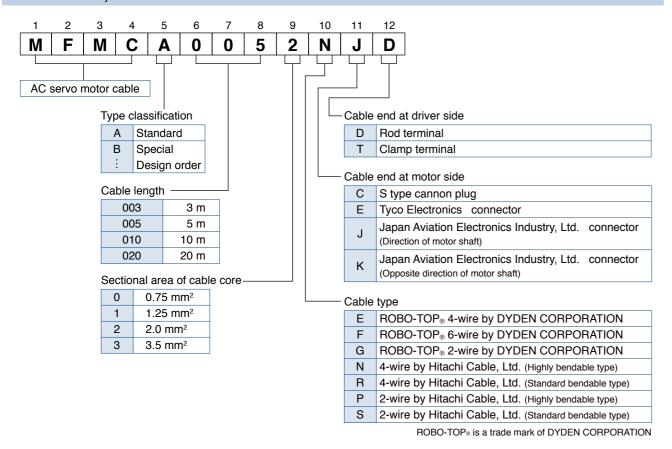
# **Options**

# **Encoder Cable**



Cable part No. Designation

# **Motor Cable, Brake Cable**

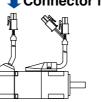


# **Specifications of Motor connector**

When the motors of <MSMD, MHMD, MSMJ, MHMJ> are used, they are connected as shown

Connector: Made by Tyco Electronics (The figures below show connectors for the motor.)

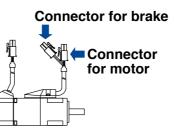
# Connector for encoder

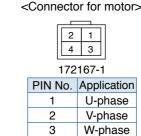


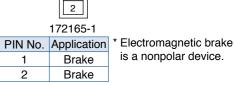
			,		PIN No.	Application
	3	2	1		1	NC
	6	5	4		2	PS
					3	PS
		2168	•		4	E5V
20-bit Incremental		5	E0V			
					6	FG(SHIELD)

				PIN No.	Application			
	3	2	1	]	1	BAT+		
	6	5	4		2	BAT-		
	9	8	7		3	FG(SHIELD)		
172169-1 17-bit Absolute					4	PS		
					5	PS		
1	/-DIL	ADS	SOIUL	E	6	NC		
					7	E5V		
					8	E0V		
ng to NC.					9	NC		
_								

<Remarks> Do not connect anything to NC.





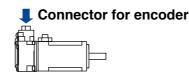


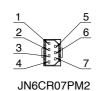
When the motors of <MSME (50 W to 750 W (200 V))> are used, they are connected as shown

Ground

Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)

\* Do not remove the gasket supplied with the junction cable connector. Securely install the gasket in place. Otherwise, the degree of protection of IP67 will not be guaranteed.

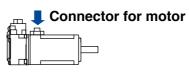


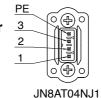


20-bit In	cremental		17-bit Absolute		
PIN No.	Application		PIN No.	Application	
1	FG(SHIELD)		1	FG(SHIELD)	
2	<u> </u>		2	BAT-	
3	E0V		3	E0V	
4	PS		4	PS	
5	_		5	BAT+	
6	E5V		6	E5V	
7	PS		7	PS	

Tightening torque of the screw (M2) 0.19 N·m to 0.21 N·m

\* Be sure to use only the screw supplied with the connector, to avoid damage.





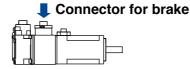
1	U-phase
2	V-phase
3	W-phase
PE	Ground

PIN No. Application

und Tightening torque of the screw (M2) 0.085 N·m to 0.095 N·m (screwed to plastic)

\* Be sure to use only the screw supplied with the connector, to avoid damage.

[Motor with brake]





PIN No.	Application	
1	Brake	* Electromagnetic brake is
2	Brake	a nonpolar device.

Tightening torque of the screw (M2) 0.19 N·m to 0.21 N·m

\* Be sure to use only the screw supplied with the connector, to avoid damage.

# **Encoder Cable**

\* It doesn't correspond to IP65 and IP67.

**Options** 

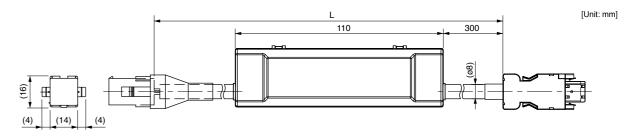
**A5 Family** 

Part No.	MFECA0 * * 0EAM	Compatible motor output	50 W to 750 W, 200 W to 750 W,	

Specifications For 20-bit incremental encoder (Without battery box)

Title	Part No.	Manufacturer	L (m)	Part No.
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EAM
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EAM
Connector (Motor side)	172160-1	Tyco Electronics	10	MFECA0100EAM
Connector pin	170365-1	Tyco Electronics	20	MFECA0200EAM
Cable	0.20 mm <sup>2</sup> ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

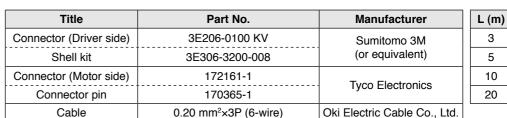
Part No.	MFECA0 * * 0EAE	Compatible motor output		50 W to 750 W, 200 W to 750 W,			
Specifications	rs For 17-bit absolute encoder (With battery box)						



Title	Part No.	Manufacturer	L (m)	Part No.
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M 3		MFECA0030EAE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EAE
Connector (Motor side)	172161-1	Tugo Floatronico	10	MFECA0100EAE
Connector pin	170365-1	Tyco Electronics	20	MFECA0200EAE
Cable	0.20 mm <sup>2</sup> ×4P (8-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0EAD	Compatible motor output		50 W to 750 W, 200 W to 750 W,			
Specifications	For 17-bit incremental encoder (Without battery box)						

[Unit: mm]



3 MFECA0030EAD 5 MFECA0050EAD MFECA0100EAD 10 20 MFECA0200EAD

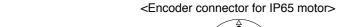
Part No.

**Specifications of Motor connector** 

• When the motors of <MSME (750 W(400 V), 1.0 kW to 5.0 kW), MDME, MGME, MHME> are used, they are connected as shown below.

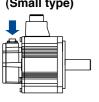
Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)

Connector for encoder



IP65 motor Connector for encoder (Large type)

IP67 motor Connector for encoder (Small type)



∆	
N/MS3102A20-29P	

N/MS3102A20-29P						
20-bit In	cremental	17-bit A	Absolute			
PIN No.	PIN No. Application		Application			
Α	NC	Α	NC			
В	NC	В	NC			
С	NC	С	NC			
D	NC	D	NC			
Ε	NC	E	NC			
F	NC	F	NC			
G	E0V	G	E0V			
Н	E5V	Н	E5V			
J	FG(SHIELD)	J	FG(SHIELD)			
K	PS	K	PS			
L	PS	L	PS			
M	NC	M	NC			

NC NC



<Encoder connector for IP67 motor>

JN2AS10ML3-R

20-bit Incremental			17-bit Absolute		
PIN No. Application			PIN No.	Application	
1	1 E0V 2 NC 3 PS 4 E5V 5 NC 6 NC 7 PS		1	E0V	
2			2	NC	
3			3	PS	
4			4	E5V	
5			5	BAT-	
6			6	BAT+	
7			7	PS	
8	NC		8	NC	
9	9 FG(SHIELD) 10 NC		9	FG(SHIELD)	
10			10	NC	

# <Remarks>

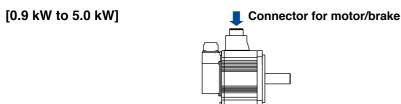
Do not connect anything to NC.

[6.0 kW or more]

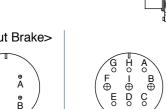
Connector for motor

Connector for brake

# Connector for motor/brake



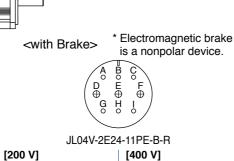




D A  e e C B	
JL04V-2E20-4PE-B-R	JL04V-2E20-18PE-B-R
MSME 750 W(400 V),	[200 V]
1.0 kW to 2.0 kW	MSME 1.0 kW to 2.0 kW

MSME	750 W(400 V),	[200	) VJ	
	1.0 kW to 2.0 kW	MSI	ME	1.0 kW to 2.0 kW
MDME	400 W (400 V),	MD	ME	1.0 kW to 2.0 kW
	600 W (400 V),	MFI	ME*	1.5 kW
	1.0 kW to 2.0 kW	MG	ME	0.9 kW
MGME	0.9 kW	MH	ME	1.0 kW to 1.5 kW

MHME 1.0 kW to 1.5 k	:w_	LIVII IIVIL 1.0	NW to 1.5 KW
JL04HV-2E22-22PE-E	3-R		
MSME 3.0 kW to 5.0 k	w	PIN No.	Application
MDME 3.0 kW to 5.0 k	w	G	Brake
MGME 2.0 kW to 4.5 k	w	Н	Brake
MHME 2.0 kW to 5.0 k		Α	NC
		F	U-phase
PIN No. Application	on	I	V-phase
A U-phase	€	В	W-phase
B V-phase	)	E	Ground
C W-phase	е	D	Ground



NC

NC

BAT-

BAT+

[200 V]		[400 V]	
MSME	3.0 kW to 5.0 kW	MSME	750 W,
MDME	3.0 kW to 5.0 kW		1.0 kW to 5.0 kV
MFME*	2.5 kW, 4.5 kW	MDME	400 W, 600 W,
MGME	2.0 kW to 4.5 kW		1.0 kW to 5.0 kV
MHME	2.0 kW to 5.0 kW	MFME*	1.5 kW to 4.5 kV
_	_	MGME	0.9 kW to 4.5 kV
		MHME	1.0 kW to 5.0 kV

PIN No.	Application		
Α	Brake		
В	Brake		
С	NC		
D	U-phase		
E	V-phase		
F	W-phase		
G	Ground		
Н	Ground		
I	NC		

* MFME	is common to with or without brake.
_	

Ground

<Remarks>

Do not connect anything to NC.

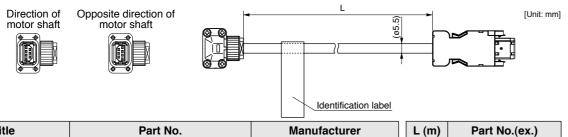
			D A C B		
	,	JL04V-2E3	32-17PE-B-F		
5.0 kW		MDME 7.5 MGME 6.0 MHME 7.5			
00 W.		PIN No.	Application		
5.0 kW		Α	U-phase		
4.5 kW		В	V-phase		
4.5 kW		С	W-phase		
5.0 kW	L	D	Ground		
7	<brake></brake>				
			D A C B		
		N/MS310	2A 14S-2P		
		MDME 7.5	kW to 15.0 kW		
	- 1	MGME 6.0 MHME 7.5			
		PIN No.	Application		
		Α	Brake		
		В	Brake		
		С	NC		
		D	NC		
			agnetic bra olar device		

<Motor>

[Unit: mm]

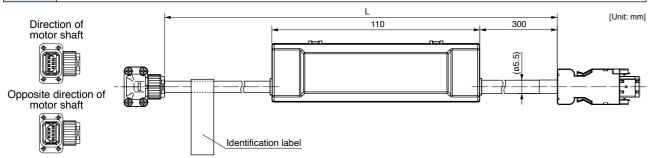
# **Encoder Cable**

\* It doesn't correspond to IP65 and IP67.



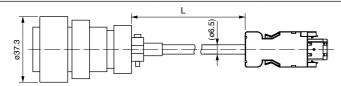
Title	Part No.	Manufacturer	L
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	
Shell kit	3E306-3200-008	(or equivalent)	Г
Connector (Motor side)	JN6FR07SM1	Japan Aviation	
Connector pin	LY10-C1-A1-10000	Electronics Ind.	
Cable	AWG24 4-wire, AWG22 2-wire (ø5.5)	Hitachi Cable, Ltd.	

Part No.	MFECA0 ** 0MJE (Highly bendable type, Direction of motor shaft)  MFECA0 ** 0MKE (Highly bendable type, Opposite direction of motor shaft)	Commodible	MSME 50 W to 750 W (200 V)
	MFECA0 ** 0TJE (Standard bendable type, Direction of motor shaft)  MFECA0 ** 0TKE (Standard bendable type, Opposite direction of motor shaft)	motor output	
Specifications	For 17-bit absolute encoder (With battery box)		



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030MJE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050MJE
Connector (Motor side)	JN6FR07SM1	Japan Aviation	10	MFECA0100MJE
Connector pin	LY10-C1-A1-10000	Electronics Ind.	20	MFECA0200MJE
Cable	AWG24 4-wire, AWG22 2-wire (ø5.5)	Hitachi Cable, Ltd.		

Part No.	MFECA0 * * 0ESD	Compatible motor output	MDME 400 W(400 V), MDME 600 W(400 V) MSME 750 W(400 V) 0.9 kW to 15.0 kW (IP65 Motor)	
Specifications	For 20-bit incremental encoder (Without battery box)			



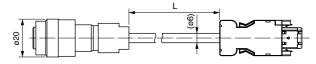
Title	Part No.	Manufacturer
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M
Shell kit	3E306-3200-008	(or equivalent)
Connector (Motor side)	N/MS3106B20-29S	Japan Aviation
Cable clamp	N/MS3057-12A	Electronics Ind.
Cable	0.2 mm <sup>2</sup> ×3P (6-wire)	Oki Electric Cable Co., Ltd.

L (m)	Part No.
3	MFECA0030ESD
5	MFECA0050ESD
10	MFECA0100ESD
20	MFECA0200ESD

[Unit: mm]

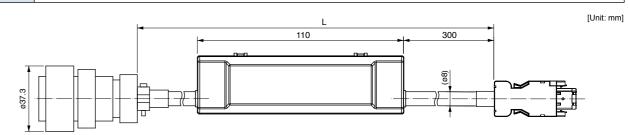
MFECA0030MJD MFECA0050MJD MFECA0100MJD MFECA0200MJD

Part No	o. MFECA0 * * 0ETD	Compatible motor output	MDME 400 W(400 V), MDME 600 W(400 V), MSME 750 W(400 V) 0.9 kW to 15.0 kW (IP67 Motor)		
Specification	For 20-bit incremental encoder (Without battery box)				



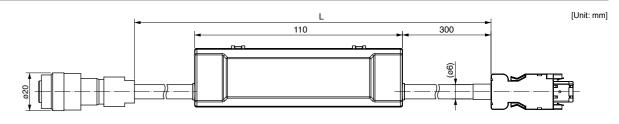
Title	Part No.	Manufacturer	L (m)	Part No.
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ETD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETD
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation	10	MFECA0100ETD
Connector pin	JN1-22-22S-PKG100	Electronics Ind.	20	MFECA0200ETD
Cable	0.2 mm <sup>2</sup> x3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0ESE	Compatible motor output	0.9 kW to 5.0 kW (IP65 Motor)
Specifications	For 17-bit absolute encode	er (With battery bo	ox)



Title	Part No.	Manufacturer	L (m)	Part No.
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ESE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ESE
Connector (Motor side)	N/MS3106B20-29S	Japan Aviation	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 * * 0ETE	Compatible motor output	MDME 400 W(400 V), MDME 600 W(400 V) MSME 750 W(400 V) 0.9 kW to 15.0 kW (IP67 Motor)		
Specifications	For 17-bit absolute encoder (With battery box)				



Title	Part No.	Manufacturer	L (m)	Part No.
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ETE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETE
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation	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.		

[Unit: mm]

# MSME 750 W(400 V), 1.0 kW to 2.0 kW,

Applicable model MDME 400 W(400 V), 600 W(400 V), 1.0 kW to 2.0 kW MHME 1.0 kW to 1.5 kW, MGME 0.9 kW (All model 200 V and 400 V commonness)

[Unit: mm]

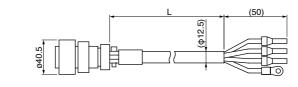
MFMCD0 \* \* 2ECD

Part No.

Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JL04V-6A20-4SE-EB-R	Japan Aviation	3	MFMCD0032ECD
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCD0052ECD
Rod terminal	NTUB-2		10	MFMCD0102ECD
Nylon insulated round terminal N2-M4		J.S.T Mfg. Co., Ltd.	20	MFMCD0202ECD
Cable	ROBO-TOP 600 V 2.0 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		<u> </u>

Part No.	MFMCE0 * * 2ECD		MHME 2.0 kW (200 V and 400 V commonness)
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[Unit: mm]

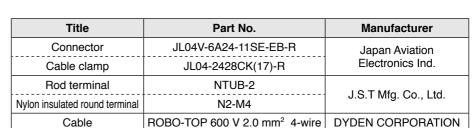


Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation	3	MFMCE0032ECD
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCE0052ECD
Rod terminal	NTUB-2	LC T Mfa Co. Ltd	10	MFMCE0102ECD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202ECD
Cable	ROBO-TOP 600 V 2.0 mm <sup>2</sup> 4-wire	DYDEN CORPORATION		

Part No.	MFMCF0 * * 2ECD	Applicable model	MFME	1.5 kW(400 V), 2.5 kW(200 V and 400 V commonness)
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192

[Unit: mm]



	L (m)	(m) Part No.			
3		MFMCF0032ECD			
	5	MFMCF0052ECD			
	10	MFMCF0102ECD			
	20	MFMCF0202ECD			

**Motor Cable (without Brake)** \* It doesn't correspond to IP65 and IP67.

Part No.	MFMCA0 * * 0EED	Applicable model	50 W to 750 W, 200 W to 750 W,		
	(50)		(50)		[Unit: mm]

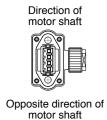
=10

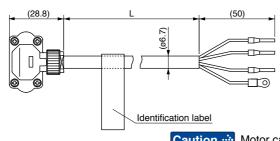
Title	Part No.	Manufacturer
Connector	172159-1	Tugo Flootronico
Connector pin	170366-1	Tyco Electronics
Rod terminal	AI0.75-8GY	Phoenix Contact
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.
Cable	ROBO-TOP 600V 0.75mm <sup>2</sup> 4-wire	DYDEN CORPORATION

L (m)	Part No.
3	MFMCA0030EED
5	MFMCA0050EED
10	MFMCA0100EED
20	MFMCA0200EED

	MFMCA0 * * 0NJD (Highly bendable type, Direction of motor shaft)		MSME 50 W to 750 W(200V)
Dort No.	MFMCA0 * * 0NKD (Highly bendable type, Opposite direction of motor shaft)		MSME 200 W to 750 W(200V)
Part No.		model	MSME 50 W to 750 W(200V)
	MFMCA0 * * 0RKD (Standard bendable type, Opposite direction of motor shaft)		MSME 200 W to 750 W(200V)

[Unit: mm]





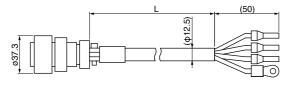


Caution : Motor cable for opposite direction of motor shaft cannot be used with a motor 50W and 100W.

Title	Part No.	Manufacturer
Connector	JN8FT04SJ1	Japan Aviation
Connector pin	ST-TMH-S-C1B-3500	Electronics Ind.
Rod terminal	AI0.75-8GY	Phoenix Contact
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.
Cable	AWG18 4-wire (ø6.7)	Hitachi Cable, Ltd.

Part No.(ex.)		
MFMCA0030NJD		
MFMCA0050NJD		
MFMCA0100NJD		
MFMCA0200NJD		

Part No. MFMCA0	* * 2ECD Applicabl model	MFME	1.5 kW(200 V)	
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Title		Part No.	Manufacturer		L (n
	Connector	JL04V-6A20-18SE-EB-R	Japan Aviation		3
	Cable clamp	JL04-2022CK(14)-R	Electronics Ind.		5
	Rod terminal	NTUB-2	LC T Mfg. Co. Ltd		10
	Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.		20
	Cable	ROBO-TOP 600V 2.0mm <sup>2</sup> 4-wire	DYDEN CORPORATION	_	

L (m)	Part No.
3	MFMCA0032ECD
5	MFMCA0052ECD
10	MFMCA0102ECD
20	MFMCA0202ECD

# Motor Cable (with Brake) \* It doesn't correspond to IP65 and IP67.

**Options** 

**A5 Family** 

Motor Cable (without Brake)
\* It doesn't correspond to IP65 and IP67.

Part No. MFMCA0 \* \* 3ECT

MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kWApplicable model MHME 3.0 kW to 5.0 kW, MGME 2.0kW to 4.5 kW (All model 200 V and 400 V commonness)

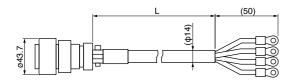
l <del>-</del>	L	(50)	
		<u>4</u>	
		9	
- H   H   H   H   H   H   H   H   H   H			
°↓Ч ҢШ⊢+Ш°		1	

Title	Part No.	Manufacturer	L (m)	Part No.
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 600 V 3.5 mm <sup>2</sup> 4-wire	DYDEN CORPORATION	20	MFMCA0203ECT

Part No.	N/I = N/I (   )   1 * * * *   = (	Applicable model	MFME 4.5 kW (200 V and 400 V commonness)
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[Unit: mm]

[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation	3	MFMCD0033ECT
Cable clamp	JL04-2428CK(17)-R	Electronics Ind.	5	MFMCD0053ECT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCD0103ECT
Cable	ROBO-TOP 600 V 3.5 mm <sup>2</sup> 4-wire	DYDEN CORPORATION	20	MFMCD0203ECT

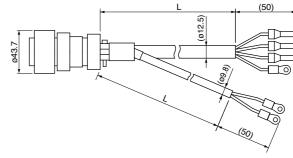
Part No.	MFMCA0 * * 2FCD	Applicable model	MDME MFME MHME	1.0 kW to 2.0 kW(200 V), 1.0 kW to 2.0 kW(200 V), 1.5 kW(200 V), 1.0 kW(200 V) to 1.5 kW(200 V) 0.9 kW(200V)
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(50)

Title		Part No.	Manufacturer	L (m)	Part No.
Connector		JL04V-6A20-18SE-EB-R Japan Aviation		3	MFMCA0032FCD
Cable clamp		JL04-2022CK(14)-R	Electronics Ind.	5	MFMCA0052FCD
Rod termina	al	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCA0102FCD
Nylon insulated	Earth	N2-M4	LC TMfc Co Ltd	20	MFMCA0202FCD
round terminal	Brake	N1.25-M4	J.S.T Mfg. Co., Ltd.		
Cable		ROBO-TOP 600 V 0.75 mm <sup>2</sup> and ROBO-TOP 600 V 2.0 mm <sup>2</sup> 6-wire	DYDEN CORPORATION		

Part No.	MFMCE0 * * 2FCD	Applicable model	MDME MFME MGME	750 W(400 V) to 2.0 kW(400 V), 400 W(400 V) to 2.0 kW(400 V), 1.5 kW(400 V), 2.5 kW(200 V/400 V), 0.9 kW(400 V) 1.0 kW(400 V), 1.5 kW(400 V), 2.0 kW(200 V/400 V)

[Unit: r	1
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Title		Part No.	Manufacturer	L (m)	
Connector		JL04V-6A24-11SE-EB-R	Japan Aviation	3	MF
Cable clamp		JL04-2428CK(17)-R	Electronics Ind.	5	MF
Rod terminal		NTUB-2	J.S.T Mfg. Co., Ltd.	10	MF
Nylon insulated	Earth	N2-M4	J.S.T Mfg. Co., Ltd.	20	MF
round terminal	Brake	N1.25-M4	J.S.1 Wilg. Co., Ltd.		
Cable		ROBO-TOP 600 V 0.75 mm <sup>2</sup> and ROBO-TOP 600 V 2.0 mm <sup>2</sup> 6-wire	DYDEN CORPORATION		

193

# **Brake Cable**

\* It doesn't correspond to IP65 and IP67.

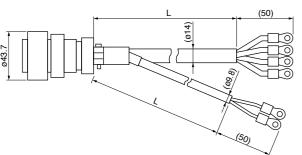
**A5 Family** 

**Options** 

\* It doesn't correspond to IP65 and IP67.

**Motor Cable (with Brake)** 

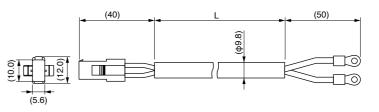
MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kW MFME 4.5 kW, MHME 3.0 kW to 5.0 kW Applicable model MFMCA0 \* \* 3FCT Part No. MGME 2.0 kW to 4.5 kW (All model 200 V and 400 V commonness)



L (50)	[Unit: mm]
(50)	
*	

Title		Title Part No.		Manufacturer
Connector		JL04V-6A24-11SE-EB-R	Japan Aviation	
Cable clam	)	JL04-2428CK(17)-R	Electronics Ind.	
Nylon insulated	Earth	N5.5-5	J.S.T Mfg. Co., Ltd.	
round terminal	Brake	N1.25-M4	J.S. I Mig. Co., Ltd.	
Cable		ROBO-TOP 600 V 0.75 mm <sup>2</sup> and ROBO-TOP 600 V 3.5 mm <sup>2</sup> 6-wire	DYDEN CORPORATION	

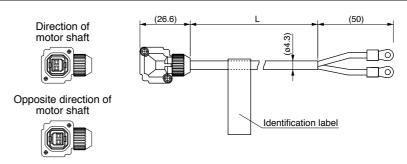
L (m)	Part No.		
3	MFMCA0033FCT		
5	MFMCA0053FCT		
10	MFMCA0103FCT		
20	MFMCA0203FCT		



Title	Part No.	Manufacturer	L (m)	Part No.
Connector	172157-1	T Flanks in	3	MFMCB0030GET
Connector pin	170366-1, 170362-1	Tyco Electronics	5	MFMCB0050GET
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100GET
Cable	ROBO-TOP 600 V 0.75 mm <sup>2</sup> 2-wire	DYDEN CORPORATION	20	MFMCB0200GET

	MFMCB0 ** 0PJT (Highly bendable type, Direction of motor shaft)  MFMCB0 ** 0PKT (Highly bendable type, Opposite direction of motor shaft)	Annliachla	MSME
Part	MFMCB0 ** 0SJT (Standard bendable type, Direction of motor shaft)	Applicable model	50 W to 750 W (200 V)
	MFMCB0 * * 0SKT (Standard bendable type, Opposite direction of motor shaft)		(200 V)

[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.
Connector	JN4FT02SJMR	Japan Aviation	3	MFMCB0030
Connector pin	ST-TMH-S-C1B-3500	Electronics Ind.	5	MFMCB0050
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100
Cable	AWG22 2-wire (ø4.3)	Hitachi Cable, Ltd.	20	MFMCB0200

0PJT 50PJT 00PJT 0PJT

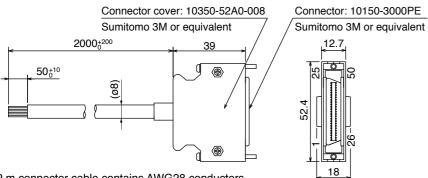
195

196

[Unit: mm]

# **Interface Cable**

[Unit: mm]



This 2 m connector cable contains AWG28 conductors.

#### Table for wiring

					I				
Pin No.	color	Pin No.	color	Pin No.	color	Pin No.	color	Pin No.	color
1	Orange (Red1)	11	Orange (Black2)	21	Orange (Red3)	31	Orange (Red4)	41	Orange (Red5)
2	Orange (Black1)	12	Yellow (Black1)	22	Orange (Black3)	32	Orange (Black4)	42	Orange (Black5)
3	Gray (Red1)	13	Gray (Red2)	23	Gray (Red3)	33	Gray (Red4)	43	Gray (Red5)
4	Gray (Black1)	14	Gray (Black2)	24	Gray (Black3)	34	White (Red4)	44	White (Red5)
5	White (Red1)	15	White (Red2)	25	White (Red3)	35	White (Black4)	45	White (Black5)
6	White (Black1)	16	Yellow (Red2)	26	White (Black3)	36	Yellow (Red4)	46	Yellow (Red5)
7	Yellow (Red1)	17	Yel (Blk2)/Pink (Blk2)	27	Yellow (Red3)	37	Yellow (Black4)	47	Yellow (Black5)
8	Pink (Red1)	18	Pink (Red2)	28	Yellow (Black3)	38	Pink (Red4)	48	Pink (Red5)
9	Pink (Black1)	19	White (Black2)	29	Pink (Red3)	39	Pink (Black4)	49	Pink (Black5)
10	Orange (Red2)	20	_	30	Pink (Black3)	40	Gray (Black4)	50	Gray (Black5)

#### <Remarks>

Color designation of the cable e.g.) Pin-1 Cable color: Orange (Red1): One red dot on the cable The shield of this cable is connected to the connector shell but not to the terminal.

# **Interface Conversion Cable**

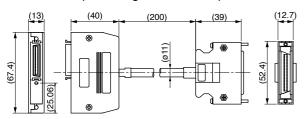
Part No.	DV0P4120, 4121, 4130, 4131, 4132	
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Interface cables for old product (XX series or V series) can be connected to the current product by using the connector conversion cable shown below.

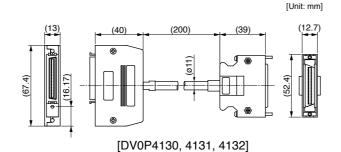
DV0P4120	MINAS XX → A5II, A5 series (A4, A series) for position control/ velocity control
DV0P4121	MINAS XX → A5II, A5 series (A4, A series) for torque control
DV0P4130	MINAS V → A5II, A5 series (A4, A series) for position control
DV0P4131	MINAS V → A5II, A5 series (A4, A series) for velocity control
DV0P4132	MINAS V → A5II, A5 series (A4, A series) for torque control

<sup>\*</sup> For details of wiring, contact our sales department.

Converts 36-pin configuration to 50-pin.



[DV0P4120, 4121]



**Connector Kit** 

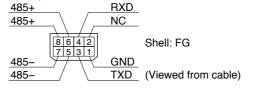
# Connector Kit for Communication Cable (for RS485, RS232) (Excluding A5IE, A5E Series)

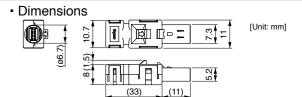
# Part No. DV0PM20024

# Components

Title	Part No.	Manufacturer	Note
Connector	2040008-1	Tyco Electronics	For Connector X2 (8-pins)

• Pin disposition of connector, connector X2





# Connector Kit for Safety (Excluding A5IE, A5E Series)

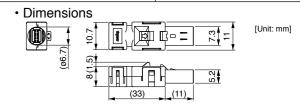
# Part No. DV0PM20025

# Components

· · · · · · · · · · · · · · · · · · ·			
Title	Part No.	Manufacturer	Note
Connector	2013595-1	Tyco Electronics	For Connector X3 (8-pins)

 Pin disposition of connector, connector X3 SF1+





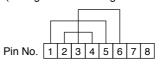
# Safety bypass plug (Excluding A5IE, A5E Series)

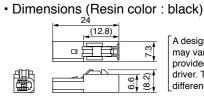
# Part No. DV0PM20094

# · 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.)





A design and color may vary from the plug provided together with driver. There is no difference in function.

[Unit: mm]

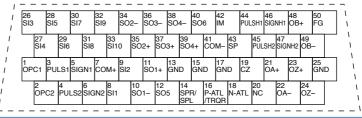
# **Connector Kit for Interface**

# Part No. DV0P4350

### · Components

Title	Part No.	Number	Manufacturer	Note
Connector	10150-3000PE	1	Sumitomo 3M	For Connector X4
Connector cover	10350-52A0-008	1	(or equivalent)	(50-pins)

• Pin disposition (50 pins) (viewed from the soldering side)



- 1) Check the stamped pin-No. on the connector body while making a wiring.
- 2) For the function of each signal title or its symbol, refer to the operating manual.
- 3) Do not connect anything to NC pins in the above table.

#### <Remarks>

• For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.213 "List of Peripheral Equipments".

Part No. DV0PM20026

Title

Connector

**Connector Kit for Encoder** 

Components

E5V

Connector Kit for External Scale (Excluding A5IE, A5E Series)

Part No.

MUF-PK10K-X

EXB (Viewed from cable)

# Part No. DV0PM20010

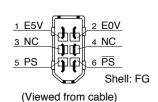
# Components

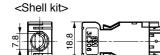
Title	Part No.	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M (or equivalent)	For Connector X6
Shell kit	3E306-3200-008		

Pin disposition of connector, connector X6

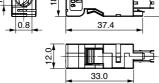
• Pin disposition of connector, connector X5

EXA





Dimensions

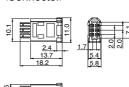


Manufacturer

J.S.T Mfg. Co., Ltd.

Dimensions

# <Connector>



[Unit: mm]

Note

For Connector X5 (10-pins)

[Unit: mm]

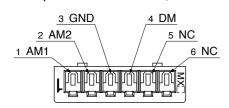
# **Connector Kit for Analog Monitor Signal**

# Part No. DV0PM20031

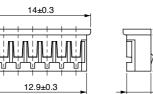
### Components

Title	Part No.	Number	Manufacturer	Note
Connector	510040600	1	Molex Inc	For Connector X7 (6-pins)
Connector pin	500118100	6		

• Pin disposition of connector, connector X7



Dimensions



### <Remarks>

Connector X1: use with commercially available cable.

· Configuration of connector X1: USB mini-B

# **Connector Kit for Power Supply Input**

Part No. DV0PM20032 (For A-frame to C-frame 100 V, A-frame to D-frame 200 V: Single row type)

# · Components

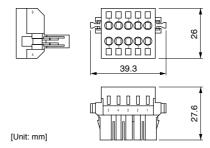
Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGF	1	LOTMic Co Ltd	For Connector VA
Handle lever	J-FAT-OT	2	J.S.T Mfg. Co., Ltd.	For Connector XA

Part No. DV0PM20033 (For A-frame to D-frame 200 V: Double row type)

# Components

Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGSA-C	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT	2		

# Dimensions



\* When connection multiple axes in series, make sure the sum of the current value does not exceed the rated current (11.25 A) of DV0PM20033.

# Remarks - ❖

When using drivers MDDKT5540 \*\*\* or MDDHT5540 \*\*\* in single-phase power supply, do not use DV0PM20033.

Driver part No.	Power supply	Rated input current
MADHT1105 *** MADKT1105 ***	Single phase 100 V	1.7 A
MADHT1107 *** MADKT1107 ***	Single phase 100 V	2.6 A
MADHT1505 *** MADKT1505 ***	Single phase/3-phase 200 V	1.6 A/0.9 A
MADHT1507 *** MADKT1507 ***	Single phase/3-phase 200 V	2.4 A/1.3 A
MBDHT2110 *** MBDKT2110 ***	Single phase 100 V	4.3 A
MBDHT2510 *** MBDKT2510 ***	Single phase/3-phase 200 V	4.1 A/2.4 A
MCDHT3120 *** MCDKT3120 ***	Single phase 100 V	7.6 A
MCDHT3520 *** MCDKT3520 ***	Single phase/3-phase 200 V	6.6 A/3.6 A
MDDHT3530 *** MDDKT3530 ***	Single phase/3-phase 200 V	9.1 A/5.2 A
MDDHT5540 *** MDDKT5540 ***	Single phase/3-phase 200 V	14.2 A/8.1 A

# Part No. DV0PM20044 (For E-frame 200 V)

# Components

Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT-L	2		

**Part No. DV0PM20051** (For D-frame 400 V)

# Components

Title	Part No.	Number	Manufacturer	Note
Connector	03JFAT-SAYGSA-M	1	LOTMic Co. Ltd	For Connector VA
Handle lever	J-FAT-OT-L	2	J.S.T Mfg. Co., Ltd.	For Connector XA

**Part No. DV0PM20052** (For E-frame 400 V)

### Components

Title	Part No.	Number	Manufacturer	Note
Connector	03JFAT-SAYGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT-L	2		

# **Connector Kit**

# **Connector Kit**

\* When IP65 or IP67 are necessary, the customer must give appropriate processing.

**Options** 

**A5 Family** 

# **Connector Kit for Control Power Supply Input**

Part No. | **DV0PM20053** (For D, E-frame 400 V)

# Components

Title	Part No.	Number	Manufacturer	Note
Connector	02MJFAT-SAGF	1	J.S.T Mfg. Co., Ltd.	For Connector XD
Handle lever	MJFAT-0T	1		

# **Connector Kit for Regenerative Resistor Connection (E-frame)**

Part No. DV0PM20045 (For E-frame 200 V/400 V)

# Components

Title	Part No.	Number	Manufacturer	Note
Connector	04JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XC
Handle lever	J-FAT-OT-L	2		* Jumper wire is included.

**Part No. DV0PM20055** (For D-frame 400 V)

### Components

Title	Part No.	Number	Manufacturer	Note
Connector	04JFAT-SAXGSA-M	1	J.S.T Mfg. Co., Ltd.	For Connector XC
Handle lever	J-FAT-OT-L	2		

# **Connector Kit for Motor Connection (Driver side)**

Part No. DV0PM20034 (For A-frame to C-frame 100 V, A-frame to D-frame 200 V)

# Components

Title	Part No.	Number	Manufacturer	Note
Connector	06JFAT-SAXGF	1	LC T Mfa Co. Ltd	For Connector XB
Handle lever	J-FAT-OT	2	J.S.T Mfg. Co., Ltd.	* Jumper wire is included.

Part No. DV0PM20046 (For E-frame 200 V/400 V)

# Components

Title	Part No.	Number	Manufacturer	Note	
Connector	03JFAT-SAXGSA-L	1	LC T Mfa Co Ltd	For Connector VP	
Handle lever	J-FAT-OT-L	2	J.S.T Mfg. Co., Ltd.	For Connector XB	

Part No. | **DV0PM20054** (For D-frame 400 V)

### Components

Title	Part No.	Number	Manufacturer	Note	
Connector	03JFAT-SAXGSA-M	1	LC T Mfg. Co. Ltd	For Connector VP	
Handle lever	J-FAT-OT-L	2	J.S.T Mfg. Co., Ltd.	For Connector XB	

# Connector Kit for Motor/Encoder Connection

Dort No.		Applicable	MSMD 50 W to 750 W, MHMD 200 W to 750 W
Part NO.		model	(absolute encoder type)

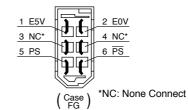
### · Components

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)
Connector	172161-1	1	Type Fleetrenies	For Encoder cable
Connector pin	170365-1	9	Tyco Electronics	(9-pins)
Connector	172159-1	1	Tyco Electronics	For Motor cable
Connector pin	170366-1	4	Tyco Electronics	(4-pins)

• Pin disposition of connector, • Pin disposition of connector connector X6

for encoder cable

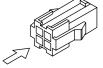
• Pin disposition of connector for motor cable



r-	:11111	EEEEE		_
1	1	2	3	;
i	BAT+	BAT-	FG	;
i.	4	5	6	;
÷	PS	PS	NC	;
i	7	8	9	;
1	E5V	E0V	NC	







\* When you connect the battery for absolute encoder, refer to P.207, "When you make your own cable for 17-bit absolute encoder"

				50 W to 750 W,			
Part No.	DV0P4380	Applicable model	MSMJ	200 W to 750 W,	MHMJ	200 W to 750 W	
			(incremental encoder type)				

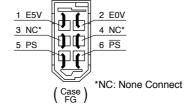
# · Components

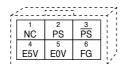
Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector VC (C nine)	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)	
Connector	172160-1	1	Tues Floatronies	For Encoder cable	
Connector pin	170365-1	6	Tyco Electronics	(6-pins)	
Connector	172159-1	1	Tugo Floatronico	For Motor cable	
Connector pin	170366-1	170366-1 4 Tyco Electronics		(4-pins)	

· Pin disposition of connector, · Pin disposition of connector connector X6

for encoder cable

· Pin disposition of connector for motor cable











# **Connector Kit**

\* When IP65 or IP67 are necessary, the customer must give appropriate processing.

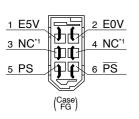
Part No. DV0PM20035 MSME 50 W to 400 W(100 V), 50 W to 750 W(200 V)

# Components

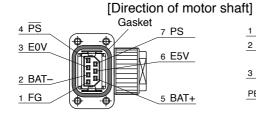
Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Commenter VC (Coming)	
Shell kit	3E306-3200-008	3E306-3200-008 1 (or equivalent)		For Connector X6 (6-pins)	
Encoder connector	JN6FR07SM1 1 Japan		Japan Aviation	For Encoder cable	
Socket contact	LY10-C1-A1-10000	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)		

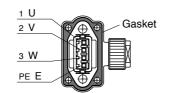
• Pin disposition of connector, • Pin disposition of connector connector X6 for encoder cable

· Pin disposition of connector for motor cable

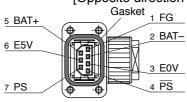


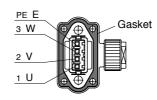
\*1 NC: None Connect





[Opposite direction of motor shaft]





\* Pins 2 and 5 are left unused (NC) with an incremental encoder.

Remarks - Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

Part No.		Applicable model	<ip67 motor=""> MSME 750 W (400 V), 1.0 kW to 2.0 kW, MDME 400 W (400 V), 600 W (400 V), 1.0 kW to 2.0 kW MHME 1.0 kW to 1.5 kW, MGME 0.9 kW (All model 200 V and 400 V commonness)</ip67>	Without brake
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# Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	206-0100 KV 1 Sumitomo 3M		For Connector X6 (6-pins)	
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector A6 (6-pins)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	For Encoder cable	
Motor connector	JL04V-6A-20-4SE-EB-R	1	Japan Aviation	For Motor cable	
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	FOI WIOLOT CADIE	

# <Remarks>

• For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.213 "List of Peripheral Equipments".

		<ip65 motor=""></ip65>			
	Part No			MSME 750 W (400 V), 1.0 kW to 2.0 kW	Without
Part NO.	DV0F4310	model	MDME 400 W (400 V), 600 W (400 V), 1.0 kW to 2.0 kW	brake	
				MHME 1.0 kW to 1.5 kW, MGME 0.9 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)		
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	For Encoder cable	
Motor connector	N/MS3106B20-4S	1	Japan Aviation	For Motor coble	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	For Motor cable	

			<pre><!--P67 motor--></pre>	\^ <i>(</i> ;4 a_a_,4	
Part No	DV0PM20037		MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kW	Without	
rait ivo.	D V OF IVIZOUS I	model	MHME 2.0 kW to 5.0 kW, MGME 2.0 kW to 4.5 kW	brake	
			(All model 200 V and 400 V commonness)		

# 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	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	For Encoder cable	
Motor connector	JL04V-6A22-22SE-EB-R	1	Japan Aviation	For Motor cable	
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	FOI WIGGO CABLE	

			<ip65 n<="" th=""><th>notor&gt;</th><th></th><th></th><th>Mithout</th></ip65>	notor>			Mithout
Part No.		Applicable model	MSME	3.0 kW to 5.0 kW,	MDME	3.0 kW to 5.0 kW	Without brake
			MHME	2.0 kW to 5.0 kW,	MGME	2.0 kW to 4.5 kW	Diake

# Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	Sumitorio Sivi		For Connector X6 (6-pins)	
Shell kit	3E306-3200-008				
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	For Encoder Cable	
Motor connector	N/MS3106B22-22S	1	Japan Aviation	For Motor coble	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	For Motor cable	

Part No.	DV0PM20038	Applicable model	<ip67 motor=""> MSME 1.0 kW to 2.0 kW, MDME 1.0 kW to 2.0 kW MFME 1.5 kW (Common to with/ without brake), MHME 1.0 kW to 1.5 kW, MGME 0.9 kW (All model 200 V)</ip67>	With brake
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# 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	JN2DS10SL1-R	1	Japan Aviation	Fau Francisco cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	For Encoder cable	
Motor connector	JL04V-6A20-18SE-EB-R	1	Japan Aviation	For Motor cable	
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	For Motor Cable	

# **Connector Kit**

\* When IP65 or IP67 are necessary, the customer must give appropriate processing.

Part No.		Applicable model	<ip65 motor=""> MSME 750 W (400 V), 1.0 kW to 2.0 kW MDME 400 W (400 V), 600 W (400 V), 1.0 kW to 2.0 kW MHME 1.0 kW to 1.5 kW, MGME 0.9 kW</ip65>	With brake
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### Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)	
Shell kit	3E306-3200-008	200-008 1 (or equivaler		For Corniector Ao (o-pins)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	For Encoder cable	
Motor connector	N/MS3106B20-18S	1	Japan Aviation	For Motor cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	FOI WIOLOT CADIE	

Part No.	DV0PM20039	Applicable model	<ip67 motor=""> (200V)  MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kW  MFME 2.5 kW to 4.5 kW (Common to with/ without brake),  MHME 2.0 kW to 5.0 kW, MGME 2.0 kW to 4.5 kW (400V)  MSME 750 W to 5.0 kW, MDME 400 W to 5.0 kW  MFME 1.5 kW to 4.5 kW (Common to with/ without brake),  MHME 1.0 kW to 5.0 kW, MGME 0.9 kW to 4.5 kW</ip67>	brake
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# Components

Title	Part No.	Number	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	100 KV 1 Sumitomo 3M		For Connector X6 (6-pins)	
Shell kit	3E306-3200-008	1	1 (or equivalent)		
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	For Ericoder Cable	
Motor connector	JL04V-6A24-11SE-EB-R	1	Japan Aviation	For Motor coble	
Cable clamp	JL04-2428CK(17)-R	1	Electronics Ind.	For Motor cable	

Part No.		Applicable model	<ip65 motor=""> MSME 3.0 kW to 5.0 kW, MDME 3.0 kW to 5.0 kW MHME 2.0 kW to 5.0 kW, MGME 2.0 kW to 4.5 kW</ip65>	With brake
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# 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	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable	
Cable clamp	N/MS3057-12A	1	Electronics Ind.		
Motor connector	N/MS3106B24-11S	1	Japan Aviation	For Motor coblo	
Cable clamp	N/MS3057-16A	1	Electronics Ind.	For Motor 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.213 "List of Peripheral Equipments".

Part No.	DV0PM20056	Applicable model	<ip67 motor=""> MDME 7.5 kW to 15.0 kW MGME 6.0 kW, MHME 7.5 kW</ip67>	Withou brake
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### Components

_					
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.		
Motor connector	JL04V-6A32-17SE-EB-R	1	Japan Aviation	For Motor coble	
Cable clamp	JL04-32CK(24)-R *	1	Electronics Ind.	For Motor cable	

<sup>\*</sup> Cable cover size:  $\Phi$ 22 to  $\Phi$ 25. Cable core material is not specified. The user can select the cable compatible with the connector to be used.

Part No.		Applicable model	<ip67 motor=""> MDME 7.5 kW to 15.0 kW MGME 6.0 kW, MHME 7.5 kW</ip67>	With brake	
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# Components

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 Francisco cobla	
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	For Encoder cable	
Motor connector	JL04V-6A32-17SE-EB-R	1	Japan Aviation	For Mater coble	
Cable clamp	JL04-32CK(24)-R *	1	Electronics Ind.	For Motor cable	
Brake connector	N/MS3106B14S-2S	1	Japan Aviation	For Droke coble	
Cable clamp	N/MS3057-6A	1	Electronics Ind.	For Brake cable	

<sup>\*</sup> Cable cover size: Φ22 to Φ25. Cable core material is not specified. The user can select the cable compatible with the connector to be used.

# **Connector Kit for Motor/Brake Connection**

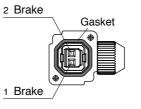
model WISIVIE SO W 10 750 W	Part No.		Applicable model	MSME 50 W to 750 W	
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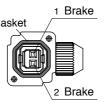
### Components

Title	Part No.	Number	Manufacturer	Note
Connector	JN4FT02SJM-R	1	Japan Aviation	For brake cable
Socket contact	ST-TMH-S-C1B-3500	2	Electronics Ind.	FOI DIAKE CADIE

# • Pin disposition of connector for brake cable

[Direction of motor shaft] [Opposite direction of motor shaft]





Secure the gasket in place without removing it from the connector.

Otherwise, the degree of protection of IP67 will not be guaranteed.

• For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.213 "List of Peripheral Equipments".

A5 Family

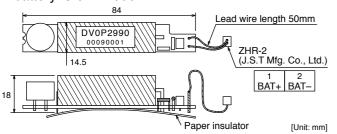
# **Battery for Absolute Encoder**

Part No. DV0P2990

**Battery for Absolute Encoder** 

\* A5IIE, A5E series does not support to absolute encoder.

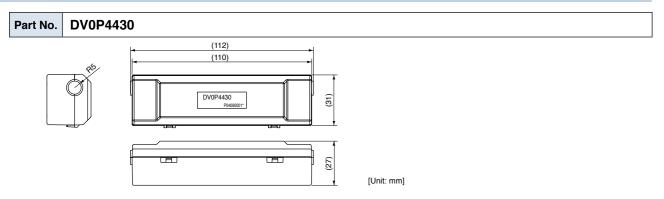
· Lithium battery: 3.6 V 2000 mAh



### <Caution>

This battery is categorized as hazardous substance, and you may be required to present an application of hazardous substance when you transport by air (both passenger and cargo airlines).

# **Battery Box for Absolute Encoder**



# When waking a cable for 17-bit absolute encoder by yourself

When you make your own cable for 17-bit absolute encoder, connect the optional battery for absolute encoder, DV0P2990 as per the wiring diagram below. Connector of the battery for absolute encoder shall be provided by customer as well.

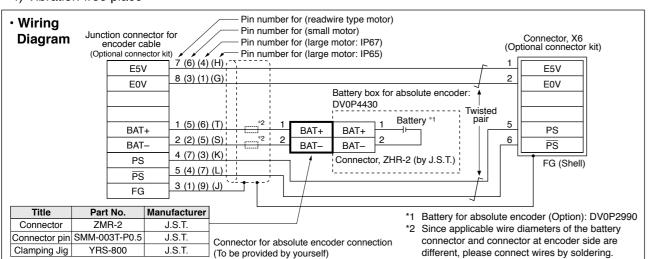
#### <Caution>

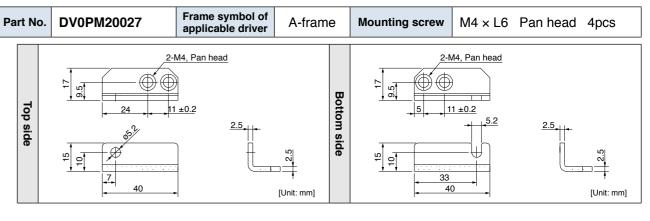
Install and fix the battery securely. If the installation and fixing of the battery is not appropriate, it may cause the wire breakdown or damage of the battery.

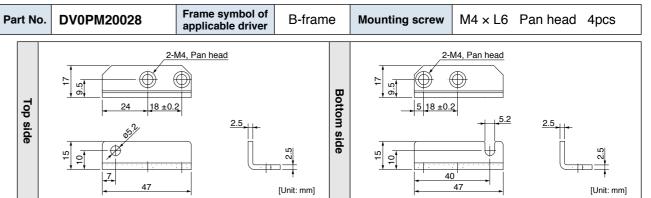
Refer to the instruction manual of the battery for handling the battery.

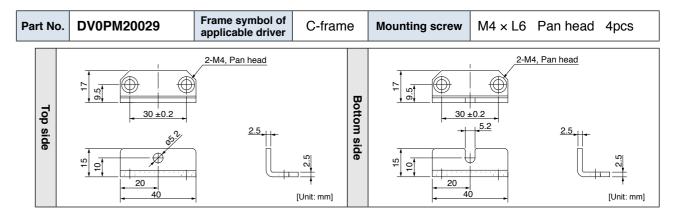
# Installation Place of Battery

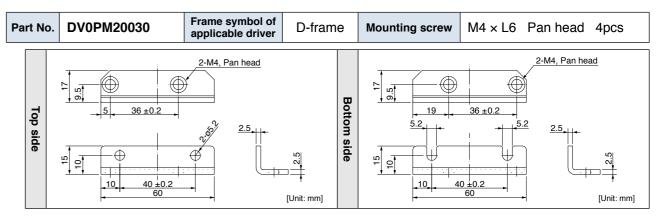
- 1) Indoors, where the products are not subjected to rain or direct sun beam.
- 2) Where the products are not subjected to corrosive atmospheres such as hydrogen sulfide, sulfurous acid, chlorine, ammonia, chloric gas, sulfuric gas, acid, alkaline and salt and so on, and are free from splash of inflammable gas, grinding oil, oil mist, iron powder or chips and etc.
- 3) Well-ventilated and humid and dust-free place.
- 4) Vibration-free place











For E, F and G-frame, it is possible to make both a front end and back end mounting by changing the mounting direction of L-shape bracket (attachment).

**Options** 

**Options** 

# **External Regenerative Resistor**

Fig.2 Α (Mounting pitch) · Wiring of the reactor <Single phase> · Wiring of the reactor <3-Phase> Servo Power supply Servo side side driver Power side supply : Center-to-center distance F: Center-to-center on outer circular arc distance on slotted hole

												[Ullit. Illili]
	Part No.	A	В	С	D	E(Max)	F	G	н	ı	Inductance (mH)	Rated current (A)
	DV0P220	65±1	125±1	(93)	136мах	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
Eia 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)	155мах	150	79+3/-0	95±2	4-7φ×12	M4	1.39	11
	DV0P224	60±1	150±1	(113)	160мах	155	84+3/-0	100±2	4-7φ×12	M5	0.848	16
	DV0P225	60±1	150±1	(113)	160мах	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

<sup>\*</sup> For application, refer to P.21 to P.28 and P.153 to P.154 "Table of Part Numbers and Options".

# **Harmonic restraint**

Harmonic restraint measures are not common to all countries. Therefore, prepare the measures that meet the requirements of the destination country.

With products for Japan, on September, 1994, "Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system" and "Guidelines for harmonic restraint on household electrical appliances and general-purpose articles" established by the Agency for Natural Resources and Energy of the Ministry of Economy, Trade and Industry (the ex-Ministry of International Trade and Industry). According to those guidelines, the Japan Electrical Manufacturers' Association (JEMA) have prepared technical documents (procedure to execute harmonic restraint: JEM-TR 198, JEM-TR 199 and JEM-TR 201) and have been requesting the users to understand the restraint and to cooperate with us. On January, 2004, it has been decided to exclude the general-purpose inverter and servo driver from the "Guidelines for harmonic restraint on household electrical appliances and general-purpose articles". After that, the "Guidelines for harmonic restraint on household electrical appliances and general-purpose articles" was abolished on September 6, 2004. We are pleased to inform you that the procedure to execute the harmonic restraint on general-purpose inverter and servo driver was modified as follows.

- 1. All types of the general-purpose inverters and servo drivers used by specific users are under the control of the "Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system". The users who are required to apply the guidelines must calculate the equivalent capacity and harmonic current according to the guidelines and must take appropriate countermeasures if the harmonic current exceeds a limit value specified in a contract demand. (Refer to JEM-TR 210 and JEM-TR 225.)
- 2. The "Guidelines for harmonic restraint on household electrical appliances and general-purpose articles" was abolished on September 6, 2004. However, based on conventional guidelines, JEMA applies the technical documents JEM-TR 226 and JEM-TR 227 to any users who do not fit into the "Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system" from a perspective on enlightenment on general harmonic restraint. The purpose of these guidelines is the execution of harmonic restraint at every device by a user as usual to the

<Remarks> When using a reactor, be sure to install one reactor to one servo driver.

			Specifications							
Part No.	Manufacturer's	Resistance	cable core outside diameter	Weight -		power nce) *1	Activation			
Part NO.	part No.	nesistance			Free air	with fan 1 m/s	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				
DV0P4282	RF180B	25	ф1.27	0.4	17	50	140±5 °C			
DV0P4283	RF180B	50	Ψ1.27   AWG18 \	0.2	17	50	B-contact			
DV0P4284	RF240	30	stranded	0.5	40	100	Open/Close capacity			
DV0P4285	RH450F	20	\ wire /	1.2	52	130	(resistance load)			
DV0PM20048	RF240	120		0.5	35	80	1 A 125 VAC 6000 times			
DV0PM20049	RH450F	80		1.2	65	190	0.5 A 250 VAC 10000 times			
DV0PM20058	RH450F × 6	3 3.3 - <sup>-2</sup> 16 - <sup>-3</sup> 780								
DV0PM20059	RH450F × 6	13.3	— *2	16	_ *3	1140	•			

Manufacturer : Iwaki Musen Kenkyusho

A built-in thermal fuse and a thermal protector are provided for safety.

The circuit should be so designed that the power supply will be turned off as the thermal protector operates.

The built-in thermal fuse blows depending on changes in heat dissipation condition, operating temperature limit, power supply voltage or load.

Mount the regenerative resistor on a machine operating under aggressive regenerating condition (high power supply voltage, large load inertia, shorter deceleration time, etc.) and make sure that the surface temperature will not exceed 100 °C.

Attach the regenerative resistor to a nonflammable material such as metal.

Cover the regenerative resistor with a nonflammable material so that it cannot be directly touched.

Temperatures of parts that may be directly touched by people should be kept below 70 °C.

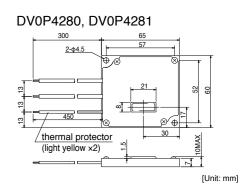
\*2 Terminal block with screw tightening torque as shown below.

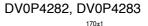
T1, T2, 24 V, 0 V, E: M4: 1.2 N·m to 1.4 N·m : M5 : 2.0 N·m to 2.4 N·m

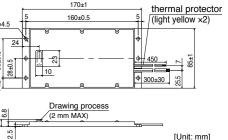
Use the cable with the same diameter as the main circuit cable. (Refer to P.19).

\*3 With built-in fan which should always be operated with the power supply connected across 24 V and 0 V.

	Power supply							
Frame	Single phase, 100 V	Single phase, 200 V 3-phase, 200 V	3-phase, 400 V					
A	DV0P4280	DV0P4281 (50 W, 100 W)						
		DV0P4283 (200 W)	_					
В	DV0P4283	DV0P4283						
С	DV0P4282	DV0F4203						
D		DV0P4284	DV0PM20048					
E		DV0P4284 × 2 in parallel or DV0P4285	DV0PM20049					
F	_	DV0P4285 × 2 in parallel	DV0PM20049 × 2 in parallel					
G		DV0P4285 × 3 in parallel	DV0PM20049 × 3 in parallel					
Н		DV0P4285 × 6 in parallel or DV0PM20058	DV0PM20049 × 6 in parallel or DV0PM20059					







<sup>\*1</sup> Power with which the driver can be used without activating the built-in thermal protector.

# **Surge Absorber for Motor Brake**

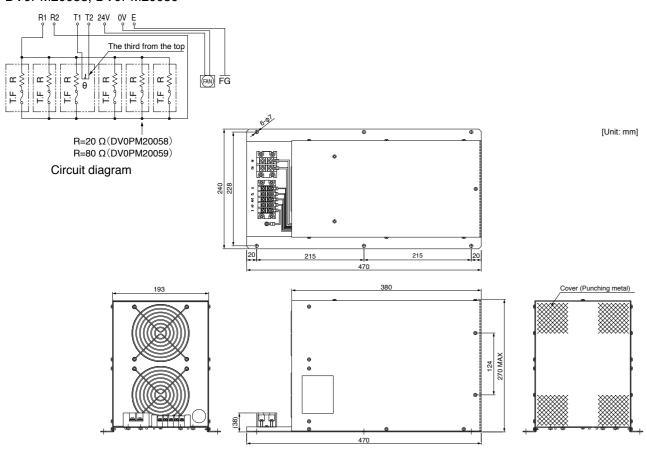
**A5 Family** 

# DV0P4284, DV0PM20048 DV0P4285, DV0PM20049 thermal protector (light yellow ×2)

# thermal protector [Unit: mm]

**External Regenerative Resistor** 

# DV0PM20058, DV0PM20059



# <Caution when using external regenerative resistor>

# Regenerative resistor gets very hot.

Configure a circuit so that a power supply shuts down when built-in thermal protector of the regenerative resistor works. Because it is automatic reset thermal protector, please apply a self-holding circuit to the outside in order to maintain safety in case of sudden activation. During the failure of the driver, the surface temperature of the regenerative resistor may exceed the operating temperature before thermal protector starts to work.

Built-in thermal fuse of regenerative resistor is intended to prevent from ignition during the failure of the driver and not intended to suppress the surface temperature of the resistor.

- Be attached the regenerative resistance to non-combustible material such as metal.
- Built-in thermal fuse of regenerative resistor is intended to prevent from ignition during the failure of the driver and not intended to suppress the surface temperature of the resistor.
- Do not install the regenerative resistor near flammable materials.

	Motor	Part No.	Manufacturer	
MSMD	50 W to 750 W	Z15D271	SEMITEC Corporation	
MSMJ	200 W to 750 W	or	or NIPPON CHEMI-CON	
	50 W to 750 W	TNR15G271K	CORPORATION	
MSME	750 W (400 V) 1.0 kW to 5.0 kW	Z15D151	SEMITEC Corporation	
	400 W (400 V), 600 W (400 V)		·	
MDME -	1.0 kW to 3.0 kW	NVD07SCD082	KOA Corporation	
	4.0 kW to 7.5 kW	Z15D151	SEMITEC Corporation	
	11 kW, 15 kW			
NACNAC	1.5 kW	NVD07SCD082	KOA Corporation	
MFME	2.5 kW, 4.5 kW			
MGME	0.9 kW to 6.0 kW	Z15D151	SEMITEC Corporation	
MHMD MHMJ	200 W to 750 W	Z15D271 or TNR15G271K	SEMITEC Corporation or NIPPON CHEMI-CON CORPORATION	
NALINAE	1.0 kW, 1.5 kW	NVD07SCD082	KOA Corporation	
MHME	2.0 kW to 7.5 kW	Z15D151	SEMITEC Corporation	

# **List of Peripheral Equipments**

Manufacturer	Tel No. / Home Page	Peripheral components
Panasonic Corporation	http://panasonic.net/es/	Circuit breaker
Eco Solutions Company	111.p.//pariacomemos 65/	
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/	-
KK-CORP.CO.JP	+81-184-53-2307 http://www.kk-corp.co.jp/	
MICROMETALS	+81-4-2934-4151	Noise filter
(Nisshin Electric Co., Ltd.)	http://www.nisshin-electric.com/	for signal lines
TDK Corporation	+81-3-5201-7229 http://www.global.tdk.com/	
Okaya Flastria Industrias Ca. Ltd.	+81-3-4544-7040	Surge absorber
Okaya Electric Industries Co. Ltd.	http://www.okayaelec.co.jp/english/index.html	Noise filter
Japan Aviation Electronics Industry, Ltd.	+81-3-3780-2717 http://www.jae.co.jp/e-top/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	+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	
Schaffner EMC, Inc.	+81-3-5712-3650 http://www.schaffner.jp/	Maine Ch.
TDK-Lambda Corporation	+81-3-5201-7140 http://www.tdk-lambda.com/	Noise filter

<sup>\*</sup> The above list is for reference only. We may change the manufacturer without notice.

214

213

mily

Series

information

# 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

## 2

## Easy to Handle, Easy to Use

- DIN-rail mounting unit (option) improves handling/installation.
- User-friendly Console makes the setup easy.
- High functionality Real-Time Auto-Gain Tuning enables adjustment-free operation.



# High-Speed Positioning with Resonance Suppression Filters

- Built-In notch filter suppresses resonance of the machine.
- Built-in adaptive filter detect resonance frequency and suppress vibration.

# 4

### **Smoother operation for Low Stiffness Machine**

Damping control function suppresses vibration during acceleration/deceleration

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Features	21
Motor Line-up	21
Model Designation	22
Overall Wiring	22
Driver and List of Applicable Peripheral Equipments	22
Driver	
Driver Specifications	
Standard Wiring Example of Main Circuit	
Encorder Wiring Diagram	
Control Circuit Standard Wiring Example	22
Dimensions of Driver	22
Motor	22
Specifications/Model designation/Torque Characteristics	
Dimensions of Moter	
Motors with Gear Reducer	
Options	23
Setup Support Software	
Cable part No. Designation	
Cable Set	
Encoder Cable	23
Motor Cable	23
Brake Cable	23
Connector Kit	23
Interface Cable	24
Communication Cable	24
Console	24
DIN Rail Mounting Unit	24
External Regenerative Resistor	24
Reactor	24
Surge Absorber for Motor Brake	24
List of Peripheral Components	24

# **Lasy to Handle, Easy to Use**

### High-functionality Real-Time Auto-Gain Tuning (Note 1)

MINAS E Series

- Offers real automatic gain tuning for low and high stiffness machines with a combination of an adaptive filter.
- Supports the vertical axis application where the load torque is different in rotational direction.

### **DIN-rail mounting unit (option)**

- DIN-rail mounting unit allows parallel mounting with small control devices such as PLC.
- Easy to mount and easy to dismount.

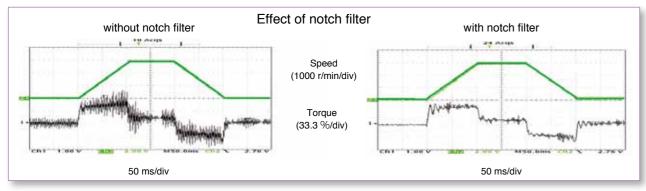
# **?**. Further Reduction of Vibration

### Adaptive filter (Note1)

- Makes the notch filter frequency automatically follow the machine resonance frequency in real-time auto-gain tuning.
- Suppression of "Judder" noise of the machine, which is caused by variation of the machines or resonance frequency due to aging, can be expected.

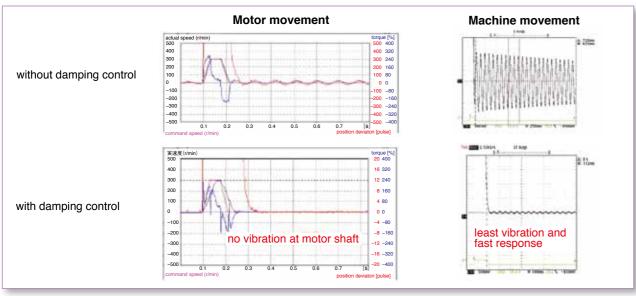
### Notch filter (Note1)

- 1-channel notch filter is equipped in the driver independent from adaptive filter.
- Each of 2 filters can set up frequency and notch width, and frequency in 1Hz unit. Suppression of "Judder" noise of the machine which has multiple resonance points can be expected.



### Damping control (Note1)

You can suppress vibration occurring at both starting and stopping in low stiffness machine, by manually setting up vibration frequency in 0.1 Hz unit. Note) Only applies to manual adjustment



217

(Note1) Select at positioning action mode

- At high speed positioning mode (Pr02=0) Select either one of notch filter, damping control or high-functionality real-time auto- gain tuning.
   Not possible to use them all at the same time.
   Adaptive filter cannot be used.
- At high-functionality positioning mode (Pr02=1) All of notch filter, damping control, high-functionality real-time auto-gain tuning and adaptive filter can be used at the same time

# 3. Further Flexibility and Multiplicity

### Console (Option)

- You can set up parameters, copy and make a JOG run.
- Convenient for maintenance at site.
- Refer to P.241, Options.

### Command control modes

- Offers 2 command modes, "Position control" and "Internal velocity control".
- You can make a 4-speed running at preset values with parameter at internal velocity control mode.

### Inrush current suppressing function

- Inrush suppressing resistor, which prevent the circuit breaker shutdown of the power supply caused by inrush current at power-on, is equipped in this driver.
- Prevents unintentional shutdown of the power supply circuit breaker in multi axis application and does not give load to the power line.

### Regeneration discharging function

- Discharges the regenerative energy with external resistor, where energy is generated while stopping the load with large moment of inertia, or use in up-down operation, and is returned to the driver from the motor.
- No regenerative resistor is installed in the driver.
- It is highly recommended to install an external regenerative resistor (option).

### **Built-in dynamic brake**

- You can select the dynamic brake action which short the servo motor windings of U, V and W, at Servo-OFF, CW/ CCW over- travel inhibition, power shutdown and trip.
- You can select the action sequence depending on the machine requirement.

### Setup support software (Option)

With the setup support software, "PANATERM" via RS232 / RS485 communication port, you can monitor the running status of the driver and set up parameters. Note) Refer to P.236 for setup support software.

## Key-way shaft and tapped shaft end

- Easy pulley attachment and easy maintenance
- Attache screw to the tapped shaft to prevent key or pulley from being pulled out.

### **Wave-form graphic function**

- With the setup support software, "PANATERM", you can monitor the "Command speed", "Actual speed", "Torque", "Position deviation" and "Positioning complete signal".
- Helps you to analyze the machine and shorten the setup time

Note) Refer to P.236 for setup support software.

### Frequency analyzing function

- You can confirm the response frequency characteristics of total machine mechanism including the servo motor with the setup support software, "PANATERM".
- Helps you to analyze the machine and shorten the setup time

Note) Refer to P.236 for setup support software.

### **Torque limit switching function**

- You can select 2 preset torque limit value from external input.
- Use this function for tension control or press-hold control.

### **Conformity to CE and UL Standards**







Subject		Standard conformed		
Motor	IEC60034-1	IEC60034-5 UL1004 CSA22.2 No.100	Conforms to Low-Voltage	
	EN50178	UL508C CSA22.2 No.14	Directives	
	EN55011	Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment	Conforms to	
	EN61000-6-2	Immunity for Industrial Environments		
Matau	EC61000-4-2	Electrostatic Discharge Immunity Test		
Motor and driver	IEC61000-4-3	000-4-3 Radio Frequency Electromagnetic Field Immunity Test		
unver	IEC61000-4-4	Electric High-Speed Transition Phenomenon/Burst Immunity Test	by EMC Directives	
	IEC61000-4-5	Lightening Surge Immunity Test		
	IEC61000-4-6	High Frequency Conduction Immunity Test		
	IEC61000-4-11	Instantaneous Outage Immunity Test		

IEC : International Electrotechnical Commission

EN : Europaischen Normen

EMC : Electromagnetic Compatibility

UL : Underwriters Laborato

CSA: Canadian Standards Association

Pursuant to at the directive 2004/108/EC.article 9(2)

Panasonic Testing Centre Panasonic Service Europe,

a division of Panasonic Marketing Europe GmbH Winsbergring 15,22525 Hamburg,F.R.Germany

\* When exporting this product, follow statutory provisions of the destination country.

## **Motor Line-up**

MINAS E series

			Rated rotational	Rotary	encoder	Brake	Gear	111.7			
	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	IP65 Except shaft throughhole and connector	Small capacity Ultra low inertia	SMT machines Inserters High repetitive positioning application

## **Model Designation**

### Servo Motor

# M U M A 5 A Z P 1 S \*\*

Symbol MUMA Ultra low inertia (50 W to 400 W)

**Motor rated output** 

Symbol	Rated output
5A	50 W
01	100 W
02	200 W
04	400 W

**Voltage specifications** 

Symbol	Specifications
1	100 V
2	200 V
Z	100 V/200 V common (50 W only)

Rotary encoder specifications							
Symbol	Format	Pulse counts	Resolution	Wires			
Р	Incremental	2500 P/r	10000	5			

**Special specifications** 

**Motor structure** 

motor off dotaio							
Symbol	Shaft	Holding	g brake	Oil seal			
	Key-way, center tap	without	with	without	with*		
S	•	•		•			
Т	•		•	•			

\* Motor with oil seal is manufactured by order.

**Design order** 

Symbol	Specifications
1	Standard

See P.227 for motor specifications

### ■ Motor with gear reducer

## M U M A 0 1 1 P 3 1 N

Motor rated output Symbol Rated output Symbol Type 01 100 W Ultra low inertia MUMA (100 W to 400 W) 02 200 W 04 400 W

Voltage specifications

voltage specifications					
Symbol	Specifications				
1	100 V				
2	200 V				

**Rotary encoder specifications** 

Total y chocker openione						
Symbol	Format	Pulse counts	Resolution	Wires		
Р	Incremental	2500 P/r	10000	5		

Gear reduction ration, gear type

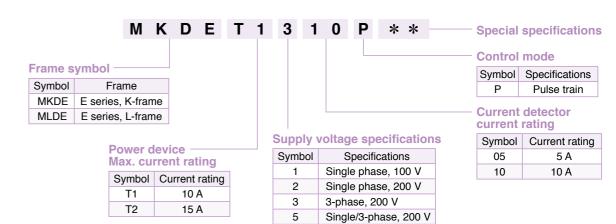
	Gear	Moto	r outpu			
Symbol	reduction ratio	100	200	400	Gear type	
1N	1/5	•	•	•	Cau biala	
2N	1/9	•	•	•	For high	
4N	1/25	•	•	•	accuracy	

**Motor structure** 

Symbol	Shaft	Holding	g brake
Syllibol	Key-way	without	with
3	•	•	
4	•		•

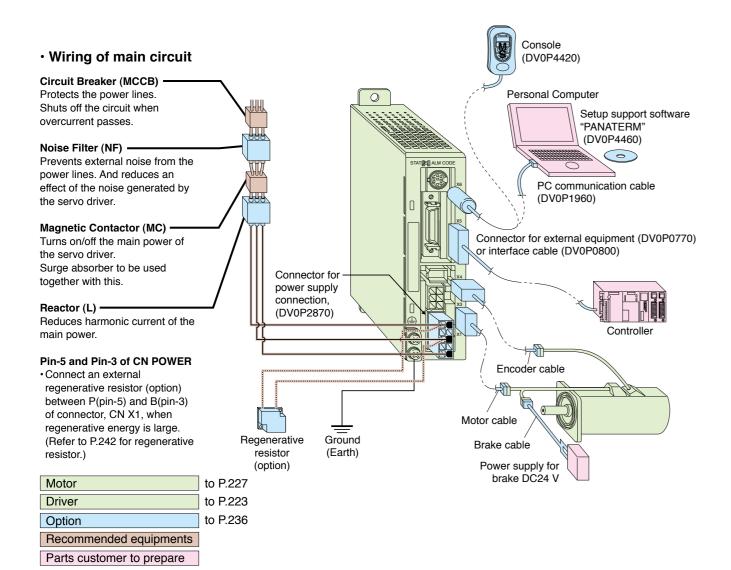
See P.232 for motor with gear reducer specifications

### Servo Driver



See P.223 for driver specifications

## **Overall Wiring/ Driver and List of Applicable Peripheral Equipments**



### List of recommended peripheral equipments

	Мо	tor	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 A)		10.4		
phase,		100 W	0.4 kVA	(5 A)		10 A (3P+1a)		
100 V		200 W	0.5 kVA	(10 A)		(01 4 14)	_	
		50 W	0.01970			15 A		
Single		100 W	0.3 kVA	(5 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	
		400 W	0.9 kVA	(10 A)			AWGIO	
		50 W	0.017/4					
3-phase		100 W	0.3 kVA	(5 A)		10 A		
200 V		200 W	0.5 kVA	/A (3P+1a)	1	1	(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 noise filter and power supply.
- For details of the noise filters, refer to P.256.

### <Remarks>

· Use a copper conductor cables with temperature rating of 60 °C or higher for main power connector and ground

Use a cable for ground with diameter of 2.0 mm<sup>2</sup> (AWG14) or larger.

Carrying page								
	Part No.	Carrying page						
Console				DV0P4420	241			
Setup Support Software, PANATERM			Japanese English	DV0P4460	236			
RS232 Commu (for Connection			Cable	DV0P1960	241			
Interface Cable	)			DV0P0800	241			
Connector Kit f	or E	xter	nal Equipment	DV0P0770	240			
Connector Kit f	or N	/lotor	and Encoder	DV0P3670	239			
Connector Kit f	or E	)rive	Power Supply	DV0P2870	239			
Encoder Cable	!		MFECA0 * *	0EAM	238			
Motor Cable			MFMCA0 * *	238				
Brake Cable			MFMCB0 * *	238				
Cable Set (3 m	) <sup>(No</sup>	te 3)	DV0P37300	238				
Cable Set (5 m	) <sup>(No</sup>	te 3)	DV0P39200	238				
DIN Rail Moun	t Un	it	DV0P3811		242			
External	10	0 V	50 Ω 10 W	DV0P2890	040			
Regenerative Resistor	20	0 V	100 Ω 10 W	DV0P2891	242			
			100 V	DV0P227				
Reactor				DV0P228	243			
			200 V	DV0P220				
Noise Filter				DV0P4160	256			
		gle phase 0 V, 200 V	DV0P4190	256				
		3-p	hase 200 V	DV0P1450				
Noise Filter for	DV0P1460	256						

(Note 3) Cable set (3 m) contains,

- 1) Interface cable: DV0P0800
- 2) Encoder cable (3 m): MFECA0030EAM
- 3) Motor cable (3 m) : MFMCA0030AEB
- 4) Connector kit for driver power supply connection: DV0P2870 Cable set (5 m) contains,
- 1) Interface cable: DV0P0800
- 2) Encoder cable (5 m) : MFECA0050EAM
- 3) Motor cable (5 m): MFMCA0050AEB
- 4) Connector kit for driver power supply connection : DV0P2870

## **■ Table of Part Numbers and Options**

MINAS E Series

			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	External Regenerative Resistor	Reactor	Noise Filter												
Single	50	MUMA5AZP1 □	227	MKDET1105P	226 (K)						DV0P227													
phase	100	MUMA011P1 $\square$	227	MKDET1110P	226 (K)					DV0P2890	DVUFZZI													
100 V	200	MUMA021P1 🗌	227	MLDET2110P	226 (L)						DV0P228													
	50	MUMA5AZP1 🗌	229	MKDET1505P	226 (K)																			
Single	100	MUMA012P1	229	MKDET1505P	226 (K)																			
phase 200 V	200	MUMA022P1	229	MLDET2210P	226 (L)	MEEOAOU	MEEOAO de de OEANA	MEEGAGAAA	MEEO A O de de OE A A A	MEEO A O de de OE A A A	(L)	L)	MEEO A O de de OE A M	MEECAO	MEECAON NOTAN	MEEO A O de de OE A NA	MEECAOW WOEAN	MFECA0 * * 0EAM MFMCA0 * * 0A	MEMOAO II II OA ED					D)/0D4400
	400	MUMA042P1	229	MLDET2510P	226 (L)	MIFECAU* * UEAM	MFMCAU* *UAEB		MFMCB0 * * 0GET			DV0P4160												
	50	MUMA5AZP1	229	MKDET1505P	226 (K)			)	226 (K)				DV0P2891	DV0P220										
	100	MUMA012P1	229	MKDET1505P	226 (K)																			
3-phase 200 V	200	MUMA022P1	229	MKDET1310P	226 (K)																			
	400	MUMAO 40D4	000	MLDET2510P	000 (1)																			
	400	MUMA042P1 □	229	MLDET2310P	226 (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.237.

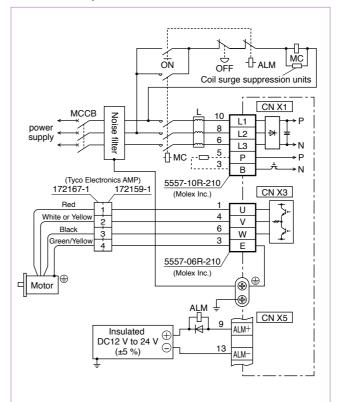
Standard Wiring Example of Main Circuit/ Encorder Wiring Diagram

**E Series** 

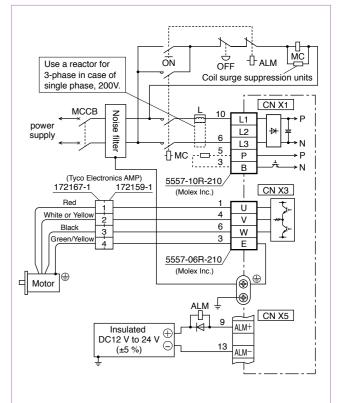
**Wiring Diagram** 

### **Standard Wiring Example of Main Circuit**

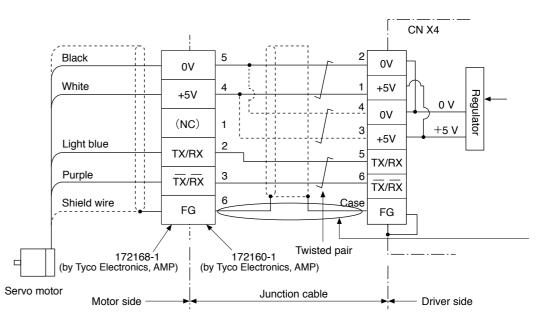
### 3-Phase, 200 V



### ■ Single Phase, 100 V / 200 V



### **Encorder Wiring Diagram**



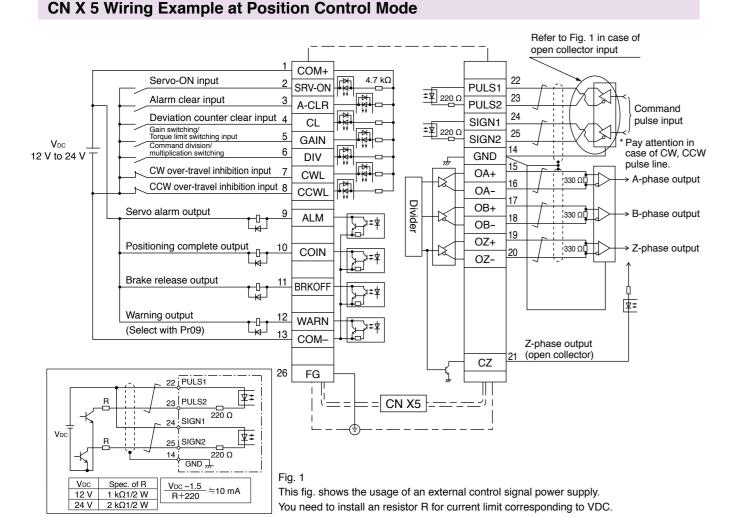
### When you make your own junction cable for encoder (Refer to P.239, P.240 "Options" for connector.)

- 1) Refer the wiring diagram.
- 2) Use the twisted pair wire with shield, with core diameter of 0.18 mm² (AWG24) or larger, with higher
- 3) Use the twisted pair wire for the corresponding signal and power supply.
- 4) Shielding

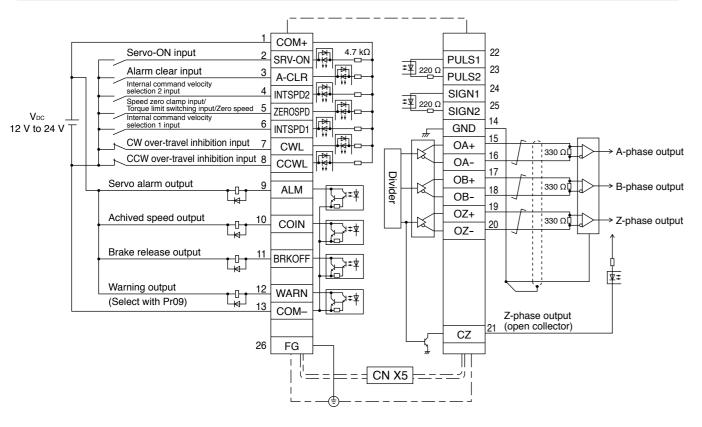
Connect the shield of the driver to the case of CN X4. Connect the shield of the motor to Pin-6.

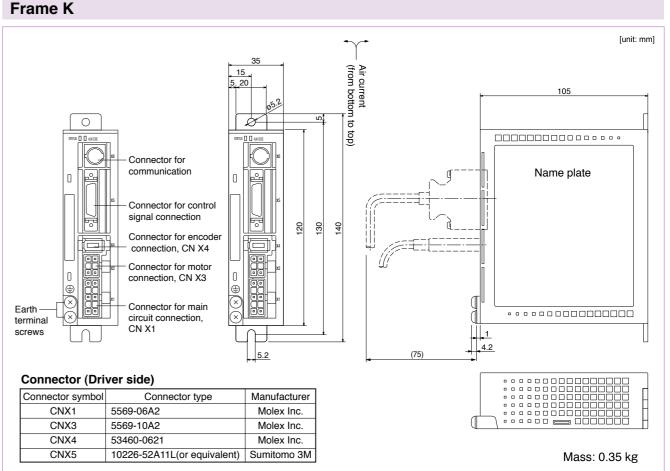
		Sing	le phase, 100 V	Single phase, 100 V to 115 V +10 % 50 Hz/60 Hz		
	nput	Sino	lo phase 200 V	Single phase, 200 V to 240 V +10 % 50 Hz/60 Hz		
	Input power	Single phase, 200 V				
		3-ph	ase, 200 V	3-phase, 200 V to 240 V +10 % 50 Hz/60 Hz		
	Environment	Tem	perature	Operating: 0 °C to 55 °C, Storage: –20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal temperature="">)</nomal>		
	ron	Hum	nidity	Both operating and storage : 90 %RH or less (free from condensation)		
	nen	Altitu	ıde	1000 m or lower		
		Vibra	ation	5.88 m/s² 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.		
	Cont	trol me	ethod	IGBT PWM Sinusoidal wave drive		
	Enco	oder fe	eedback	2500 P/r (10000 resolution) incremental encoder		
	ω C	Inpu	t	7 inputs (1) Servo-ON, (2) Alarm clear and other inputs vary depending on the control mode.		
	Control signal	Outp	out	4 outputs (1) Servo alarm, (2) Alarm, (3) Release signal of external brake and other outputs vary depending on the control mod		
<b>60</b> –	σт	Inpu	t	2 inputs Supports both line driver I/F and open collector I/F.		
	Pulse signal	Outp	out	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.		
	Com	munic	cation function RS232	1 : 1 communication to a host with RS232 interface is enabled.		
	Disn	lay LE	:D	(1) Status LED (STATUS), (2) Alarm code LED (ALM-CODE)		
		enerat		No built-in regenerative resistor (external resistor only)		
	_			Built-in		
		amic b trol mo		3 modes of (1) High-speed position control, (2) Internal velocity control and		
		Control input		(3) High-functionality positioning control are selectable with parameter.  (1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Deviation counter clear, (4) Gain switching, (5) Electronic gear switching		
		Control output		(1) Positioning complete (In-position)		
	Positio		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>0</u>		Electronic gear /Division/Multiplication of command pulse	Setup of electronic gear ratio Setup range of (1-10000) × 2 <sup>(0-17)</sup> /(1-10000)		
			Smoothing filter	Primary delay filter or FIR type filter is selectable to the command input.		
	Internal	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,</li><li>(5) Speed zero clamp</li></ul>		
	mal	Con	trol output	(1) Speed arrival (at-speed)		
	Speed	Inter	nal speed command	Internal 4-speed is selectable with control input.		
,	ed 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>8</u>	Zero	-speed clamp	0-clamp of internal speed command with speed zero clamp input is enabled.		
1			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	puls	sion of encoder feedback e	1 P/r to 2500 P/r (encoder pulses count is the max.).		
	의	Protective function	Hardware error	Over-voltage, under-voltage, over-speed over-load, over-heat, over-current and encoder error etc.		
		otive	Software error	Excess position deviation, command pulse division error, EEPROM error etc.		
		Trac	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		
		Ĕ	Setup support software	PANATERM (Supporting OS : Windows98, Windows ME, Windows2000, and WindowsXP)		

## **Control Circuit Standard Wiring Example**

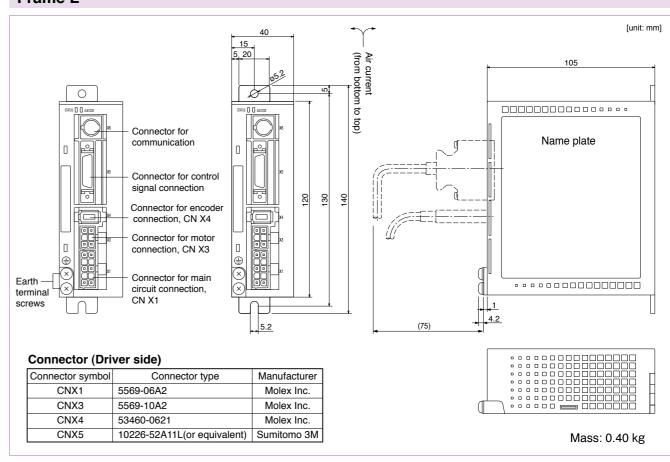


### **CN X 5 Wiring Example at Internal Velocity Control Mode**





### Frame L



**Motor Specifications** 

100 V **MUMA** 50 W to 200 W

0.96 (1.36)

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)					
Static friction torque (N·m)	0.29	1.27			
Engaging time (ms)	25	50			
Releasing time (ms) Note)4	20 (30)	15 (100)			
Exciting current (DC) (A)	0.26	0.36			
Releasing voltage	DC 1 V or more				
Exciting voltage	DV 24 V ±10 %				

0.5 (0.7)

0.4 (0.6)

Permissible load					
During assembly	Radial load P-direction (N)	147	392		
	Thrust load A-direction (N)	88	147		
-	Thrust load B-direction (N)	117	196		
	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.231, and for the diver, refer to P.226.

Mass (kg), ( ) represents holding brake type

### **Model Designation**

Symbol Type Ultra low inertia MUMA (50 W to 200 W)

Motor rated output Symbol Rated output 50 W 5A 01 100 W 02

200 W

Voltage specifications Symbol Specifications 100 V 100/200 V Z (50 W only)

Design order 1 : Standard

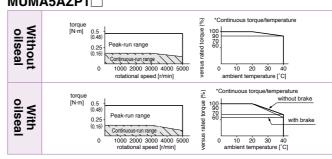
IVIOLOI SLI	Shaft	Holding	brake	Oil s	eal
Symbol	Key-way, center tap	without	with	without	with
S	•	•		•	
Т	•		•	•	

Rotary encoder specifications

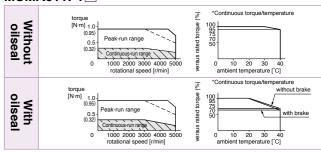
Symbol	Format	Pulse counts	Resolution	Wires
Р	Incremental	2500 P/r	10000	5

### **Torque Characteristics** [at AC100 V of power voltage (Dotted line represents the torque at 10 % less supply voltage.)]

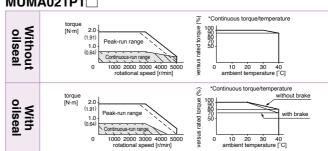
### MUMA5AZP1



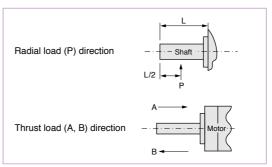
MUMA011P1



### MUMA021P1



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well. Running range (Torque limit setup: 300 %) Running range (Torque limit setup: 200 %) Running range (Torque limit setup: 100 %



- 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
  - 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
  - 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)

**Motor Specifications** 

200 V **MUMA** 50 W to 400 W

Low inertia

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)					
Static friction torque (N · m)	0.29	1.27			
Engaging time (ms)	25	50			
Releasing time (ms) Note)4	20 (30)	15 (100)			
Exciting current (DC) (A)	0.26	0.36			
Releasing voltage	ge DC 1 V or more				
Exciting voltage	DV 24 V ±10 %				

Permissible load					
	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.231, and for the driver, refer to P.226.

Note) Driver for 50 W and 100 W has a common power supply of single phase and 3-phase 200 V.

Driver for 200 W, the upper row is the power supply of 3-phase 200 V, and lower is the power supply of single-phase 200 V.

Driver for 400 W, the upper row is the power supply of 3-phase 200 V, and lower is the common power supply of single-phase and 3-phase 200 V.

### **Model Designation**

### M S Design order

Symbol Type Ultra low inertia MUMA (50 W to 400 W)

Motor rated output Symbol Rated output 5A 50 W 01 100 W 02 200 W 04 400 W

Voltage specifications Symbol Specifications 2 200 V 100/200 V Z (50 W only)

1 : Standard

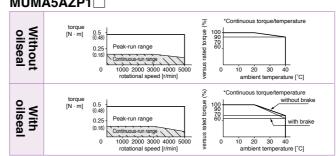
	Shaft	Holding	brake	Oil seal			
Symbol	Key-way, center tap	without	with	without	with		
S	•	•		•			
Т	•		•	•			

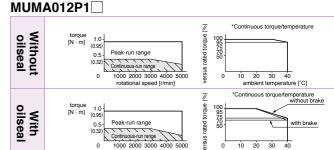
Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
Р	Incremental	2500 P/r	10000	5

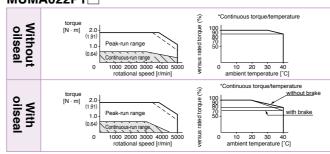
### Torque Characteristics [at AC200 V of power voltage (Dotted line represents the torque at 10 % less supply voltage.)]

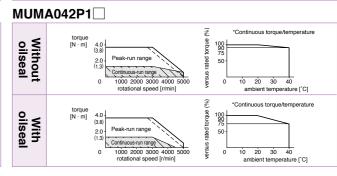
### MUMA5AZP1

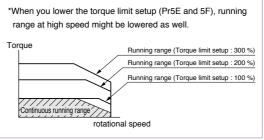


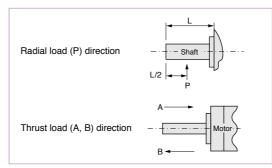


### MUMA022P1









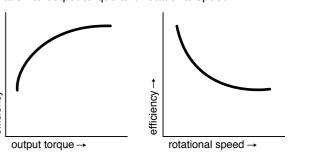
- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
  - If the load is connected, frequency will be defined as 1/(m+1), where m = (load moment of inertia) / (rotor moment of inertia).
  - · When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated
  - Power supply voltage is AC240 V (at 200 V of the main voltage).
  - If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/240) relative to the value in the table.
  - · When regeneration occurs 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)

# **MINAS E Series Motors with Gear Reducer**

### **Motor Types with Gear Reducer**

Reduction ratio	Мо	Type of		
	100	200	400	reducer
1/5	•	•	•	
1/9	•	•	•	For high precision
1/25	•	•	•	precision

Efficiency of the gear reducer shows the following inclination in relation to output torque and rotational speed.



# Encoder Motor connector connector LL LR LE Brake connector (Key way dimensions) □LC

[Unit: mm]

**MUMA 50 W to 400 W** 

\* Dimensions are subject to change without notice. Contact us or a dealer for the latest information

						[Unit: mm]				
				MUMA series	(Ultra low inertia)					
Motor outpu	ıt		50 W	100 W	200 W	400 W				
Motor mode	əl	MUMA	5A□P1□	01□P1□	02□P1□	04□P1□				
Rotary encoder specifications		2500 P/r Incremental	2500 P/r Incremental	2500 P/r Incremental	2500 P/r Incremental					
LL		Without brake	75.5	92.5	96	123.5				
LL		With brake	107	124	129	156.5				
	LR		24	24	30	30				
S			8	8	11	14				
LA		48	48	70	70					
LB			22	22	50	50				
	LC		42	42	60	60				
	LE		2	2	3	3				
	LF		7	7	7	7				
	LH		34	34	43	43				
	LZ		3.4	3.4	4.5	4.5				
	LW		14	14	20	25				
	LK		12.5	12.5	18	22.5				
	ΚW		3h9	3h9	4h9	5h9				
Key way	KH		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)				
Mana (kg)		Without brake	0.40	0.50	0.96	1.5				
Mass (kg)		With brake	0.60 0.70 1.		1.36	1.9				
Connector/Plug specifications			refer to Options, P.239, P.240.							

### <Cautions>

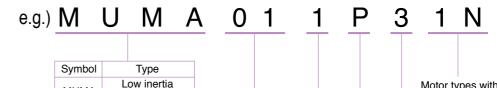
Reduce the moment of inertia ratio if high speed response operation is required.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

### Model No. Designation

MUMA

04



(100 to 400 W) Motor rated output Symbol Rated output 100 W 02 200 W

400 W

Voltage specifications Symbol Specifications 100 V 200 V

Rotary encoder specifications									
Symbol	Format	Pulse counts	Pulse counts	Wire					
Р	Incremental	2500 P/r	10000	5					

## Motor structure Holding brake 4

Motor types with gear reducer

Reduction

ratio

1/5

1/9

1/25

2N

4N

100

200

400

reducer

For High

### **Specifications of Motor with Gear Reducer**

	Motor type	MUMA					
	Backlash	3 minutes or smaller (initial value) at output shaft of the reducer					
	Composition of gear	Planetary gear					
	Gear efficiency	65 % to 85 %					
0	Rotational direction at output shaft (of reducer)	Same direction as the motor output shaft					
Gear	Composition of gear	Planetary gear					
reducer	Mounting method	Flange mounting					
	Permissible moment of inertia of the load	10 times or smaller than rotor moment of inertia of the motor					
	(conversion to the motor shaft)	To times of smaller than fotor moment of mertia of the motor					
	Protective structure	IP44 (at gear reducer)					
	Ambient temperature	0 °C to 40 °C					
F	Ambient humidity	85 %RH (free from condensation) or less					
Environment	Vibration resistance	49 m/s <sup>2</sup> or less (at motor frame)					
	Impact resistance	98 m/s² or less					

## **Torque Characteristics**

**E Series** 

# **Motors with Gear Reducer**

### **Table of Motor with Gear Reducer Specifications**

	Motor					MU	JMA with g	ear reduc	er				
Model	Output	utput Reduction ratio	Output	Rated	Max.	Rated		/motor + redu	of inertia cer/converted or shaft		ass	Permissible radial load	Permissible thrust load
	•		•	speed	speed	torque	torque	w/o brake	w/ brake	w/o brake	w/ brake	raulai loau	till dot load
	(W)		(W)	(r/min)	(r/min)	(N·m)	(N·m)	J ( × 10	⁻⁴kg·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

**Table of Motor Specifications/** 

The Combination of the Driver and the Motor

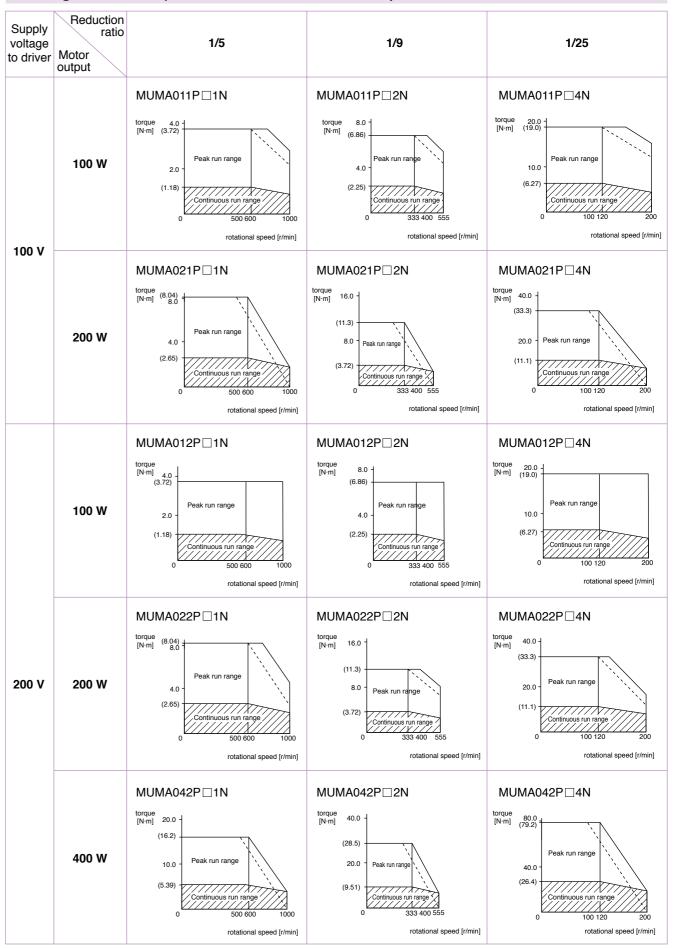
For dimensions, refer to P.235.

### The Combination of the Driver and the Motor with Gear Reducer

Combination w	ith driver	10	0 V	200 V					
Encoder	Motor	Part No. of motor	Single phase, 100 V	Part No. of motor	3-phase, 200 V	Single phase, 200 V			
Ericoder	output	with gear reducer	Part No. of driver	with gear reducer	Part No. of driver	Part No. of driver			
	100 W	MUMA011P□□N	MKDET1110P	MUMA012P□□N	MKDET1505P	MKDET1505P			
2500 P/r	200 W	MUMA021P□□N	MLDET2110P	MUMA022P□□N	MKDET1310P	MLDET2210P			
Incremental	400 W			MUMA042P□□N	MLDET2510P	MLDET2510P			
	400 W _		_	IVIUIVIAU42PUUN	MLDET2310P	WILDET25TUP			

For dimensions, refer to P.235.

### For High Precision (MUMA Series 100 W to 400 W)



Dotted line represents the torque at 10 % less supply voltage.

## **Setup Support Software**

### **MUMA** series with Gear Reducer

[Unit: mm] (Detailed dimensions of shaft end) (LG) LR Encoder connecter (AMP) Motor connector (AMP) Brake connector (AMP)  $\Box$ LC LK

**Motor Dimensions** 

### 2500 P/r Encoder

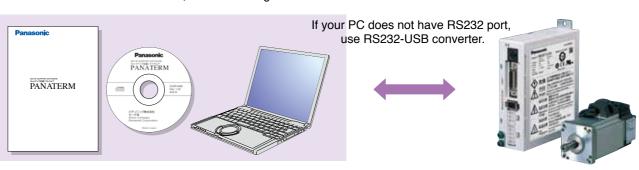
	Motor	Reduction														Key way	Jnit: mm]				
Model	output	ratio	L	LL	LR	LQ	LC	LB	LA	S	LH	LZ	LK	(LG)	LE	B×H×LD	T				
MUMA01□P□1N		1/5	192	92.5																	
WOW/YOTE ETT		173	223.5	124	32	20	52	52	50	60	60 12	12 10	10 M5	18	67.5		4×4×16	2.5			
MUMA01□P□2N	100 W	1/9	192	92.5	52	20	52	30	00	12	10	(Depth: 12)	10	07.5		424210	2.5				
WOW/OILI LEV	100 44	173	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				
WOWAUTET EN		1/23	266	124	50	50 30	50 30	, 30	30 30	30 30	70	70	90	19	17	(Depth: 20)	20	32	3	0x0x22	3.3
MUMA02□P□1N		1/5	200.5	96	32	32 20	20	20	20	52	50	60	12	10	M5	18	72.5		4×4×16	2.5	
WOW/WOZEIT EITY		173	233.5	129	52			52	30	00	12	12 10	(Depth: 12)		72.0		4,4,10	2.5			
MUMA02 P 2N	200 W	1/9	235.5	96										89.5							
WOWAOZ I ZIV	200 W	173	268.5	129										09.5							
MUMA02 P 4N						1/25	246	96										100			
WOWAUZ_I4IV		1/23	279	129	50	30	78	70	90	19	17	M6	26	100		6×6×22	3.5				
MUMA042P□1N		1/5	263	123.5	30	30	70	70	90	19	17	(Depth: 20)	20			0x0x22	3.3				
WOWA0421 LITT		173	296	156.5										89.5							
MUMA042P□2N	400 W	1/9	263	123.5									89.5								
IVIOIVIAU42FZIN	400 W	1/9	296	156.5																	
MI IMAO42P AN		1/25	288.5	123.5	61	40	98	90	00	445			M8	35	104	5	0700				
MUMA042P□4N			321.5	156.5	01	40		90	115	115 24	24 18	8 (Depth: 20)	ან	104	5	8×7×30	4				

Upper column : without brake [ Lower column : with brake

### Setup Support Software "PANATERM" for MINAS series AC Servo Motor & Driver

Part No. DV0P4460 (Japanese/English version)

The PANATERM assists users in setting parameters, monitoring control conditions, setup support, and analyzing mechanical operation data on the PC screen, when installed in a commercially available personal computer, and connected to the MINAS A4 series, E series through the RS232 serial interface.



### **Basic Function**

### Parameter setup

- · After a parameter is defined on the screen, it will be sent to the driver immediately.
- Once you register parameters you frequently use, they can be easily set up on the screen.

### **Monitoring Control Conditions**

### Monitor

- · Control conditions: Control mode, velocity, torque, error and warning
- Driver input signal
- · Load conditions: Total count of command/feedback pulses, Load ratio, Regenerative resistor load ratio

### Alarm

- · Displays the numbers and contents of the current alarm and up to 14 error events in the past.
- · Clears the numbers and contents of the current alarm and up to 14 error events in the past.

### Setup

### Auto tuning

· Gain adjustment and inertia ratio measurement

### Graphic waveform display

• The graphic display shows command velocity, actual velocity, torque, and error waveforms.

### Absolute encoder setup

- · Clears absolute encoder at the origin.
- · Displays single revolution/multi-revolution data.
- · Displays absolute encoder status.

### **Analysis of Mechanical Operation Data**

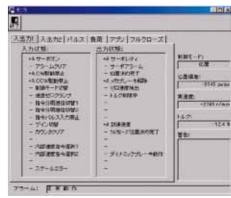
### Frequency analysis

• Measures frequency characteristics of the machine, and displays Bode diagram.

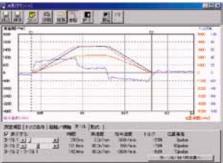
### ■ Can not use with A5 family.

## HEROLDHICH - SPED. M.O.S. (HEROLD) HY. ADA-DED II RIGER STO 2 MINUS-TRACTOR D ROBBERSON 4 MINNODOWNERS 15 ##3+-#3+9-# 15 24-#2+9-#2453#\$\$

Parameter



Monitor



Graphic waveform display

[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

C

Α

Type classification

0

0

**Encoder Cable** 

Ε

## **Cable part No. Designation**

M Connector (MUMA)

A Tyco Electronics, AMP connector

E PVC cable with shield by Oki Electric Cable Co., 0.20 mm<sup>2</sup> × 3P

ROBO-TOP® is a trade mark of DYDEN CORPORATION

Ε

Α

Cable end

(Encoder side)

0050

0100

0200

Cable end (Driver side)

3 m

5 m

10 m

20 m

0

Cable type

Cable length

MFECA: Encoder cable

5

### Cable Set (3 m)

Cable

### Part No. DV0P37300

- 1) Interface cable: DV0P0800
- 2) Encoder cable (3 m): MFECA0030EAM
- 3) Motor cable (3 m): MFMCA0030AEB
- 4) Connector kit for driver power supply connection : DV0P2870

### Cable Set (5 m)

## Part No. DV0P39200

- 1) Interface cable: DV0P0800
- 2) Encoder cable (5 m): MFECA0050EAM
- 3) Motor cable (5 m): MFMCA0050AEB
- 4) Connector kit for driver power supply connection : DV0P2870

### **Encoder Cable**

### Part No. MFECA0 \* \* 0EAM

Part No. MFMCA0 \* \* 0AEB

[Unit: mm]

[Unit: mm]

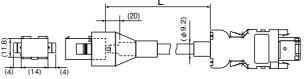
[Unit: mm]

Part No.

MFECA0030EAM

MFECA0050EAM

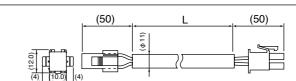
MFECA0100EAM 20 MFECA0200EAM



Title	Part No.	Manufacturer	L (m)	Ī
Connector (Driver side)	3E206-0100KV	Sumitomo 3M	3	Ī
Shell kit	3E306-3200-008	or equivalent	5	Ī
Connector	172160-1	Tugo Floatronico	10	Ī
Connector Pin	170365-1	Tyco Electronics	20	Ī
Cable	0.20 mm <sup>2</sup> × 3P	Oki Electric Cable Co., Ltd.		

### Motor Cable (ROBO-TOP® 105 °C 600 V . DP)

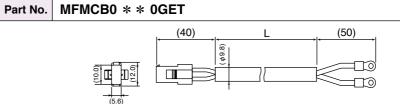
 $\mathsf{ROBO}\text{-}\mathsf{TOP}_{\otimes}$  is a trade mark of DYDEN CORPORATION



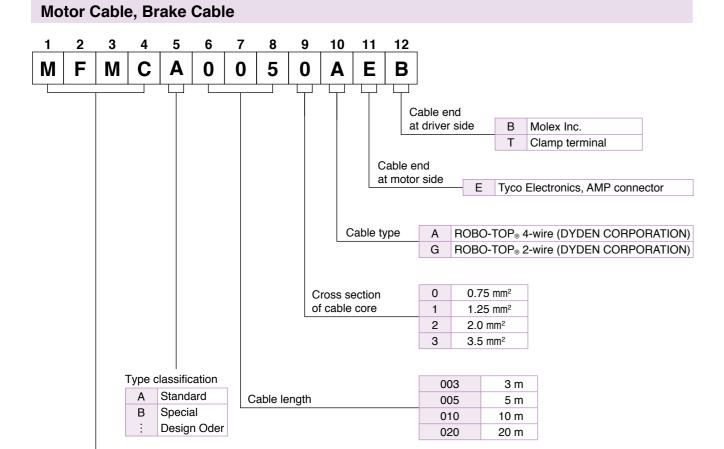
Title	Part No.	Manufacturer	L (m)	Part No.
Connector	172159-1	Tugo Floatronico	3	MFMCA0030AEB
Connector Pin	170362-1, 170366-1	Tyco Electronics	5	MFMCA0050AEB
Connector	5557-06R-210	Molex Inc	10	MFMCA0100AEB
Connector Pin	5556T	Molex IIIC	20	MFMCA0200AEB
Cable	BOBO-TOP 600 V 0.75 mm <sup>2</sup>	Daiden Co. Ltd		

### Brake Cable (ROBO-TOP<sub>®</sub> 105 °C 600V . DP)

 $\mathsf{ROBO}\text{-}\mathsf{TOP}_{\otimes}$  is a trade mark of DYDEN CORPORATION



Title	Part No.	Manufacturer	L (m)	Part No.
Connector	172157-1	Tugo Floatronico	3	MFMCB0030GET
Connector Pin	170362-1, 170366-1	Tyco Electronics	5	MFMCB0050GET
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100GET
Cable	ROBO-TOP 600 V 0.75 mm <sup>2</sup>	Daiden Co.,Ltd.	20	MFMCB0200GET



AC servo motor cable

### Connector Kit

### **Connector Kit for Power Supply Connection**

Part No. DV0P2870

Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector (10 pins)	5557-10R-210	1	Molex Inc.	For connector, CN X1
Connector pin	5556PBTL	6	iviolex IIIc.	(10 pins)

Pin configuration of connector CN X1

7						73
	10	9	8	7	6	ı i
- 1	L1	(NC)	L2	(NC)	L3	
- 1	5	4	3	2	1	
- 1	Р	(NC)	В	(NC)	Е	



 Recommended manual crimping tool (to be prepared by customer)

Part No.	Cable material
i ait ivo.	Cable Illaterial
57026-5000	UL1007
57027-5000	UL1015

<Cautions>

- 1. The above pin disposition is shown when viewed from the terminal inserting direction. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- 2. Refer to P.224 for wiring and connection.
- 3. Do not connect anything to pins marked "NC".

### Connector Kit for Motor/Encoder Connection

Part No. DV0P3670 (Incremental 2500 pulse, 5-wire)

This option is required when you make your own encoder cable and motor cable. (Brake cable is required for brake.)

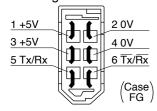
### Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For connector, CN X4
Shell kit	3E306-3200-008	1	or equivalent	(6 pins)
Connector (6 pins)	172160-1	1	Tugo Floatronico	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	Molex IIIC.	(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	Type Floatronics		
For motor power cable junction	755331-1	Tyco Electronics	_	
For Connector CN X3	57026-5000	Moley Inc	UL1007	
For Connector CN X3	57027-5000	Molex Inc.	UL1015	

### <Remarks>

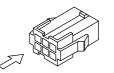
1. The above pin configuration is shown when viewed from the pin-soldering direction. Make a correct wiring by checking the stamped pin numbers on the connector itself.

239

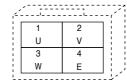
- 2. Connect the shield of the wire to the case (FG) without fail.
- 3. For wiring and connection, refer to P.224.

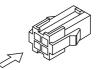
Pin configuration of encoder cable junction

<u>,                                    </u>	,,,,,,,,,			
	1	2	3	-
	NC	TX/RX	TX/RX	:
	4	5	6	i
	+5V	0V	FG	1,

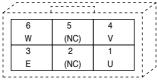


Pin configuration of motor power cable junction





Pin configuration of mating connector to CN X3 connector





### <Cautions>

- 1. The above pin configuration is shown when viewed from the terminal inserting direction. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- 2. Refer to P.224 for wiring and connection.

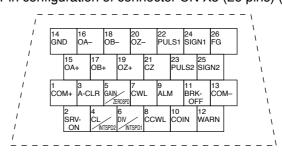
### **Connector Kit for External Peripheral Equipment**

Part No.	. DV0P0770	

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.225 for symbols and functions of the above signals.

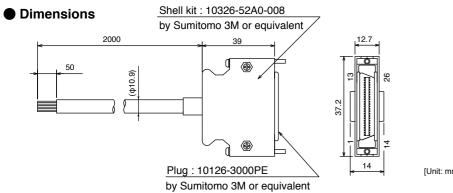
## DIN Rail Mounting Unit/ External Regenerative Resistor

### **Interface Cable**

Part No. DV0P0800 Cable of 2 m is connected.

**Communication Cable/ Console** 

**Interface Cable/** 



### 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>

The shield of this cable is not connected to a connector pin. To connect the shield to FG or GND at the driver side, use a connector kit for external device connection.

[Unit: mm]

### **Communication Cable (For Connection with PC)**

# Part No. DV0P1960

MD connector

### Console

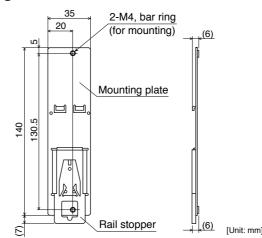
D-sub connector 9P

# Part No. DV0P4420 (62) M3 length 5 mm Tightening torque for the insert screw shall be 0.5 N·m or less MD connector Mini DIN-8P [Unit: mm]

### **DIN Rail Mounting Unit**

Part No. DV0P3811

### Dimensions

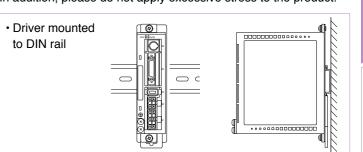


### <Notes>

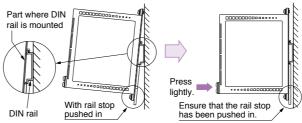
2 mounting screws (M4 X L8, Pan head) are attached. Rail stopper can be extended to max. 10 mm.

### <Cautions>

Please read carefully operation manual before using this product. In addition, please do not apply excessive stress to the product.

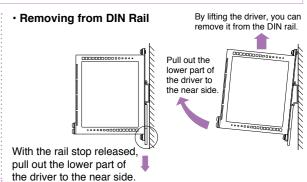


### · How to Install



Hook the upper side of DIN rail mounting part on the DIN rail.

# Press lightly the lower part of the main body of driver.

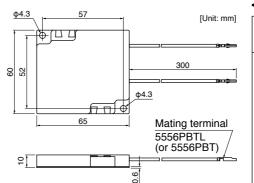


### **External Regenerative Resistor**

			Specifi		
Part No.	Manufacturer's Part No.	Resistance Rated power		Activation temperature of built-in fuse	Note (Input Power of drive)
		Ω	W	°C	
DV0P2890	45M03	50	10	<b>137</b> <sup>+3</sup> <sub>-2</sub>	Single phase, 100 V
DV0P2891	45M03	100	10	<b>137</b> <sup>+3</sup> <sub>-2</sub>	Single/3-phase, 200 V

Manufactured by Iwaki Musen Kenkyuusho Co., Ltd.

### Dimensions



### <Caution of when using external regeneration resistor>

Since it becomes high temperature, external regeneration resistor must be installed according to the contents shown below.

- · Attach to incombustibles, such as metal.
- Install in the place which cannot touch directly by covering with incombustibles etc.
- · Do not install near the combustibles.

Although the thermal cutoff is built in external regeneration resistor, the skin temperature of regeneration resistor may become high exceeding the operating temperature of thermal cutoff by the time the thermal cutoff operates in amplifier failure.

The thermal cutoff is for preventing ignition of the regeneration resistor in amplifier failure, and is not for controlling the skin temperature of resistor.

### <Remarks>

Thermal fuse is installed for safety.

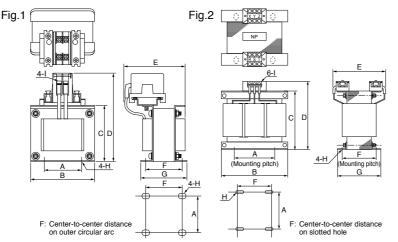
The thermal fuse may blow due to heat dissipating condition, working temperature, supply voltage or load fluctuation. Make it sure that the surface temperature of the resistor may not exceed 100 °C at the worst running conditions with the machine, which brings large regeneration (such case as high supply voltage, load inertia is large or deceleration time is short) Please carry out air cooling if needed.

# **List of Peripheral Components**

**E Series** 

### Reactor

Frame symbol of driver	Power supply specifications	Rated output	Part No.	Fig.
MKDE	Single phase, 100 V	50 W to 100 W	DV0P227	1
	Single phase, 200 V	50 W to 100 W	DV0P220	2
	3-phase, 200 V	50 W to 200 W	DV0F220	
	Single phase, 100 V	200 W	DV0P228	1
MLDE	Single phase, 200 V	200 W to 400 W	DV0P220	2
	3-phase, 200 V	400 W		



**Surge Absorber for Motor Brake** 

[Unit: mm]

	Part No.	А	В	С	D	E(Max)	F	G	н	ı	Inductance (mH)	Rated current (A)
Fig. 1	DV0P227	55±0.7	80±1	66.5±1	110 Max	90	41±2	55±2	4-5φ×10	M4	4.02	5
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

### Harmonic restraint on general-purpose inverter and servo driver

Reactor/

On September, 1994, Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system and Guidelines for harmonic restraint on household electrical appliances and general-purpose articles established by the Agency for Natural Resources and Energy of the Ministry of Economy, Trade and Industry (the ex-Ministry of International Trade and Industry). According to those guidelines, the Japan Electrical Manufacturers Association (JEMA) have prepared technical documents (procedure to execute harmonic restraint: JEM-TR 198, JEM-TR 199 and JEM-TR 201) and have been requesting the users to understand the restraint and to cooperate with us. On January, 2004, it has been decided to exclude the general-purpose inverter and servo driver from the Guidelines for harmonic restraint on household electrical appliances and general-purpose articles". After that, the Guidelines for harmonic restraint on household electrical appliances and general-purpose articles was abolished on September 6, 2004.

We inform you that the procedure to execute the harmonic restraint on general-purpose inverter and servo driver will be modified as follows.

- 1. All types of the general-purpose inverters and servo drivers used by specific users are under the control of the Guide-lines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system. The users who are required to apply the guidelines must calculate the equivalent capacity and harmonic current according to the guidelines and must take appropriate countermeasures if the harmonic current exceeds a limit value specified in a contract demand. (Refer to JEM-TR 210 and JEM-TR 225.)
- 2. The Guidelines for harmonic restraint on household electrical appliances and general-purpose articles was abolished on September 6, 2004. However, based on conventional guidelines, JEMA applies the technical documents JEM-TR 226 and JEM-TR 227 to any users who do not fit into the Guidelines for harmonic restraint on heavy consumers who receive power through high voltage system or extra high voltage system from a perspective on enlightenment on general harmonic restraint. The purpose of these guidelines is the execution of harmonic restraint at every device by a user as usual to the utmost extent.

### -Romarke

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		
Motor	Part No. (Manufacturer's)	Manufacturer	
MUMA 50 W to 400 W	Z15D151	SEMITEC Corporation	

### **List of Peripheral Components**

Manufacturer	Tel No. / Home Page	Peripheral components
Panasonic Corporation Eco Solutions Company	http://panasonic.net/es/	Circuit breaker
Panasonic Corporation Automotive & Industrial Systems Company	http://panasonic.net/id/	Surge absorber Switch, Relay
Iwaki Musen Kenkyusho Co., Ltd.	+81-44-833-4311 http://www.iwakimusen.co.jp/	Regenerative resistor
SEMITEC Corporation	+81-3-3621-2703 http://www.semitec.co.jp/english2/	Surge absorber for motor brake
TDK Corporation	+81-3-5201-7229 http://www.global.tdk.com/	Noise filter for signal lines
Okaya Electric Industries Co. Ltd.	+81-3-4544-7040 http://www.okayaelec.co.jp/english/index.html	Surge absorber Noise filter
Sumitomo 3M	+81-3-5716-7290 http:/solutions.3m.com/wps/portal/3M/ja_JP/ WW2/Country/	
Tyco Electronics	+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

<sup>\*</sup> The above list is for reference only. We may change the manufacturer without notice.

MEMO

# Information

### Contents

A5 Family	247
EC Directives / Conformity to UL Standards / KC	247
Composition of Peripheral Equipments	249
E Series	255
Compliance to EC and EMC Directives	255
Composition of Peripheral Components	255
Conformity to UL Standards	256
Motor capacity selection software	257
AC Servo Motor Capacity Selection Software	257
Option Selection Software for AC Servo Motor	257
Guide to the International System of Units (SI)	258
Selecting Motor Capacity	260
Request Sheet for Motor Selection	266
Connection Between Driver and Controller	274
Connection Between A5 Family Driver and Controller	274
Replacing Old Model Servo Driver with MINAS A5II and A5 Series	279
Connection Between E Series Driver and Controller	283
Index	288
Sales Office	305



Motor

EN60034-1

EN60034-5

(E327868)

C22.2 No.100

UL1004-1. UL1004-6

### : International Electrotechnical Commission

EN55011

EN61000-6-2

EN61800-3

EN61800-5-1

EN61508(SIL2)

IEC61326-3-1

C22.2 No.14

EN62061(SILCL 2)

EN61800-5-2(STO)

UL508C (E164620)

KN61000-4-2, 3, 4, 5, 6, 8, 11

ISO13849-1(PL d)(Cat.3)

FΝ · Furopaischen Normen

**Conformed Standards** 

EC

**Directives** 

**UL Standards** 

**CSA Standards** 

**Radio Waves Act** (South Korea) (KC) \*2

**EMC** 

**Directives** 

Low-Voltage

**Directives** 

Machinery

**Directives** 

**Functional** 

safety \*1

**EMC**: Electromagnetic Compatibility

· Underwriters Laboratories CSA: Canadian Standards Association

Pursuant to the directive 2004/108/EC, article 9(2) Panasonic Testing Centre

Panasonic Service Europe, a division of

Panasonic Marketing Europe GmbH

Winsbergring 15, 22525 Hamburg, F.R. Germany

## When export this product, follow statutory provisions of the destination country.

- \*1 A5IIE and A5E series doesn't correspond to the functional safety standard.
- \*2 Information related to the Korea Radio Law

This servo driver is a Class A commercial broadcasting radio wave generator not designed for home use. The user and dealer should be aware of this fact.

Driver

A 급 기기 (업무용 방송통신기자재)

이 기기는 업무용(A 급) 전자파적합기기로서 판매자

또는 사용자는 이 점을 주의하시기 바라며, 가정외의

지역에서 사용하는 것을 목적으로 합니다.

(대상기종: Servo Driver)

### **EC Directives**

The EC Directives apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products.

However, our AC servos meet the relevant EC Directives for Low Voltage Equipment so that the machine or equipment comprising our AC servos can meet EC Directives.

### **EMC Directives**

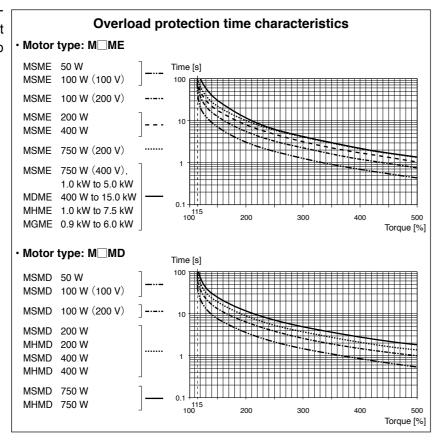
MINAS Servo System conforms to relevant standard under EMC Directives setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EMC Directives, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

### **Conformity to UL Standards**

Observe the following conditions of (1) and (2) to make the system conform to UL508C (E164620).

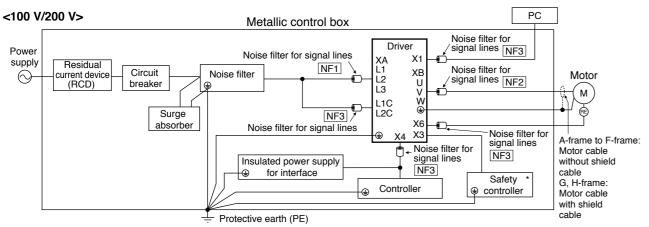
- (1) Use the driver in an environment of Pollution Degree 2 or 1 prescribed in IEC60664-1.
  - (e.g. Install in the control box with IP54 enclosure.)
- (2) Make sure to install a circuit breaker or fuse which are UL recognized (Listed (1) marked) between the power supply and the noise filter.
  - For rated current of circuit breaker and fuse, refer to P.19 "Driver and List of Applicable Peripheral Equip-
  - 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).



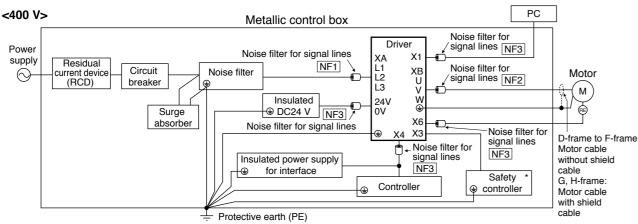
### **Installation Environment**

Use the servo driver in the environment of Pollution Degree 1 or 2 prescribed in IEC-60664-1 (e.g. Install the driver in control panel with IP54 protection structure.)



For NF1 to NF3, refer to the Table "Noise Filter for Signal Line" (P.254).

<sup>\*</sup> A5IIE, A5E is not provided with X3 terminal.



For NF1 to NF3, refer to the Table "Noise Filter for Signal Line" (P.254).

### <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 <sup>+10</sup> % to 230 V <sup>+10</sup> % <sub>-15</sub> %	50 Hz/60 Hz
400 V type [Main power supply] (D-frame to H-frame)	3-phase, 380 V <sup>+10</sup> / <sub>-15</sub> % to 480 V <sup>+10</sup> / <sub>-15</sub> %	50 Hz/60 Hz
400 V type [Control power supply] (D-frame to H-frame)	DC 24 V ±15 %	

<sup>(1)</sup> This product is designed to be used in over-voltage category (installation category) II of EN 61800-5-1:2007.

### **Circuit Breaker**

Install a circuit breaker which complies with IEC Standards and UL recognized (Listed and marked) between power supply and noise filter.

The short-circuit protection circuit on the product is not for protection of branch circuit.

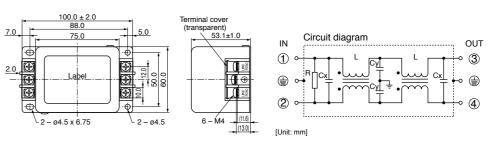
The branch circuit should be protected in accordance with NEC and the applicable local regulations in your area.

### **Noise Filter**

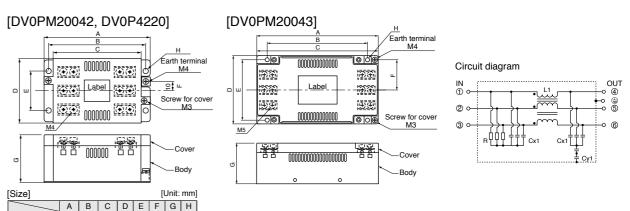
When you install one noise filter at the power supply for multi-axes application, contact the manufacturer of the noise filter. If noise margin is required, connect 2 filters in series to emphasize effectiveness.

### Options

Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
DV0P4170	Single phase 100 V, 200 V	SUP-EK5-ER-6	A-frame and B-frame	Okaya Electric Ind.



Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
	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	



DV0PM20042 115 105 95 70 43 10 52 5.5

DV0P4220 145 135 125 70 50 10 52 5.5

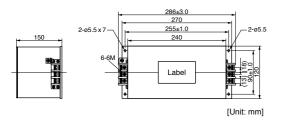
DV0PM20043 165 136 165 90 80 40 54 5.5

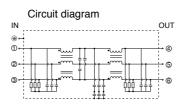
Eaving the remaining terminal unconnected.

<sup>\*</sup> A5IIE, A5E is not provided with X3 terminal.

<sup>(2)</sup> Use an insulated power supply of DC12 V to 24 V which has CE marking or complies with EN60950.

LOAD

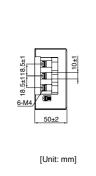


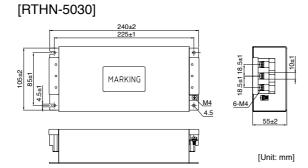


### Recommended components

Part No.	Voltage specifications for driver	Current rating (A)	Applicable driver (frame)	Manufacturer
RTHN-5010		10	A-frame to C-frame	
RTHN-5030	3-phase 200 V	30	D-frame	TDK-Lambda Corp.
RTHN-5050		50	E-frame and F-frame	

# [RTHN-5010] 210±2 195±1 MARKING MARKING M4 4.5



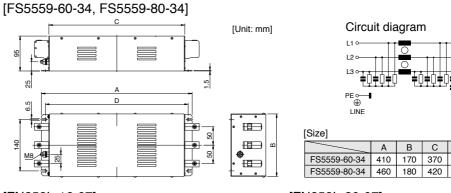


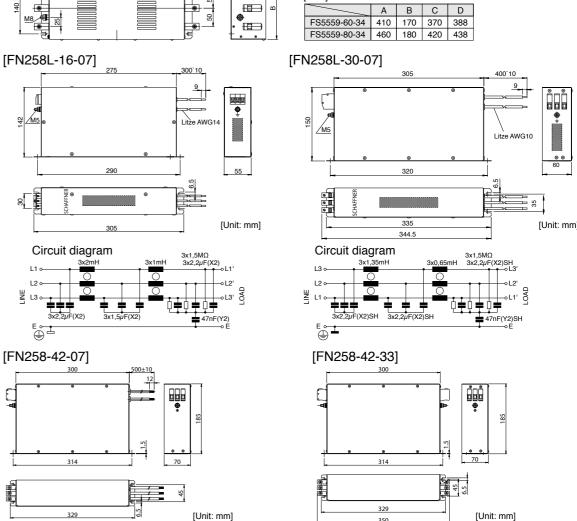
# [RTHN-5050] 300±2 280±1 WARKING MARKING MARK

### <Remarks>

- Select a noise filter of capacity that exceeds the capacity of the power source (also check for load condition).
- For detailed specification of the filter, contact the manufacturer.
- When two or more servo drivers are used with a single noise filter at the common power source, consult with the noise filter manufacturer.

Part No.	Voltage specifications for driver	Current rating (A)	Applicable driver (frame)	Manufacturer
FS5559-60-34	2 phase 200 V	60	G-frame	
FS5559-80-34	3-phase 200 V	80	H-frame	
FN258L-16-07		16	D-frame and E-frame	Schaffner EMC, Inc.
FN258L-30-07	3-phase 400 V	30	F-frame	Schainlei Eivic, inc.
FN258-42-07		42	G-frame and H-frame	
FN258-42-33		42	G-iranie and n-iranie	





## <Remarks>

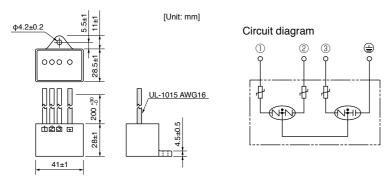
Circuit diagram

- Select a noise filter of capacity that exceeds the capacity of the power source (also check for load condition).
- For detailed specification of the filter, contact the manufacturer.
- When two or more servo drivers are used with a single noise filter at the common power source, consult with the noise filter manufacturer.

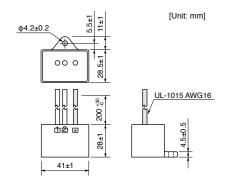
### **Surge Absorber**

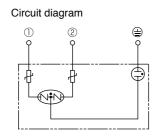
Provide a surge absorber for the primary side of noise filter.

Option part No. Voltage specifications for driver		Manufacturer's part No.	Manufacturer
DV0P1450	3-phase 200 V	R·A·V-781BXZ-4	Okaya Electric Ind.
DV0PM20050	3-phase 400 V	R·A·V-801BXZ-4	Okaya Liectiic iiid.



Option part No.	Voltage specifications for driver	Manufacturer's part No.	Manufacturer
DV0P4190	Single phase 100 V, 200 V	R·A·V-781BWZ-4	Okaya Electric Ind.





### **Noise Filter for Signal Lines**

Install noise filters for signal lines to all cables (power cable, motor cable, encoder cable and interface cable)

Symbol*1	Cable Name	100 V/200 V Amp. frame symbol	400 V Amp. frame symbol	Option part No.	Manufacturer's part No.	Manufacturer	Qty.
		A, B, C, D	D, E, F	DV0P1460	ZCAT3035-1330	TDK Corp.	4
NF1	Power cable	E, F	_	Recommended components	RJ8035	KK-CORP.CO.JP	1
		G, H	G, H	Recommended components	RJ8095	KK-CORP.CO.JP	1
		A, B, C, D, E, F	D, E, F	DV0P1460	ZCAT3035-1330	TDK Corp.	4
NF2	Motor cable	G, H	G, H	Recommended components	T400-61D	MICROMETALS	1
NF3	24 V Power cable     Encoder cable     Interface cable     USB cable     Control power cable	Common (to all frames)		DV0P1460	ZCAT3035-1330	TDK Corp.	4

<sup>\*1</sup> For symbols, refer to the Block Diagram "Installation Environment" (P.249).

### <Remarks>

To connect the noise filter to the connector XB connection cable, adjust the sheath length at the tip of the cable, as required.

### <Caution>

Fix the signal line noise filter in order to prevent excessive stress to the cables.

### <Fig.2: Dimensions>

	•												
ĺ	Part No.	Current	100 kHz	Size [Unit: mm]									
	Part No.	Part No.   Cur	Current	Current	(μH)	Α	В	С	D1	D2	Core thickness	Е	F
	RJ8035	35 A	9.9±3	170	150	23	80	53	24	R3.5	7		
	RJ8095	95 A	7.9±3	200	180	34	130	107	35	R3.5	7		

Fig.1: DV0P1460(Option)

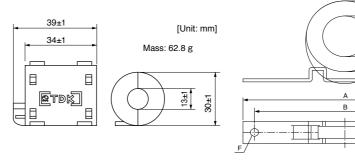
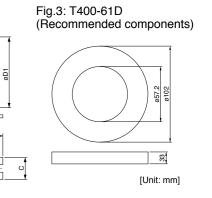


Fig.2: RJ8035, RJ8095 (Recommended components)



### **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

- (1) Connect the protective earth terminal ( ) of the driver and the protective earth terminal (PE) of the control box without fail to prevent electrical shocks.
- (2) Do not make a joint connection to the protective earth terminals ((1)). 2 terminals are provided for protective earth.

### <Note>

For driver and applicable peripheral equipments, refer to P.19 "Driver and List of Applicable Peripheral Equipments".

## Compliance to EC and EMC Directives

### **EC Directives**

The EC Directives apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products. MINAS AC Servos conforms to the EC Directives for Low Voltage Equipment so that the machine incorporating our servos has an easy access to the conformity to relevant EC Directives for the machine.

### **EMC Directives**

MINAS Servo System conform to relevant standard under EMC Directives setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EMC Directives, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

### **Conformed Standards**

Subject		Conformed Standard					
	IEC60034-1	IEC60034-5 UL1004 CSA22.2 No.100	Conforms to				
Motor	EN50178	UL508C CSA22.2 No.14	Low- Voltage Directives				
	EN55011	Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment					
	EN61000-6-2	Immunity for Industrial Environments	Conforms to references				
	IEC61000-4-2	Electrostatic Discharge Immunity Test					
Motor	IEC61000-4-3	Radio Frequency Electromagnetic Field Immunity Test					
and driver	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						

- IEC: International Electrotechnical Commission
- EN : Europaischen Normen **EMC: Electromagnetic Compatibility**
- UL : Underwriters Laboratories
- CSA: Canadian Standards Association

Pursuant to at the directive 2004/108/EC, article 9(2)

- Panasonic Testing Centre
- Panasonic Service Furone
- a division of Panasonic Marketing Europe GmbH Winsbergring 15,22525 Hamburg, F.R. Germany

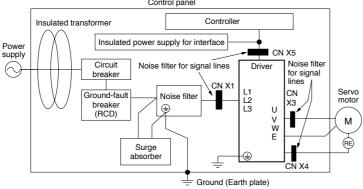
## Composition of Peripheral Components

### <Pre><Pre>cautions 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 pane

### **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 <sup>+10</sup> / <sub>-15</sub> % to 240 V <sup>+10</sup> / <sub>-15</sub> %	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, (n) marked), between the power supply and the noise filter.

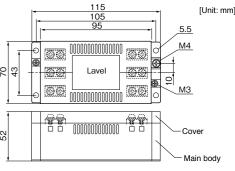
### Noise Filter

When you install one noise filter in the power supply for multi axis application, consult with the manufacture of the filter.

**Composition of Peripheral Components** 

**Conformity to UL Standards** 

Option part No.	Part No.	Manufacturer
DV0P4160	3SUP-HU10-ER-6	Okaya Electric Industries Co.



### Surge Absorber

Install a surge absorber at primary side of the noise filter.

Option part No.	Driver voltage spec	Part No.	Manufacturer	Option part No.	Driver voltage spec	
DV0P1450	3-phase, 200 V	R·A·V-781BXZ-4	Okaya Electric	DV0P4190	Single phase, 100 V, 200 V	R·
	Ø4.2±	0.2	[Unit: mm]		ø4.2±	0.2
Circuit diagr	ram ③ ⊕	0000		Circuit diagr	ram ⊜	
		28±1 200 -0 +0 -0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0 +0	04-01-015 AWG16 Off-1015			Г
L		41±1		L		<u>_</u>

	Option part No.	Driver voltage spec	Part No.	Manufacturer
	DV0P4190	Single phase, 100 V, 200 V	R·A·V-781BWZ-4	Okaya Electric
n]	0: "	04.2±	0.2	[Unit: mm]
	Circuit diagr	am	0 0 0 58.5±1	UL-1015
			500-30	AWG16
-			12 & TH 88 8	4.5±0.5
			41±1	ı

### <Remarks>

Remove this surge absorber when you perform dielectric test on the machine, or surge absorber might be damaged

### **Noise Filter for Signal Lines**

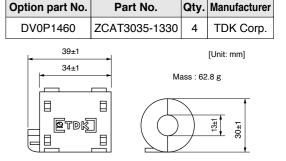
Install noise filters for signal lines to all cables (Power line, motor cable, encoder cable, interface cable)

### <Caution>

- Please fix a line noise filter to avoid excessive stress to the cable.
- · When using multiple axes, noise generated from each driver might influence driver and peripheral equipment and result to

Please insert line noise filters between driver and motor wires (U, V, W but grounding).

(Please refer to P.255 "peripheral equipment configuration".)



### Grounding

- (1) Connect the protective earth terminal of the driver ((1) and protective earth terminal of the control panel (PE) without fail to prevent electrical shocks.
- (2) Do not co-clamp to the ground terminals ( $(\perp)$ ). 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.)
- (2) Install a circuit breaker or fuse which are UL recognized (LISTED (1) marked) between the power supply and the noise filter without fail.

### **AC Servo Motor Capacity Selection Software**

We have prepared PC software "M-SELECT" for AC servo motor capacity selection. Consult our sales representative or authorized distributor.

### Three-step selection

1. Select components and specified values Select appropriate mechanical parameter items and fill them with parameter values derived from

the real machine. To simulate the target machine as practical as possible, use maximum number of parameters available.



### 2. Enter operation pattern

Input the planned operation pattern that will contain [speed and rotation standard] or [absolute position

standard] with optional settings such as S-acceleration/de celeration.



### 3. Select the motor

**AC Servo Motor Capacity Selection Software** 

**Option Selection Software for AC Servo Motor** 

When the data required in step 1 and 2 above have been input, the software lists the motors,

which will be appropriate to use with your machine. Select the motor that is best suitable for your machine application.



### Details of motor

Once the motor is selected, specifications of the motor and amplifier, and details of reason for

determination are displayed and may be printed out.



### **Option Selection Software for AC Servo Motor**

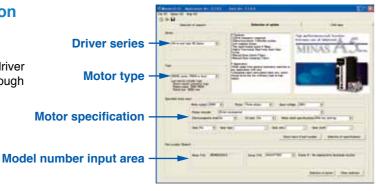
We have prepared PC software to enable fast, easy, and correct option selection, a complicated job without the software.

257

### Two procedures for option selection

1. Selection according to driver series and motor type

Suitable option can be selected by selecting driver series, motor type and motor specification through pulldown menu.



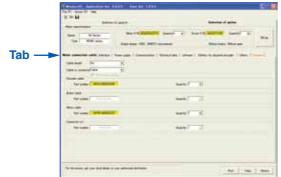
### 2. Entry of model number

If you know the model number based on the servo motor and driver currently used, enter the model number.

### Result of selection

Tab sheet specific to each of option model numbers is used for easier identification of the desired option.

\* When you are using the motor capacity selection software, simply press [Option Selection] tab and the screen as shown right will appear.



Please download from our web site and use after install to the PC. http://industrial.panasonic.com/ww/products/motors-compressors/fa-motors

### - Table 5 : Prefix SI unit — (Multiples of 10) Table1: Basic unit Table 2: Auxiliary unit Derived unit Table 4: Unit combined Table 3: Derived unit with Other derived unit with SI unit proper name

### Table1: Basic unit

Quantity	Name of unit	Symbol of unit
Length	meter	m
Weight	kilogram	kg
Time	second	s
Current	ampere	Α
Thermodynamic temperature	kelvin	K
Amount of substance	mol	mol
Luminous intensity	candela	cd

**Organization of the System of Units** 

### **Table 2: Auxiliary unit**

Quantity	Name of unit	Symbol of unit	
Plane angle	radian	rad	
Solid angle	steradian	sr	

### Table 3: Major derived unit with proper name

Quantity	Name	Symbol of unit	Derivation from basic unit, auxiliary unit or other derived unit
Frequency	hertz	Hz	1 Hz = 1 s <sup>-1</sup>
Force	newton	N	1 N = 1 kg·m/s <sup>2</sup>
Pressure, Stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>
Energy, Work, Amount of heat	joule	J	1 J = 1 N·m
Amount of work, Work efficiency, Power, Electric power	watt	W	1 W = 1 J/s
Electric charge, Amount of electricity	coulomb	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	Symbol of unit
	minute	min
Time	hour	h
	day	d
	degree	۰
Plane angle	minute	1
	second	п
Volume	liter	I, L
Weight	ton	t

**Table 5: Prefix** 

Multiples powered	Pr	refix
to unit	Name	Symbol
10 <sup>18</sup>	exa	E
1015	peta	Р
10 <sup>12</sup>	tera	Т
10 <sup>9</sup>	giga	G
10 <sup>6</sup>	mega	M
10 <sup>3</sup>	kilo	k
10 <sup>2</sup>	hecto	h
10	deca	da
10 <sup>-1</sup>	deci	d
10-2	centi	С
10 <sup>-3</sup>	milli	m
10 <sup>-6</sup>	micro	μ
10 <sup>-9</sup>	nano	n
10 <sup>-12</sup>	pico	р
10 <sup>-15</sup>	femto	f
10 <sup>-18</sup>	atto	а

# Informat

### Symbol of Symbol of SI unit and Quantity Conversion value conventional unit compatible unit Length μ (micron) μm 1 $\mu$ = 1 $\mu$ m (micrometer) Acceleration Gal m/s<sup>2</sup> 1 Gal = $10^{-2}$ m/s<sup>2</sup> G m/s<sup>2</sup> $1 G = 9.80665 \text{ m/s}^2$ Hz 1 c/s = Hz Frequency c/s. c Revolving speed, Number of revolutions rpm s<sup>-1</sup> or min<sup>-1</sup>, r/min 1 rpm = 1 min<sup>-1</sup> Weight kgf Same value Mass kg Weight flow rate kgf/s Same value Mass flow rate kg/s Specific weight kgf/m<sup>3</sup> Same value Density kg/m<sup>3</sup> m<sup>3</sup>/kgf m<sup>3</sup>/kg Same value Specific volume 1 kgf = 9.80665 N Load kgf Ν 1 kgf = 9.80665 N kgf Ν Force $1 \text{ dyn} = 10^{-5} \text{ N}$ dyn Ν Moment of force kgf·m N∙m 1 kgf·m = 9.806 N·m $1 \text{ kgf/cm}^2 = 9.80665 \times 10^4 \text{ Pa}$ Pressure kgf/cm<sup>2</sup> Pa, bar (1) or kgf/cm<sup>2</sup> = 0.980665 bar 1 at = $9.80665 \times 10^4 \text{ Pa}$ at (Engineering atmospheric pressure) Pa atm (Atmospheric pressure) Pa $1 \text{ atm} = 1.01325 \times 10^5 \text{ Pa}$ 1 mH<sub>2</sub>O = 9.80665 x 10<sup>3</sup> Pa mH<sub>2</sub>O, mAq Pa Pa or mmHg (2) 1 mmHg = 133.322 Pa mmHg Torr Pa kgf/mm<sup>2</sup> Pa or N/m<sup>2</sup> $1 \text{ kgf/mm}^2 = 9.80665 \times 10^6 \text{ Pa}$ Stress =9.80665 x 10<sup>6</sup> N/m<sup>2</sup> $1 \text{ kgf/cm}^2 = 9.80665 \times 10^4 \text{ Pa}$ kgf/cm<sup>2</sup> Pa or N/m<sup>2</sup> $= 9.80665 \times 10^4 \text{ N/m}^2$ 1 kgf/m<sup>2</sup> = 9.80665 Pa = 9.80665 N/m<sup>2</sup> Elastic modulus kgf/m<sup>2</sup> Pa or N/m<sup>2</sup> $1 \text{ kgf/cm}^2 = 9.80665 \times 10^4 \text{ N/m}^2$ 1 kgf·m = 9.80665 J Energy, Work kgf⋅m J (joule) 1 erg = $10^{-7}$ J erg Work efficiency, Power kgf·m/s W (watt) 1 kgf·m/s = 9.80665 W 1 PS = 0.7355 kW PS W PP Pa·s 1 P = 0.1 Pa·s Viscosity $10^{-2}$ St = 1 mm<sup>2</sup>/s St mm<sup>2</sup>/s Kinetic viscosity K (kelvin) 1 K = 1 K Thermodynamic temperature K K (3) 1 deg = 1 K Temperature interval deg 1 cal = 4.18605 J Amount of heat J. cal J/K (3) 1 cal/°C = 4.18605 J/K Heat capacity cal/°C 1 cal/ (kgf· $^{\circ}$ C) = 4.18605 J/ (kg·K) Specific heat, Specific heat capacity cal/ (kgf·°C) cal/ (kgf·K)(3) 1 cal/K = 4.18605 J/K Entropy cal/K J/K 1 cal/ (kgf·K) = 4.18605 J/ (kg·K)Specific entropy cal/ (kgf·K) J/(kg·K) 1 cal = 4.18605 J Internal energy (Enthalpy) cal 1 cal/kgf = 4.18605 J/kgSpecific internal energy (Specific enthalpy) cal/kgf J/kg W 1 kcal/h = 1.16279 W Heat flux cal/h Heat flux density cal/ (h·m2) W/m<sup>2</sup> 1 kcal/ (h·m²) = 1.16279 W/m² 1 kcal/ (h·m·°C) = 1.16279 W/ (m·K) W/ $(m \cdot K)^{(3)}$ Thermal conductivity cal/ (h·m·°C) Coefficient of thermal conductivity cal/ (h·m²·°C) W/ (m<sup>2</sup>·K) (3) 1 kcal/ ( $h \cdot m^2 \cdot C$ ) = 1.16279 W/ ( $m^2 \cdot K$ ) 1 Oe = $10^3 / (4\pi) \text{ A/m}$ Intensity of magnetic field Oe A/m Mx $1 \text{ Mx} = 10^{-8} \text{ Wb}$ Magnetic flux Wb (weber) $1 \text{ Gs} = 10^{-4} \text{ T}$ Magnetic flux density Gs,G T (tesla)

**Major Compatible Unit** 

### Note

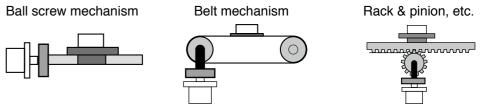
- (1) Applicable to liquid pressure. Also applicable to atmospheric pressure of meteorological data, when "bar" is used in international standard.
- (2) Applicable to scale or indication of blood pressure manometers.
- (3) "°C" can be substituted for "K".

### Flow of Motor Selection

### 1. Definition of mechanism to be driven by motor.

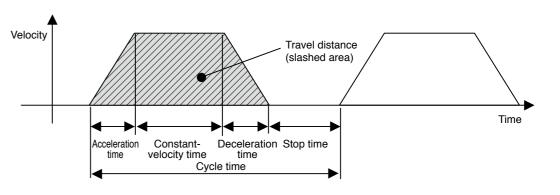
Define details of individual mechanical components (ball screw length, lead and pulley diameters, etc.)

### <Typical mechanism>



### 2. Definition of operating pattern.

Acceleration/deceleration time, Constant-velocity time, Stop time, Cycle time, Travel distance



Note) Selection of motor capacity significantly varies depending on the operating pattern.

The motor capacity can be reduced if the acceleration/deceleration time and stop time are set as long as possible.

### 3. Calculation of load inertia and inertia ratio.

Calculate load inertia for each mechanical component. (Refer to "General inertia calculation method" described later.)

Divide the calculated load inertia by the inertia of the selected motor to check the inertia ratio. For calculation of the inertia ratio, note that the catalog value of the motor inertia is expressed as " $\times$  10<sup>-4</sup> kg·m<sup>2</sup>".

### 4. Calculation of motor velocity

Calculate the motor velocity from the moving distance, acceleration / deceleration time and constant-velocity time.

### 5. Calculation of torque

Calculate the required motor torque from the load inertia, acceleration/deceleration time and constant-velocity time.

### 6. Calculation of motor

Select a motor that meets the above 3 to 5 requirements.

### **Description on the Items Related to Motor Selection**

### 1. Torque

### (1) Peak torque

Indicate the maximum torque that the motor requires during operation (mainly in acceleration and deceleration steps). The reference value is 80% or less of the maximum motor torque. If the torque is a negative value, a regenerative discharge resistor may be required.

### (2) Traveling torque, Stop holding torque

Indicates the torque that the motor requires for a long time. The reference value is 80% or less of the rated motor torque. If the torque is a negative value, a regenerative discharge resistor may be required.

### Traveling torque calculation formula for each mechanism

### **Ball screw mechanism**

Traveling torque

 $\mathsf{Tf} = \frac{\mathsf{P}}{2\pi\,\eta}\,(\mu\mathsf{g}\mathsf{W} + \mathsf{F})$ 



W: Weight [kg]

η: Mechanical efficiency

P:Lead [m]

μ: Coefficient of friction

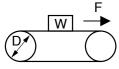
F: External force [N]

g: Acceleration of gravity 9.8[m/s<sup>2</sup>]

### **Belt mechanism**

Traveling torque

$$Tf = \frac{D}{2\pi \eta} (\mu gW + F)$$



W: Weight [kg]

P : Pulley diameter [m]

η: Mechanical efficiency μ: Coefficient of friction

F: External force [N]

g: Acceleration of gravity 9.8[m/s2]

### (3) Effective torque

Indicates a root-mean-square value of the total torque required for running and stopping the motor per unit time. The reference value is approx. 80% or less of the rated motor torque.

$$Trms = \sqrt{\frac{Ta^2 x ta + Tf^2 x tb + Td^2 x td}{tc}}$$

Ta: Acceleration torque [N·m]

ta: Acceleration time [s]

td: Deceleration time [s]

tc: Cycle time [s]

Tf: Traveling torque [N·m]

Td: Deceleration torque [N·m]

tb: Constant-velocity 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 torque and temperature rise. For actual calculation of motor velocity, see "Example of motor selection" described later.

### 3. Inertia and inertia ratio

Inertia is like the force to retain the current moving condition.

Inertia ratio is calculated by dividing load inertia by rotor inertia.

Generally, for motors with 750 W or lower capacity, the inertia ratio should be "20" or less. For motors with 1000 W or higher capacity, the inertia ratio should be "10" or less.

If you need quicker response, a lower inertia ratio is required.

/ For example, when the motor takes several seconds in acceleration step, the inertia ratio can be further \increased.

### General inertia calculation method

Shape	J calculation formula	Shape	J calculation formula
Disk	$J = \frac{1}{8} WD^{2} [kg \cdot m^{2}]$ $W : Weight [kg]$ $D : Outer diameter [m]$	Hollow cylinder	$J = \frac{1}{8} W(D^2 + d^2) [kg \cdot m^2]$ $W : Weight [kg]$ $D : Outer diameter [m]$ $d : Inner diameter [m]$
Prism	$J = \frac{1}{12} W (a^{2} + b^{2}) [kg \cdot m^{2}]$ $W : Weight [kg]$ a, b, c : Side length [m]	Uniform rod	$J = \frac{1}{48} W(3D^2 + 4L^2)_{[kg \cdot m^2]}$ $W : Weight_{[kg]}$ $D : Outer_{diameter_{[m]}}$ $L : Length_{[m]}$
Straight rod	$J = \frac{1}{3} WL^{2} [kg \cdot m^{2}]$ $W : Weight [kg]$ $L : Length [m]$	Separated rod	$J = \frac{1}{8} WD^{2} + WS^{2} [kg \cdot m^{2}]$ $W : Weight [kg]$ $D : Outer diameter [m]$ $S : Distance [m]$
Reduction gear	Inertia on shaft "a" $J = J_1 + (\frac{n_2}{n_1})^2 J_2[kg \cdot m^2]$ $n_1 : \text{A rotational speed of a shaft } [r/min]$ $n_2 : \text{A rotational speed of b shaft } [r/min]$		
Conveyor	$J = \frac{1}{4} W D^{2} [kg \cdot m^{2}]$ $W : \text{Workpiece weight on conveyor } [kg]$ $D : \text{Drum diameter } [m]$ * Excluding drum J	Ball screw	$J = J_B + \frac{W \cdot P^2}{4\pi^2}  [kg \cdot m^2]$ $W : \text{Weight } [kg]$ $P : \text{Lead}$ $JB : J \text{ of ball screw}$

If weight (W [kg]) is unknown, calculate it with the following formula:

Weight W[kg]=Density  $\rho$  [kg/m<sup>3</sup>] x Volume V[m<sup>3</sup>]

Density of each material

Iron  $\rho = 7.9 \times 10^3 \, [kg/m^3]$ 

Aluminum  $\rho = 2.8 \times 10^{3} \, [kg/m^{3}]$ 

Brass  $\rho = 8.5 \times 10^3 \, [kg/m^3]$ 

Deceleration torque  $Td = \frac{(JL + JM) \times 2\pi N[r/s]}{Deceleration time [s]}$  - Traveling torque

 $=\frac{(1.73\times10^{-4}+0.14\times10^{-4})\times2\pi\times16.7}{0.1}-0.035$  $= 0.196 - 0.035 = 0.161 [N \cdot m]$ 

### 10. Verification of maximum torque

To Drive Ball Screw Mechanism

**Example of Motor Selection** 

Acceleration torque =  $Ta = 0.231 [N \cdot m] < 1.91 [N \cdot m]$  (Maximum torque of MSME 200 W motor)

### 11. Verification of effective torque

Trms = 
$$\sqrt{\frac{Ta^2 \times ta + Tf^2 \times tb + Td^2 \times td}{tc}}$$
  
=  $\sqrt{\frac{0.231^2 \times 0.1 + 0.035^2 \times 0.8 + 0.161^2 \times 0.1}{2}}$   
= 0.067 [N·m] < 0.64 [N·m] (Rated torque of MSME 200 W motor)

12. Judging from the inertia ratio calculated above, selection of 200 W motor is preferable, although the torque margin is significantly large.

### To Drive Ball Screw Mechanism

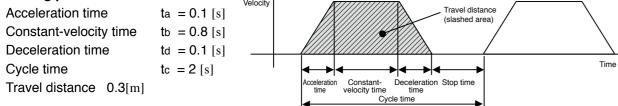
### 1. Example of motor selection for driving ball screw mechanism

Workpiece weight WA = 10 [kg]Ball screw length BL = 0.5 [m]Ball screw diameter BD = 0.02 [m]Ball screw lead BP = 0.02 [m]Ball screw efficiency  $B\eta = 0.9$ 

Travel distance 0.3[m]

Coupling inertia  $Jc = 10 \times 10^{-6} [kg \cdot m^2]$  (Use manufacturer-specified catalog value, or calculation value.)

### 2. Running pattern :



BW = 
$$\rho \times \pi \times \left(\frac{BD}{2}\right)^2 \times BL = 7.9 \times 10^3 \times \pi \times \left(\frac{0.02}{2}\right)^2 \times 0.5$$
  
= 1.24 [kg]

### 4. Load inertia

$$JL = JC + JB = JC + \frac{1}{8}BW \times BD^{2} + \frac{WA \cdot BP^{2}}{4\pi^{2}}$$

$$= 0.00001 + (1.24 \times 0.02^{2}) / 8 + 10 \times 0.02^{2} / 4\pi^{2}$$

$$= 1.73 \times 10^{-4} [kg \cdot m^{2}]$$

### 5. Provisional motor selection

In case of MSME 200 W motor :  $JM = 0.14 \times 10^{-4} \, [kg \cdot m^2]$ 

### 6. Calculation of inertia ratio

JL / JM = 
$$1.73 \times 10^{-4}$$
 /  $0.14 \times 10^{-4}$  Therefore, the inertia ratio is "12.3" (less than "30") (In case of MSME 100 W motor: JM =  $0.051 \times 10^{-4}$  Therefore, the inertia ratio is "33.9".)

### 7. Calculation of maximum velocity (Vmax)

 $\frac{1}{2}$  ×Acceleration time×Vmax+Constant-velocity time×Vmax+ $\frac{1}{2}$  ×Deceleration time×Vmax = Travel distance

$$\frac{1}{2}$$
 × 0.1 × Vmax + 0.8 × Vmax +  $\frac{1}{2}$  × 0.1 × Vmax = 0.3  
0.9 × Vmax = 0.3

$$Vmax = 0.3 / 0.9 = 0.334 \text{ [m/s]}$$

### 8. Calculation of motor velocity (N [r/min]) Ball screw lead per resolution: Bp = 0.02 [m]

$$N = 0.334 / 0.02 = 16.7 [r/s]$$
  
= 16.7 × 60 = 1002 [r/min] < 3000 [r/min] (Rated velocity of MSME 200W motor)

### 9. Calculation of torque

Traveling torque 
$$T_f = \frac{BP}{2\pi B \, \eta} \ (\mu gWA + F) = \frac{0.02}{2\pi \ x \ 0.9} \ (0.1 \times 9.8 \times 10 + 0)$$

$$= 0.035 \ [\text{N·m}]$$
Acceleration torque 
$$T_a = \frac{(\text{JL} + \text{JM}) \times 2\pi \text{N} [\text{r/s}]}{\text{Acceleration time [s]}} + \text{Traveling torque}$$

$$= \frac{(1.73 \times 10^{-4} + 0.14 \times 10^{-4}) \times 2\pi \times 16.7}{0.1} + 0.035$$

$$= 0.196 + 0.035 = 0.231 \ [\text{N·m}]$$

### **Example of Motor Selection**

### Example of motor selection for timing belt mechanism

1.Mechanism Workpiece weight WA = 2[kg] (including belt)

> Pulley diameter PD = 0.05[m]

Pulley weight WP= 0.5[kg] (Use manufacturer-specified catalog value, or calculation value.)

Mechanical efficiency  $B\eta = 0.8$ 

Coupling inertia Jc = 0 (Direct connection to motor shaft)

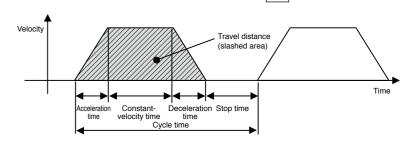
Belt mechanism inertia Pulley inertia

# ta = 0.1[s]

Acceleration time Constant-velocity time tb = 0.8[s]Deceleration time td = 0.1[s]Cycle time tc = 2[s]

Travel distance 1[m]

2. Running pattern



3. Load inertia 
$$JL = JC + JB + JP$$

= JC + 
$$\frac{1}{4}$$
WA × PD<sup>2</sup> +  $\frac{1}{8}$ WP × PD<sup>2</sup> × 2  
= 0 +  $\frac{1}{4}$  × 2 × 0.05<sup>2</sup> +  $\frac{1}{8}$  × 0.5 × 0.05<sup>2</sup> × 2  
= 0.00156 = 15.6 × 10<sup>-4</sup> [kg·m<sup>2</sup>]

### 4. Provisional motor selection

In case of MSME 750 W motor :  $JM = 0.87 \times 10^{-4} \, [kg \cdot m^2]$ 

### 5. Calculation of inertia ratio

JL / JM =  $15.6 \times 10^{-4} / 0.87 \times 10^{-4}$  Therefore, the inertia ratio is "17.9" (less than "20")

## **Request Sheet for Motor Selection**

Request for motor selection I: Ball screw drive

### 6. Calculation of maximum velocity (Vmax)

$$\frac{1}{2}$$
 × Acceleration time × Vmax + Constant-velocity time × Vmax +  $\frac{1}{2}$  × Deceleration time × Vmax = Travel distance  $\frac{1}{2}$  × 0.1 × Vmax + 0.8 × Vmax +  $\frac{1}{2}$  × 0.1 × Vmax = 1 0.9 × Vmax = 1

$$0.9 \times Vmax = 1$$
  
 $Vmax = 1 / 0.9 = 1.111[m/s]$ 

### 7. Calculation of motor velocity (N [r/min])

A single rotation of pulley : 
$$\pi \times PD = 0.157[m]$$
  
N = 1.111 / 0.157 = 7.08[r/s]  
= 7.08 × 60 = 424.8[r/min] < 3000[r/min] (Rated velocity of MSME 750 W motor)

### 8. Calculation of torque

Traveling torque 
$$T_f = \frac{PD}{2\,\eta} (\mu gWA + F) = \frac{0.05}{2\,\times\,0.8} \ (0.1\,\times\,9.8\,\times\,3 + 0)$$

$$= 0.061[\,N\cdot m\,]$$
Acceleration torque 
$$T_a = \frac{(JL + JM)\,\times\,2\pi N[\,r/s\,]}{Acceleration\,time[\,s\,]} + Traveling\,torque$$

$$= \frac{(15.6\,\times\,10^{-4} + 0.87\,\times\,10^{-4})\,\times\,2\pi\,\times\,7.08}{0.1} + 0.061$$

$$= 0.751 + 0.061 = 0.812[\,N\cdot m\,]$$
Deceleration torque 
$$T_d = \frac{(JL + JM)\,\times\,2\pi N[\,r/s\,]}{Deceleration\,time[\,s\,]} - Traveling\,torque$$

$$= \frac{(15.6\,\times\,10^{-4} + 0.87\,\times\,10^{-4})\,\times\,2\pi\,\times\,7.08}{0.1} - 0.061$$

$$= 0.751 - 0.061 = 0.69[\,N\cdot m\,]$$

### 9. Verification of maximum torque

Acceleration torque  $Ta = 0.812[N \cdot m] < 7.1[N \cdot m]$  (Maximum torque of MSME 750 W motor)

### 10. Verification of effective torque

Trms = 
$$\sqrt{\frac{Ta^2 \times ta + Tf^2 \times tb + Td^2 \times td}{tc}}$$
  
=  $\sqrt{\frac{0.812^2 \times 0.1 + 0.061^2 \times 0.8 + 0.69^2 \times 0.1}{2}}$   
= 0.241 [N·m] < 2.4 [N·m] (Rated torque of MSME 750 W motor)

### 11. Judging from the above calculation result, selection of MSME 750W motor is acceptable.

### 1. Driven mechanism and running data

11) Diameter of the ball screw

12) Total length of the ball

13) Lead of the ball screw

1)	Travel distance of the work load per one cycle	ℓ <sub>1</sub> :	mm	
	per one cycle			
2)	Cycle time	to:	S	Running pattern
	(Fill in items 3) and 4) if required.)			A location of the location of
3)	Acceleration time	ta:	S	θ / ℓ <sub>1</sub>
4)	Deceleration time	td:	S	ta to to time
5)	Stopping time	ts:	S	
6)	Max. velocity	V: m	m/s	F ~ .
7)	External force	F:	N	Wa
8)	Positioning accuracy of the work load	±	mm	
9)	Total weight of the work load and the table	WA:	kg	
10)	Power supply voltage		V	

 $\mathsf{mm}$ 

mm

14) Traveling direction (horizontal, vertical etc.)

### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section:
Name :
Address:
Tel:
Fax:
E-mail address:

mm

## **Request Sheet for Motor Selection**

### Request for motor selection II: Timing pulley + Ball screw drive

### 1. Driven mechanism and running data

1\	Travel distance of the work
1)	load per one cycle

ravei distance of the work	
oad per one cycle	

ℓ <sub>1</sub> :	mm	15)	Di

## iameter of

(or item 17) and 18))

	Moto	or side	Ball so	crew side
15) Diameter of the pulley	D <sub>1</sub> :	mm	D <sub>2</sub> :	mm
16) Weight of the pulley	W1:	kg	W2:	kg

(Fill in items 3) and 4) if required.)

ta:	s	

17) Width of the pulley

L1:	mm

4) Deceleration time

3) Acceleration time

2) Cycle time

ı		
ì		
	to:	_

19) Weight of the belt

18) Material of the pulley

W <sub>M</sub> :	kg

6) Max. velocity

7) External force

5) Stopping time

V:	mm/
Г.	

8) Positioning accuracy of the work load

work load		
Total weight of the work load and the table	Wa:	kg

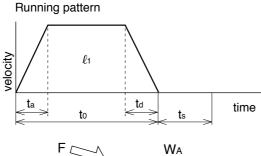
10) Power supply voltage

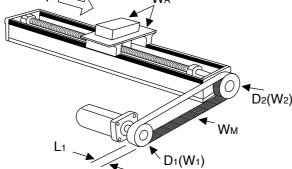
11) Diameter of the ball screw	mm
--------------------------------	----

12) Total length of the ball screw

13) Lead of the ball screw mr	13) Leac	d of the ball screw		m
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Traveling direction (horizontal, vertical etc.)





### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

mm

ı	
	Company name :
	Department/Section :
	Name :
	Address :
	Tel:
	Fax:
	E-mail address:

## **Request Sheet for Motor Selection**

### Request for motor selection III: Belt drive

N

mm

kg

mm

### 1. Driven mechanism and running data

Travel distance of the work load per one cycle	ℓ 1:	mm
) Cycle time	to:	s

(Fill in items 3) and 4) if required.)

) Acceleration time	ta:	
		-
\ Docoloration time	+4.	

5) Stopping time ts:

) Max. velocity	V:	mm/

F: 7) External force 8) Positioning accuracy of the

-,	work load	
9)	Total weight of the work load	WA:

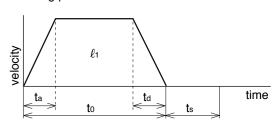
10) Power supply voltage

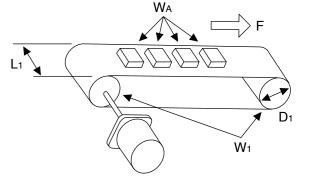
1)	Weight of the belt	W <sub>M</sub> :
----	--------------------	------------------

12) Diameter of the driving pulley

13)	Total weight of the pulley	W <sub>1</sub> :	kg

Running pattern





(or item 14) and 15))

14)	Width	of	the	pulley
-----	-------	----	-----	--------

15)	Material of the	pulle

16)	Traveling direction
10)	(horizontal vertical

2. Other data	(Fill the details or	n specific mechanisn	n and its configuratio	ns in the following blank.
---------------	----------------------	----------------------	------------------------	----------------------------

Company name :
Department/Section:
Name :
Address :
Tel:
Fax:
E-mail address:

## **Request Sheet for Motor Selection**

### Request for motor selection V: Turntable drive

### 1. Driven mechanism and running data

Travel distance of the work load per one cycle	d <sub>1</sub> :	de

Dimensions of the

	Prism		Cylinder
a:	mm	a:	mm
b:	mm	b:	mm
c:	mm	c:	mm

(Fill in items 3) and 4) if required.)

15) Number of work loads

kg

pcs

3) Acceleration time

2) Cycle time

4) Deceleration time td: 5) Stopping time

6) Max. rotational speed of the table deg/s

V: r/s

7) Positioning accuracy of the work load deg

WA: 8) Weight of one work load

Driving radius of the center of gravity of the work R<sub>1</sub>: mm

10) Diameter of the table

D<sub>1</sub>: mm

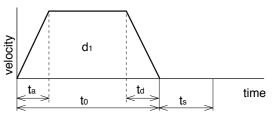
11) Mass of the table Diameter of the table

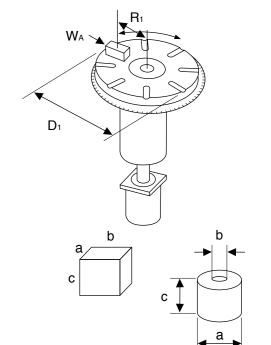
support

13) Power supply voltage

W <sub>1</sub> :	kg
T <sub>1</sub> :	mm

Running pattern





2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company nam	ne:	
Department/Se	ection :	
Name :		
Address :		
Tel:		
Fax:		
E-mail address	s:	

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 16) Diameter of the pulley D3: mm D4: mm  $\mathsf{mm}$ 17) Weight of the pulley W3: kg W4: kg 2) Cycle time to: (Fill in items 3) and 4) if required.) (or item 18) and 19)) 18) Width of the pulley 3) Acceleration time s mm

S

mm

19) Material of the pulley

Traveling direction

(horizontal, vertical etc.)

20) Weight of the belt

Running pattern

**t**a ⇒

**Request Sheet for Motor Selection** 

6) Max. velocity V: mm/s F: 7) External force Ν

td:

ts:

8) work load 9) Total weight of the work load WA: kg 10) Power supply voltage ٧

11) Weight of motor side belt W<sub>M</sub>: kg

L1:

Belt side Motor side Diameter of the mm D<sub>2</sub>: mm kg W<sub>2</sub>: kg

mm

Weight of the W<sub>1</sub>: pulley

Positioning accuracy of the

4) Deceleration time

5) Stopping time

(or item 14) and 15))

Width of the 14)

Material of the 15) pulley

		~	La
		WL	<b>*</b>
	Wa	$\rightarrow$ $\nearrow$ $\land$	
			$\prec$
D2(W2)		Dal	 ( <b>W</b> 4]
			(***
W <sub>M</sub>			
		_	
		D3(W3)	
<b>√</b> // <b>\</b>			
D <sub>1</sub> (W <sub>1</sub> )			
14 `			

**t**d

WL:

kg

time

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section:
Name :
Address:
Tel:
Fax:
E-mail address:

## **Request Sheet for Motor Selection**

### Request for motor selection VI: Timing pulley + Turntable drive

### 1. Driven mechanism and running data

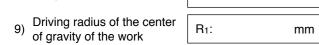
1)	Travel distance of the work load per one cycle	d <sub>1</sub> :	deg
2)	Cycle time	to:	S

 	٥,	 	

(Fill III items 3) and 4) if required.)			
3) Acceleration time	ta:	s	
4) Deceleration time	td:	s	
5) Stopping time	ts:	s	

6)	table	v:	deg
	(or)	V:	ı

7) Positioning accuracy of the work load	±	deg
8) Weight of one work load	Wa:	kg



10) Diameter of the table	D <sub>1</sub> :	mm
	ı	

11)	Mass of the table	

12)	Diameter of the table
12)	support

13)	Power	supply	voltage
. – ,		P	

14)

		(Prisr	m)		(Cylinder)
Dimension of the work load	a:		mm	a:	mm
	b:		mm	b:	mm
	c:		mm	c:	mm
Number of work lo	ads				pcs

T<sub>1</sub>:

## 16) Diameter of the pul

16) Diameter of the pulley	D <sub>2</sub> :	mm	D3:	mm
17) Weight of the pulley	W2:	kg	<b>W</b> 3:	kg

(or item 18) and 19))

18)	Width of the pulley	
. 0,	Triamin or the puncy	

19) Material of the pulle
---------------------------

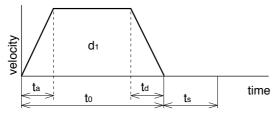
20)	Majaht	of the	halt
20)	Weight	OI LITE	Deir

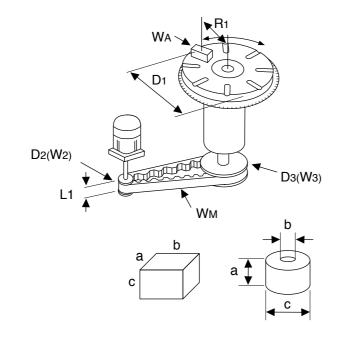
L1:	mm

Turntable side

Weight of the belt	W <sub>M</sub> :
Troight of the bolt	* * IVI.

### Running pattern





### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

kg

mm

٧

Company name :
Department/Section:
Name :
Address :
Tel:
Fax:
E-mail address:

## **Request Sheet for Motor Selection**

### Request for motor selection VII: Roller feed drive

### 1. Driven mechanism and running data

12) Mass of the roller

		_		
1)	Travel distance of the work load per one cycle	ℓ <sub>1</sub> : mm	Running pattern	
2)	Cycle time	to: s		
	(Fill in items 3) and 4) if required.)		λίοο	
3)	Acceleration time	ta: s	ta to td	time
4)	Deceleration time	td: s		ts
5)	Stopping time	ts: s		
6)	Max. velocity	v: mm/s		F
7)	External pulling force	F: N		L1
8)	Positioning accuracy of the work load	± mm		D <sub>1</sub> (W <sub>1</sub> )
9)	Number of rollers	pcs		
10)	Power supply voltage	V	(or item 13) and 14))	
11)	Diameter of the roller	D <sub>1</sub> : mm	13) Width of the roller	L <sub>1</sub> : mm

14) Material of the roller

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

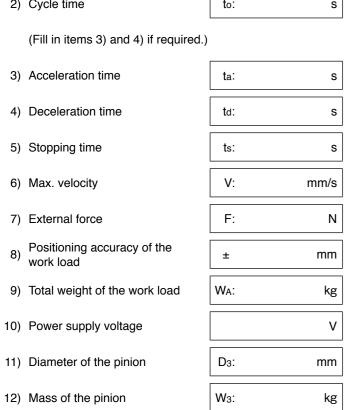
W<sub>1</sub>:

Company name :
Department/Section :
Name :
Address:
Tel:
Fax:
E-mail address:

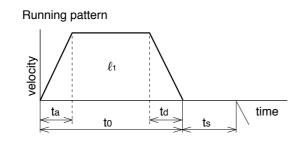
### Request for motor selection III: Driving with Rack & Pinion

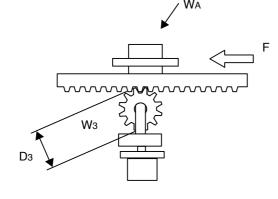
### 1. Driven mechanism and running data

Travel distance of the work load per one cycle	ℓ 1:	mm
2) Cycle time	to:	S
(Fill in items 3) and 4) if required.)		

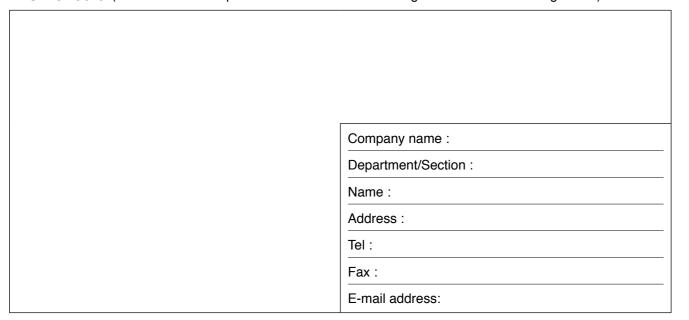


Traveling direction (horizontal, vertical, etc.)

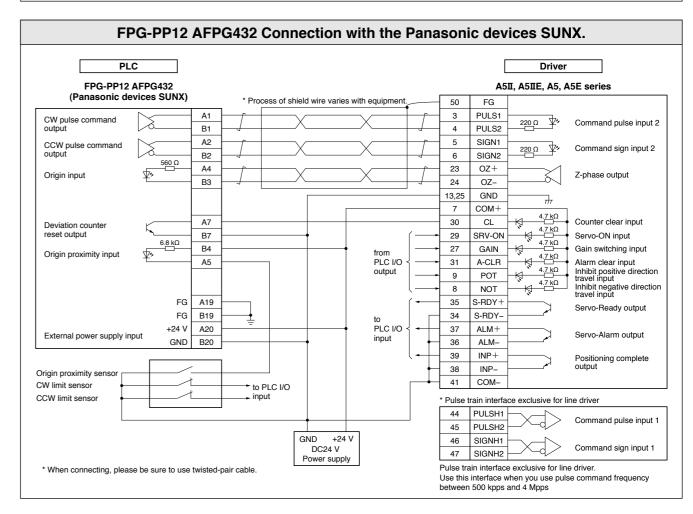


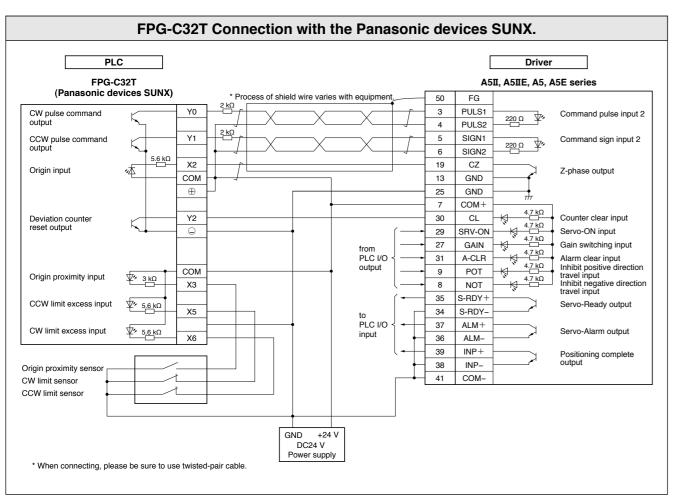


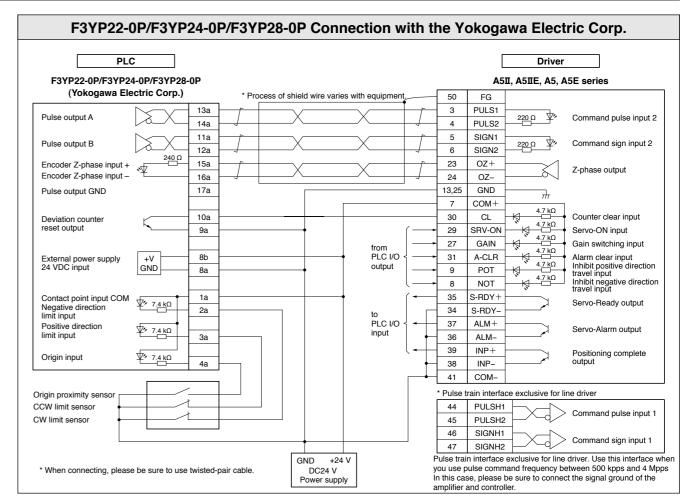
### 2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

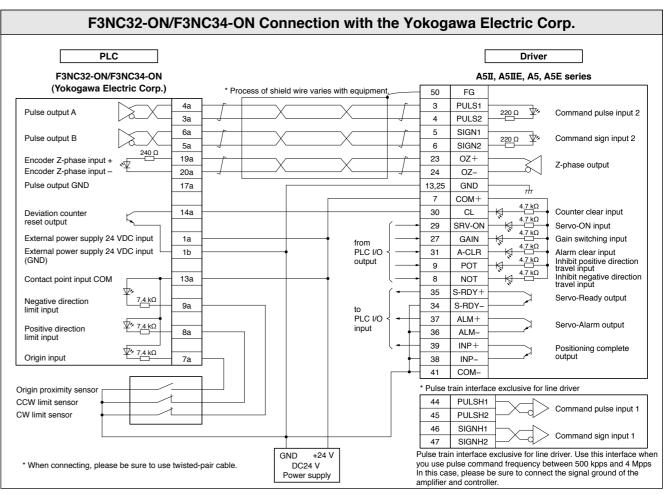


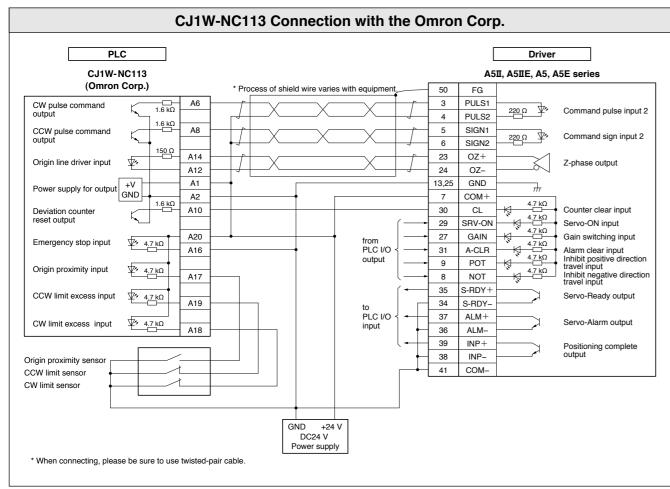
### FP7-AFP7PP02T/L(2-axes) AFP7PP04T/L(4-axes) Connection with the Panasonic devices SUNX. PLC Driver FP7-AFP7PP02T/L(2-axes) AFP7PP04T/L(4-axes) A5II, A5IIE, A5, A5E series (Panasonic devices SUNX) Process of shield wire varies with equipr PULS1 A1 A10 3 CW pulse command 220 Ω 💯 Command pulse input 2 B1 B10 PULS2 A2 A11 CCW pulse comma output 5 SIGN1 220 Ω 💯 Command sign input 2 B2 B11 SIGN2 3.9 kΩ A3 A12 07+23 Origin input (5 VDC) Z-phase output A4 A13 24 OZ-B3 B12 13,25 GND B5 B14 COM+ Servo-ON output A7 A16 30 CL Counter clear input Deviation counter reset output B7 B16 29 SRV-ON Servo-ON input 3.6 kΩ GAIN B4 B13 27 Gain switching input Origin proximity input 4.7 kΩ from PLC I/O A5 A14 31 A-CLR Alarm clear input 6.8 kΩ Inhibit positive direction travel input Inhibit negative direction travel input POT 😽 Limit excess (+) 4.7 kΩ A6 A15 8 NOT 35 S-RDY+ Limit excess ⊝ Servo-Ready output B6 B15 34 S-RDYto PLC I/O +24 V A20 A20 37 ALM+ Servo-Alarm output External power supply input GND B20 B20 36 ALM-INP+ 39 Positioning complete 38 INP-Origin proximity sensor 41 COM-CW limit sensor CCW limit sensor \* Pulse train interface exclusive for line driver 44 PULSH1 Command pulse input PULSH2 45 GND +24 V 46 SIGNH1 Command sign input 1 DC24 V SIGNH2 47 Pulse train interface exclusive for line driver. \* When connecting, please be sure to use twisted-pair cable Use this interface when you use pulse command frequency between 500 kpps and 4 Mpps

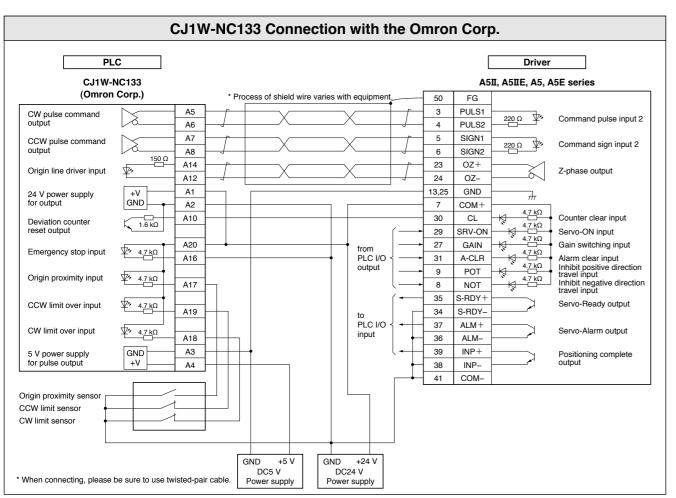


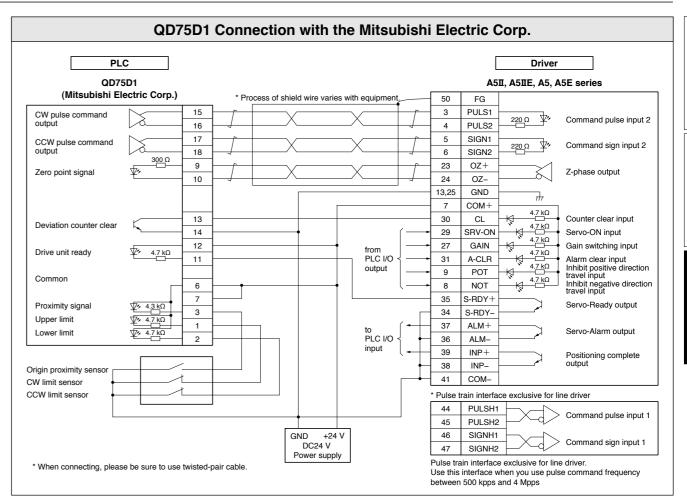


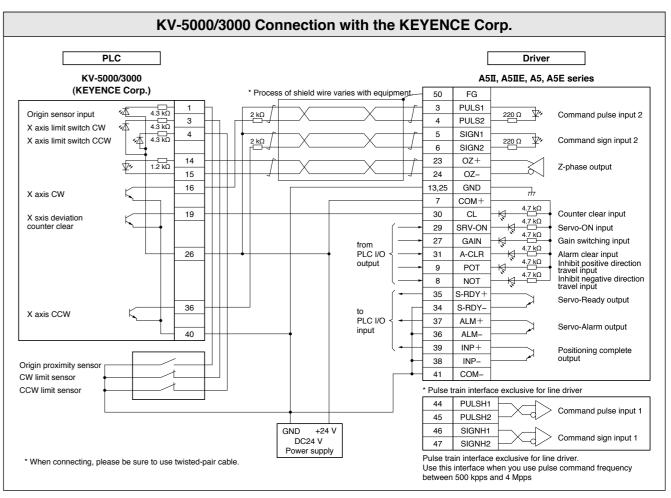










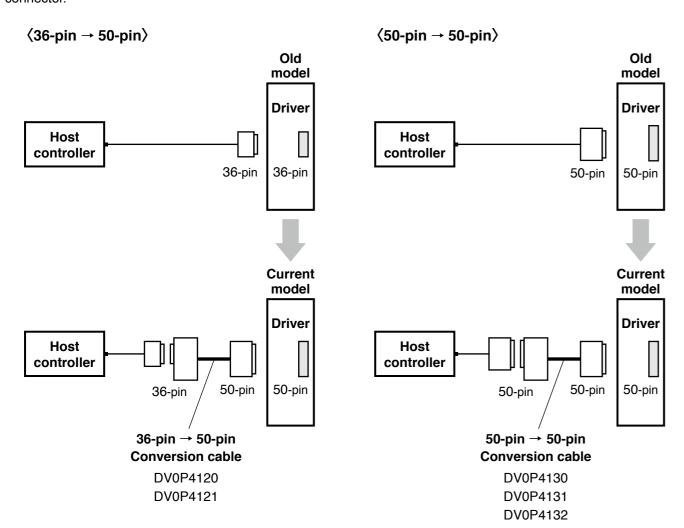


**Connection Between Driver and Controller** 

For easier replacement of old driver (MINAS X/XX/V series) with A5II, A5 series, use the interface conversion connector.

**Replacing Old Model Servo Driver** 

with MINAS A5II, A5 series



When selecting the cable, refer to the table below because the part number of the cable is specific to the control mode of the old model.

Old model	Control mode	Conversion cable part No.	Conversion wiring table
X series XX series	Position/velocity control	DV0P4120	P.280
(36-pin)	Torque control	DV0P4121	F.200
	Position control	DV0P4130	P.281
V series (50-pin)	Velocity control	DV0P4131	P.201
	Torque control	DV0P4132	P.282

279

### **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	

<sup>\* &</sup>quot;NC" is no connect.

<sup>\*</sup> For external dimensions, refer to P.197.

# Replacing Old Model Servo Driver with MINAS A5II, A5 series

		DV0P4130			DV0P4131	
Pin No. on Old Model	Pin No. on Current	Signal Name	Symbol	Pin No. on Current	Signal Name	Symbol
	Model	OW and a disk to the	OM	Model	OW and a stick that the	0)4//
1	8	CW over-travel inhibit input	CWL	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL	9	CCW over-travel inhibit input	CCWL
3	3	Command pulse input 2	PULS1	NC		
4	4	Command pulse input 2	PULS2	NC		
5	5	Command pulse sign input 2	SIGN1	NC		
6	6	Command pulse sign input 2	SIGN2	NC		
7	7	Power supply for control signal (+)	COM+	7	Power supply for control signal (+)	COM+
8	NC			NC		
9	NC			NC		
10	NC			NC		
11	11	External brake release signal	BRK-OFF+	11	External brake release signal	BRK-OFF-
12	12	Zero-speed detection output signal	ZSP	12	Zero-speed detection output signal	ZSP
13	13	Torque in-limit signal output	TLC	13	Torque in-limit signal output	TLC
14	NC			14	Speed command input	SPR
15	15	Signal ground	GND	15	Signal ground	GND
16	16	CCW direction torque limit input	CCWTL	16	CCW direction torque limit input	CCWTL
17	17	Signal ground	GND	17	Signal ground	GND
18	18	CW direction torque limit input	CWTL	18	CW direction torque limit input	CWTL
19	19	Z-phase output	CZ	19	Z-phase output	CZ
20	NC	·		NC		
21	21	A-phase output	OA+	21	A-phase output	OA+
22	22	A-phase output	OA-	22	A-phase output	OA-
23	23	Z-phase output	OZ+	23	Z-phase output	OZ+
24	24	Z-phase output	OZ-	24	Z-phase output	OZ-
25	50		FG	50	Frame ground	FG
		Frame ground		+		
26	26	Speed zero clamp input	ZEROSPD	26	Speed zero clamp input	ZEROSPE
27	27	Gain switching input	GAIN	27	Gain switching input	GAIN
28	NC		0011011	33	Selection 1 input of internal command speed	INTSPD1
29	29	Servo-ON input	SRV-ON	29	Servo-ON input	SRV-ON
30	30	Deviation counter clear input	CL	NC		
31	31	Alarm clear input	A-CLR	31	Alarm clear input	A-CLR
32	32	Control mode switching input	C-MODE	32	Control mode switching input	C-MODE
33	33	Command pulse inhibition input	INH	NC		
34	NC			NC		
35	35	Servo-Ready output	S-RDY+	35	Servo-Ready output	S-RDY+
36	NC			NC		
37	37	Servo-Alarm output	ALM+	37	Servo-Alarm output	ALM+
38	NC			NC		
39	39	Positioning complete output	COIN+	39	Speed arrival output	AT-SPEED
40	40	Torque in-limit signal output	TLC	40	Torque in-limit signal output	TLC
	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+
49	49	B-phase output	OB-	49	B-phase output	OB-
50	50	Frame ground	FG	50	Frame ground	FG

281

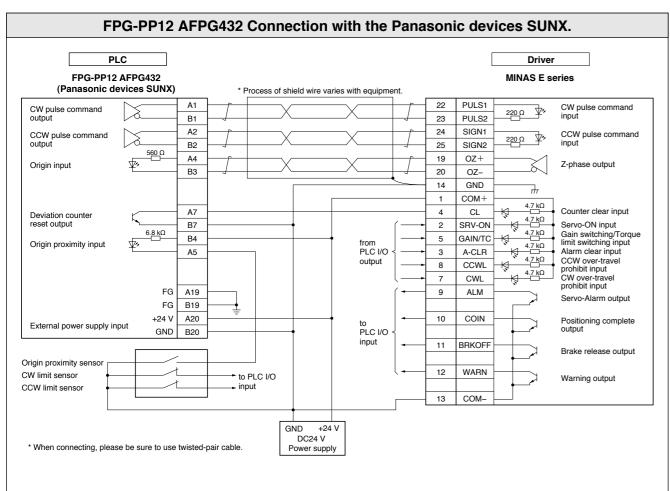
A5 Family

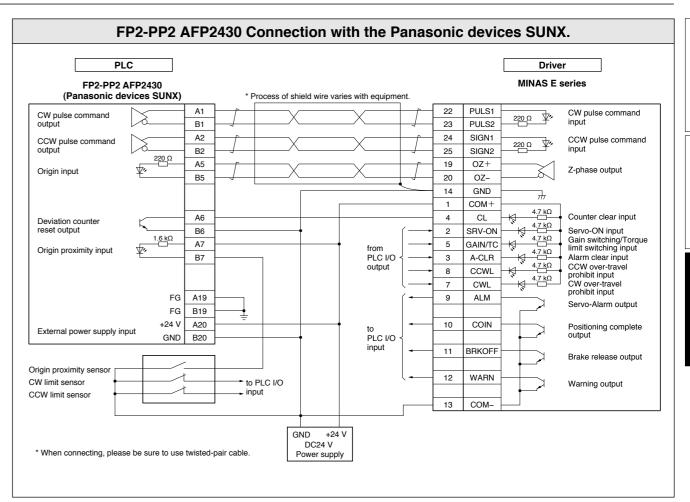
Connection Between Driver and Controller

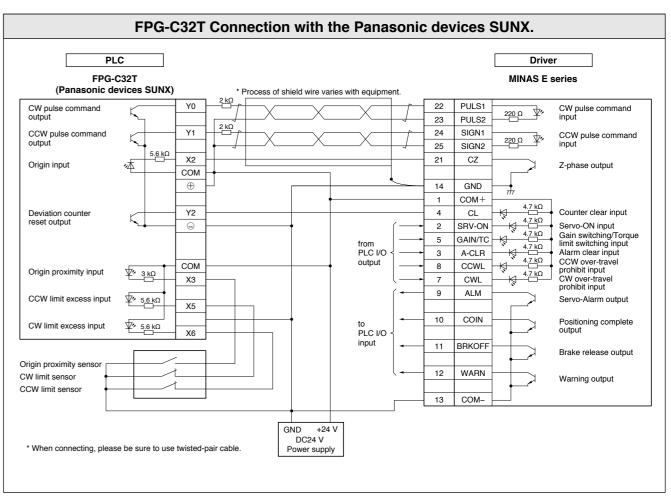
		DV0P4132	
Pin No. on Old Model	Pin No. on Current Model	Signal Name	Symbol
1	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL
3	NC		
4	NC		
5	NC		
6	NC		
7	7	Power supply for control signal (+)	COM+
8	NC		
9	NC		
10	NC		
11	11	External brake release signal	BRK-OFF+
12	12	Zero-speed detection output signal	ZSP
13	13	Torque in-limit signal output	TLC
14	NC		
15	15	Signal ground	GND
16	16	Torque command input	TRQR
17	17	Signal ground	GND
18	18	CW direction torque limit input	CWTL
19	19	Z-phase output	CZ
20	NC		
21	21	A-phase output	OA+
22	22	A-phase output	OA-
23	23	Z-phase output	OZ+
24	24	Z-phase output	OZ-
25	50	Frame ground	FG
26	26	Speed zero clamp input	ZEROSPD
27	27	Gain switching input	GAIN
28	NC		
29	29	Servo-ON input	SRV-ON
30	NC		
31	31	Alarm clear input	A-CLR
32	32	Control mode switching input	C-MODE
33	NC		
34	NC		
35	35	Servo-Ready output	S-RDY+
36	NC		
37	37	Servo-Alarm output	ALM+
38	NC		
39	39	Speed arrival output	AT-SPEED+
40	40	Torque in-limit signal output	TLC
	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

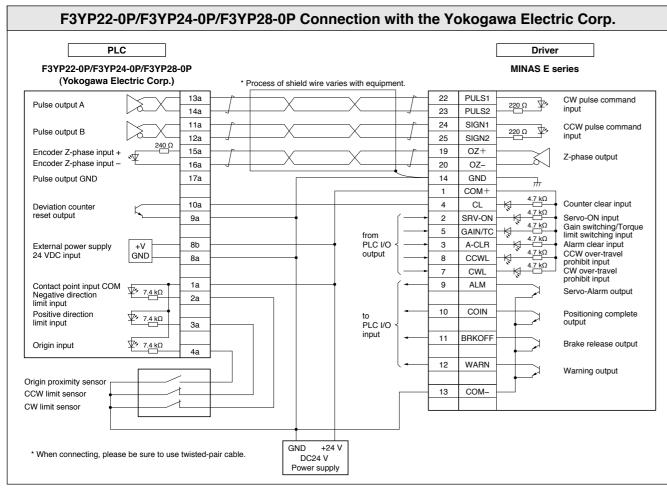
<sup>\* &</sup>quot;NC" is no connect.

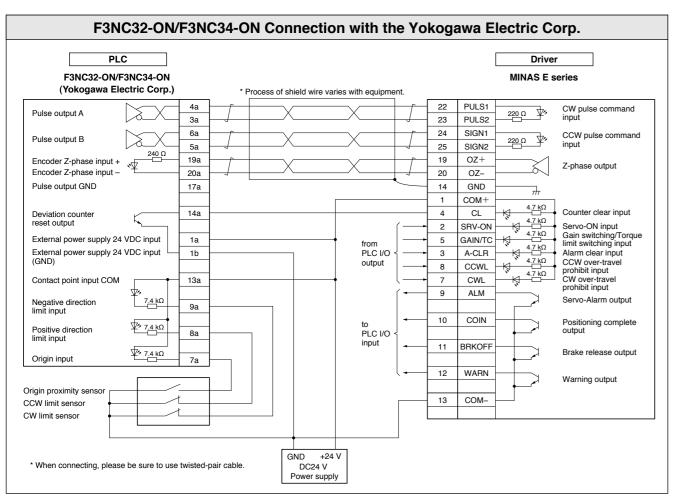
<sup>\* &</sup>quot;NC" is no connect.

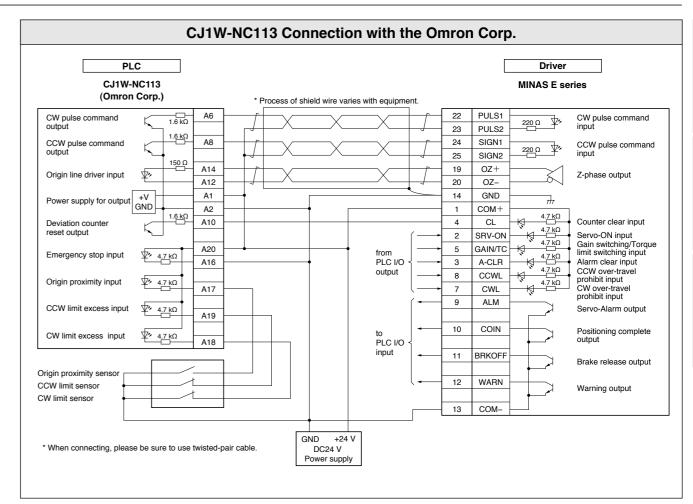


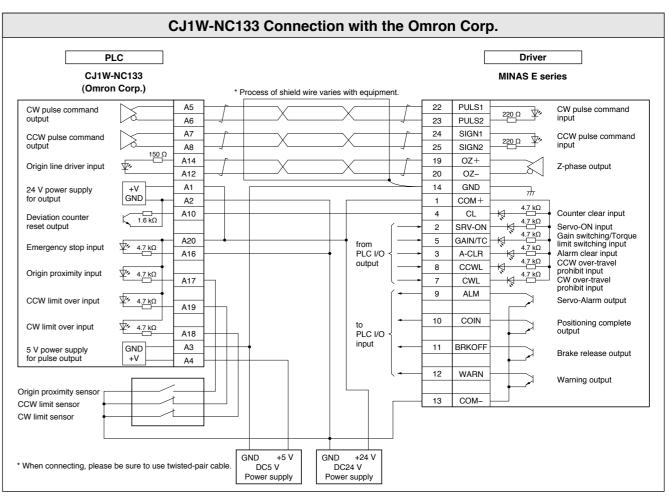












Lower limit

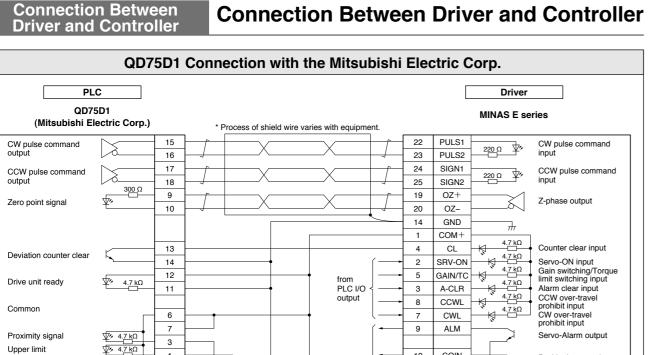
CW limit sensor

CCW limit sensor

Origin proximity senso

 $^{\star}$  When connecting, please be sure to use twisted-pair cable.

### Index (Alphabetical Order)



to PLC I/O · input

GND +24 V

Power supply

12 WARN

13 COM-

Positioning complete

Brake release output

Warning output

Part No.	Title	Page
DV0P0770	Connector kit for external peripheral equipment	240
DV0P0800	Interface cable	241
DV0P1450	Surge absorber (3-phase)	253,256
DV0P1460	Noise Filter for Signal Lines	254,256
DV0P1960	Communication cable	241
DV0P220	Reactor	209
DV0P221	Reactor	209
DV0P222	Reactor	209
DV0P223	Reactor	209
DV0P224	Reactor	209
DV0P225	Reactor	209
DV0P227	Reactor	209
DV0P228	Reactor	209
DV0P2870	Connector kit for power supply connection	239
DV0P2890	External regenerative resistor	242
DV0P2891	External regenerative resistor	242
DV0P2990	Battery For Absolute Encoder	207
DV0P3410	Noise Filter	251
DV0P3670	Connector kit for motor/encoder connection	239
DV0P37300	Cable set (3 m)	238
DV0P3811	DIN rail mounting unit	242
DV0P39200	Cable set (5 m)	238
DV0P4120	Interface conversion cable	197
DV0P4121	Interface conversion cable	197
DV0P4130	Interface conversion cable	101
DV0P4131	Interface conversion cable	197
DV0P4132	Interface conversion cable	197
DV0P4160	Noise filter	256
DV0P4170	Noise Filter	250
DV0P4190	Surge absorber (Single phase)	253,256
DV0P4220	Noise Filter	250
DV0P4280	External Regenerative Resistor: 50 Ω 25 W	210
DV0P4281	External Regenerative Resistor: 100 Ω 25 W	210
DV0P4282	External Regenerative Resistor: 25 Ω 50 W	210
DV0P4283	External Regenerative Resistor: 50 Ω 50 W	210
DV0P4284	External Regenerative Resistor: 30 Ω100 W	210
DV0P4285	External Regenerative Resistor: 20 Ω130 W	210
DV0P4290	Connector Kit for Motor/Encoder Connection	202
DV0P4310	Connector Kit for Motor/Encoder Connection	204
DV0P4320	Connector Kit for Motor/Encoder Connection	204
DV0P4330	Connector Kit for Motor/Encoder Connection	205
DV0P4340	Connector Kit for Motor/Encoder Connection	205
DV0P4350	Interface Connector	198
		_
DV0P4360	Interface cable	197
DV0P4380	Connector Kit for Motor/Encoder Connection	202
DV0P4420	Console	241
DV0P4430	Battery Box	207
DV0P4460	Setup support software "PANATERM" for	236
	MINAS series AC servo motor & Driver	
DV0PM20010	Connector Kit: Encoder	199
DV0PM20024	Connector Kit: RS485, 232	198
DV0PM20025	Connector Kit: Safety	198
DV0PM20026	Connector Kit: External Scale	199
DV0PM20027	Mounting bracket: A-frame	208
DV0PM20028	Mounting bracket: B-frame	208
DV0PM20029	Mounting bracket: C-frame	208
DV0PM20030	Mounting bracket: D-frame	208
DV0PM20031	Connector Kit: Analog Monitor Signal	199
DV0PM20032	Connector for Power Supply Input Connection (A-frame to D-frame (Single row type))	200
DV0PM20033	Connector for Power Supply Input Connection (A-frame to D-frame (Double row type))	200
DV0PM20034	Connector for Motor Connection (A-frame to D-frame)	201
DV0PM20035	Connector Kit for Motor/Encoder Connection	203
DV0PM20036	Connector Kit for Motor/Encoder Connection	203
DV0PM20037	Connector Kit for Motor/Encoder Connection	204
DV0PM20038	Connector Kit for Motor/Encoder Connection	204
DV0PM20038	Connector Kit for Motor/Encoder Connection	204
DV0PM20040	Connector Kit for Motor/Brake Connection	206
DV0PM20042	Noise Filter	250
DV0PM20043	Noise Filter	250

Part No.	Title	Page
DV0PM20044	Connector for Power Supply Input Connection (E-frame)	200
DV0PM20045	Connector for Regenerative Resistor (E-frame 200 V/400 V common)	201
DV0PM20046	Connector for Motor Connection (E-frame 200 V/400 V common)	201
DV0PM20047	Reactor	209
DV0PM20048	External Regenerative Resistor: 120 Ω 240 W	210
DV0PM20049	External Regenerative Resistor: 80 Ω 450 W	210
DV0PM20050	Surge absorber (3-phase)	253
DV0PM20051	Connector for Power Supply Input Connection (D-frame 400 V)	200
DV0PM20052	Connector for Power Supply Input Connection (E-frame 400 V)	200
DV0PM20053	Connector for Control Power Supply Input Connection (D-frame, E-frame 400 V)	201
DV0PM20054	Connector for Motor Connection (D-frame 400V)	201
DV0PM20055	Connector for Regenerative Resistor (D-frame 400 V)	201
DV0PM20056	Connector Kit for Motor/Encoder Connection	206
DV0PM20057	Connector Kit for Motor/Encoder Connection	206
DV0PM20058	External Regenerative Resistor: 3.3 Ω 780 W	210
DV0PM20059	External Regenerative Resistor:13.3 Ω 1140 W	210

MADHT		
Part No.	Title	Page
MADHT1105	A5 series Driver: A-frame	29,42
MADHT1105E	A5E series Driver: A-frame	31,42
MADHT1107	A5 series Driver: A-frame	29,42
MADHT1107E	A5E series Driver: A-frame	31,42
MADHT1505	A5 series Driver: A-frame	29,42
MADHT1505E	A5E series Driver: A-frame	31,42
MADHT1507	A5 series Driver: A-frame	29,42
MADHT1507E	A5E series Driver: A-frame	31,42

MADKT		
Part No.	Title	Page
MADKT1105	A5II series Driver: A-frame	29,42
MADKT1105E	A5IE series Driver: A-frame	31,42
MADKT1107	A5  ■ series Driver: A-frame	29,42
MADKT1107E	A5IIE series Driver: A-frame	31,42
MADKT1505	A5II series Driver: A-frame	29,42
MADKT1505E	A5IE series Driver: A-frame	31,42
MADKT1507	A5  ■ series Driver: A-frame	29,42
MADKT1507E	A5IIE series Driver: A-frame	31,42

MBDHT		
Part No.	Title	Page
MBDHT2110	A5 series Driver: B-frame	29,42
MBDHT2110E	A5E series Driver: B-frame	31,42
MBDHT2510	A5 series Driver: B-frame	29,42
MBDHT2510E	A5E series Driver: B-frame	31,42

Title	Page
A5∏ series Driver: B-frame	29,42
A5IIE series Driver: B-frame	31,42
A5II series Driver: B-frame	29,42
A5IIE series Driver: B-frame	31,42
	A5II series Driver: B-frame A5IIE series Driver: B-frame A5II series Driver: B-frame

MCDHT		
Part No.	Title	Page
MCDHT3120	A5 series Driver: C-frame	29,43
MCDHT3120E	A5E series Driver: C-frame	31,43
MCDHT3520	A5 series Driver: C-frame	29,43
MCDHT3520E	A5E series Driver: C-frame	31,43

MCDKT		
Part No.	Title	Page
MCDKT3120	A5II series Driver: C-frame	29,43
MCDKT3120E	A5IE series Driver: C-frame	31,43

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MCDKT		
Part No.	Title	Page
MCDKT3520	A5  ■ series Driver: C-frame	29,43
MCDKT3520E	A5IIE series Driver: C-frame	31,43

MDDHT		
Part No.	Title	Page
MDDHT2407	A5 series Driver: D-frame	29,44
MDDHT2407E	A5E series Driver: D-frame	31,44
MDDHT2412	A5 series Driver: D-frame	29,44
MDDHT2412E	A5E series Driver: D-frame	31,44
MDDHT3420	A5 series Driver: D-frame	29,44
MDDHT3420E	A5E series Driver: D-frame	31,44
MDDHT3530	A5 series Driver: D-frame	29,44
MDDHT3530E	A5E series Driver: D-frame	31,44
MDDHT5540	A5 series Driver: D-frame	29,44
MDDHT5540E	A5E series Driver: D-frame	31,44

MDDKT		
Part No.	Title	Page
MDDKT2407	A5II series Driver: D-frame	29,44
MDDKT2407E	A5IE series Driver: D-frame	31,44
MDDKT2412	A5II series Driver: D-frame	29,44
MDDKT2412E	A5IIE series Driver: D-frame	31,44
MDDKT3420	A5II series Driver: D-frame	29,44
MDDKT3420E	A5IIE series Driver: D-frame	31,44
MDDKT3530	A5II series Driver: D-frame	29,44
MDDKT3530E	A5IIE series Driver: D-frame	31,44
MDDKT5540	A5II series Driver: D-frame	29,44
MDDKT5540E	A5IIE series Driver: D-frame	31,44

MDME (Middle in Part No.	Title	Page
MDME044G1C	MDME 400 W Incremental encoder	111
MDME044G1D	MDME 400 W Incremental encoder	111
MDME044G1G	MDME 400 W Incremental encoder	111
MDME044G1H	MDME 400 W Incremental encoder	111
MDME044GCC	MDME 400 W Incremental encoder	111
MDME044GCD	MDME 400 W Incremental encoder	111
MDME044GCG	MDME 400 W Incremental encoder	111
MDME044GCH	MDME 400 W Incremental encoder	111
MDME044S1C	MDME 400 W Absolute encoder	111
MDME044S1D	MDME 400 W Absolute encoder	111
MDME044S1G	MDME 400 W Absolute encoder	111
MDME044S1H	MDME 400 W Absolute encoder	111
MDME044SCC	MDME 400 W Absolute encoder	111
MDME044SCD	MDME 400 W Absolute encoder	111
MDME044SCG	MDME 400 W Absolute encoder	111
MDME044SCH	MDME 400 W Absolute encoder	111
MDME064G1C	MDME 600 W Incremental encoder	112
MDME064G1D	MDME 600 W Incremental encoder	112
MDME064G1G	MDME 600 W Incremental encoder	112
MDME064G1H	MDME 600 W Incremental encoder	112
MDME064GCC	MDME 600 W Incremental encoder	112
MDME064GCD	MDME 600 W Incremental encoder	112
MDME064GCG	MDME 600 W Incremental encoder	112
MDME064GCH	MDME 600 W Incremental encoder	112
MDME064S1C	MDME 600 W Absolute encoder	112
MDME064S1D	MDME 600 W Absolute encoder	112
MDME064S1G	MDME 600 W Absolute encoder	112
MDME064S1H	MDME 600 W Absolute encoder	112
MDME064SCC	MDME 600 W Absolute encoder	112
MDME064SCD	MDME 600 W Absolute encoder	112
MDME064SCG	MDME 600 W Absolute encoder	112
MDME064SCH	MDME 600 W Absolute encoder	112
MDME102G1C	MDME 1.0 kW Incremental encoder	80
MDME102G1D	MDME 1.0 kW Incremental encoder	80
MDME102G1G	MDME 1.0 kW Incremental encoder	80
MDME102G1H	MDME 1.0 kW Incremental encoder	80
MDME102GCC	MDME 1.0 kW Incremental encoder	80
MDME102GCCM	MDME 1.0 kW Incremental encoder	164
MDME102GCD	MDME 1.0 kW Incremental encoder	80
MDME102GCDM	MDME 1.0 kW Incremental encoder	164
MDME102GCG	MDME 1.0 kW Incremental encoder	80

MDME (Middle in Part No.	Title	Page
MDME102GCGM	MDME 1.0 kW Incremental enco	
MDME102GCH	MDME 1.0 kW Incremental enco	der 80
MDME102GCHM	MDME 1.0 kW Incremental enco	der 164
MDME102S1C	MDME 1.0 kW Absolute encoder	80
MDME102S1D	MDME 1.0 kW Absolute encoder	80
MDME102S1G	MDME 1.0 kW Absolute encoder	80
MDME102S1H	MDME 1.0 kW Absolute encoder	80
MDME102SCC	MDME 1.0 kW Absolute encoder	
MDME102SCCM	MDME 1.0 kW Absolute encoder	
MDME102SCD	MDME 1.0 kW Absolute encoder	
MDME102SCDM	MDME 1.0 kW Absolute encoder	
MDME102SCG	MDME 1.0 kW Absolute encoder	
MDME102SCGM	MDME 1.0 kW Absolute encoder	
MDME102SCH	MDME 1.0 kW Absolute encoder	
MDME102SCHM MDME104G1C	MDME 1.0 kW Absolute encoder  MDME 1.0 kW Incremental encoder	
MDME104G1D	MDME 1.0 kW Incremental enco	
MDME104G1G	MDME 1.0 kW Incremental enco	
MDME104G1H	MDME 1.0 kW Incremental enco	
MDME104GTT	MDME 1.0 kW Incremental enco	
MDME104GCD	MDME 1.0 kW Incremental enco	
MDME104GCG	MDME 1.0 kW Incremental enco	
MDME104GCH	MDME 1.0 kW Incremental enco	
MDME104S1C	MDME 1.0 kW Absolute encoder	
MDME104S1D	MDME 1.0 kW Absolute encoder	1.10
MDME104S1G	MDME 1.0 kW Absolute encoder	113
MDME104S1H	MDME 1.0 kW Absolute encoder	113
MDME104SCC	MDME 1.0 kW Absolute encoder	113
MDME104SCD	MDME 1.0 kW Absolute encoder	113
MDME104SCG	MDME 1.0 kW Absolute encoder	113
MDME104SCH	MDME 1.0 kW Absolute encoder	113
MDME152G1C	MDME 1.5 kW Incremental enco	der 81
MDME152G1D	MDME 1.5 kW Incremental enco	
MDME152G1G	MDME 1.5 kW Incremental enco	
MDME152G1H	MDME 1.5 kW Incremental enco	
MDME152GCC	MDME 1.5 kW Incremental enco	
MDME152GCCM	MDME 1.5 kW Incremental enco	
MDME152GCD	MDME 1.5 kW Incremental enco	
MDME152GCDM MDME152GCG	MDME 1.5 kW Incremental enco	
MDME152GCG MDME152GCGM	MDME 1.5 kW Incremental enco	
MDME152GCGW	MDME 1.5 kW Incremental enco	
MDME152GCHM	MDME 1.5 kW Incremental enco	
MDME152S1C	MDME 1.5 kW Absolute encoder	
MDME152S1D	MDME 1.5 kW Absolute encoder	
MDME152S1G	MDME 1.5 kW Absolute encoder	
MDME152S1H	MDME 1.5 kW Absolute encoder	
MDME152SCC	MDME 1.5 kW Absolute encoder	
MDME152SCCM	MDME 1.5 kW Absolute encoder	
MDME152SCD	MDME 1.5 kW Absolute encoder	
MDME152SCDM	MDME 1.5 kW Absolute encoder	165
MDME152SCG	MDME 1.5 kW Absolute encoder	81
MDME152SCGM	MDME 1.5 kW Absolute encoder	165
MDME152SCH	MDME 1.5 kW Absolute encoder	81
MDME152SCHM	MDME 1.5 kW Absolute encoder	165
MDME154G1C	MDME 1.5 kW Incremental enco	der 114
MDME154G1D	MDME 1.5 kW Incremental enco	
MDME154G1G	MDME 1.5 kW Incremental enco	
MDME154G1H	MDME 1.5 kW Incremental enco	
MDME154GCC	MDME 1.5 kW Incremental enco	
MDME154GCD	MDME 1.5 kW Incremental enco	
MDME154GCG	MDME 1.5 kW Incremental enco	
MDME154GCH	MDME 1.5 kW Incremental enco	
MDME154S1C	MDME 1.5 kW Absolute encoder	
MDME154S1D	MDME 1.5 kW Absolute encoder	
MDME154S1G	MDME 1.5 kW Absolute encoder	
MDME154S1H	MDME 1.5 kW Absolute encoder MDME 1.5 kW Absolute encoder	
MDME154SCC	MDME 1.5 kW Absolute encoder	
MDME154SCD MDME154SCG	MDME 1.5 kW Absolute encoder  MDME 1.5 kW Absolute encoder	
MDME154SCH	MDME 1.5 kW Absolute encoder	

MDME (Middle in Part No.	Title	Page
MDME202G1D	MDME 2.0 kW Incremental encoder	82
MDME202G1G	MDME 2.0 kW Incremental encoder	82
MDME202G1H	MDME 2.0 kW Incremental encoder	82
MDME202GCC	MDME 2.0 kW Incremental encoder	82
MDME202GCCM	MDME 2.0 kW Incremental encoder	166
MDME202GCCW	MDME 2.0 kW Incremental encoder	82
MDME202GCDM	MDME 2.0 kW Incremental encoder	166
MDME202GCG	MDME 2.0 kW Incremental encoder	82
MDME202GCGM	MDME 2.0 kW Incremental encoder	166
MDME202GCH	MDME 2.0 kW Incremental encoder	82
MDME202GCHM	MDME 2.0 kW Incremental encoder	166
MDME202S1C	MDME 2.0 kW Incremental encoder	82
MDME202S1D	MDME 2.0 kW Absolute encoder	
		82 82
MDME202S1G	MDME 2.0 kW Absolute encoder	
MDME202S1H	MDME 2.0 kW Absolute encoder	82
MDME202SCC	MDME 2.0 kW Absolute encoder	82
MDME202SCCM	MDME 2.0 kW Absolute encoder	166
MDME202SCD	MDME 2.0 kW Absolute encoder	82
MDME202SCDM	MDME 2.0 kW Absolute encoder	166
MDME202SCG	MDME 2.0 kW Absolute encoder	82
MDME202SCGM	MDME 2.0 kW Absolute encoder	166
MDME202SCH	MDME 2.0 kW Absolute encoder	82
MDME202SCHM	MDME 2.0 kW Absolute encoder	166
MDME204G1C	MDME 2.0 kW Incremental encoder	115
MDME204G1D	MDME 2.0 kW Incremental encoder	115
MDME204G1G	MDME 2.0 kW Incremental encoder	115
MDME204G1H	MDME 2.0 kW Incremental encoder	115
MDME204GCC	MDME 2.0 kW Incremental encoder	115
MDME204GCD	MDME 2.0 kW Incremental encoder	115
MDME204GCG	MDME 2.0 kW Incremental encoder	115
MDME204GCH	MDME 2.0 kW Incremental encoder	115
MDME204S1C	MDME 2.0 kW Absolute encoder	115
MDME204S1D	MDME 2.0 kW Absolute encoder	115
MDME204S1G	MDME 2.0 kW Absolute encoder	115
MDME204S1H	MDME 2.0 kW Absolute encoder	115
MDME204SCC	MDME 2.0 kW Absolute encoder	115
MDME204SCD MDME204SCG	MDME 2.0 kW Absolute encoder	115
MDME204SCG MDME204SCH	MDME 2.0 kW Absolute encoder  MDME 2.0 kW Absolute encoder	115
MDME302G1C	MDME 3.0 kW Incremental encoder	83
MDME302G1D	MDME 3.0 kW Incremental encoder	83
MDME302G1G	MDME 3.0 kW Incremental encoder	83
MDME302G1H	MDME 3.0 kW Incremental encoder	83
MDME302GCC	MDME 3.0 kW Incremental encoder	83
MDME302GCCM	MDME 3.0 kW Incremental encoder	167
MDME302GCD	MDME 3.0 kW Incremental encoder	83
MDME302GCDM	MDME 3.0 kW Incremental encoder	167
MDME302GCG	MDME 3.0 kW Incremental encoder	83
MDME302GCGM	MDME 3.0 kW Incremental encoder	167
MDME302GCH	MDME 3.0 kW Incremental encoder	83
MDME302GCHM	MDME 3.0 kW Incremental encoder	167
MDME302S1C	MDME 3.0 kW Absolute encoder	83
MDME302S1D	MDME 3.0 kW Absolute encoder	83
MDME302S1G	MDME 3.0 kW Absolute encoder	83
MDME302S1H	MDME 3.0 kW Absolute encoder	83
MDME302SCC	MDME 3.0 kW Absolute encoder	83
MDME302SCCM	MDME 3.0 kW Absolute encoder	167
MDME302SCD	MDME 3.0 kW Absolute encoder	83
MDME302SCDM	MDME 3.0 kW Absolute encoder	167
MDME302SCDM MDME302SCG	MDME 3.0 kW Absolute encoder	83
MDME302SCGM	MDME 3.0 kW Absolute encoder	
		167
MDME302SCHM	MDME 3.0 kW Absolute encoder	83
MDME302SCHM	MDME 3.0 kW Absolute encoder	167
MDME304G1C	MDME 3.0 kW Incremental encoder	116
MDME304G1D	MDME 3.0 kW Incremental encoder	116
MDME304G1G	MDME 3.0 kW Incremental encoder	116
MDME304G1H	MDME 3.0 kW Incremental encoder	116
MDME304GCC	MDME 3.0 kW Incremental encoder	116
MDME304GCD	MDME 3.0 kW Incremental encoder	116
MDME304GCG	MDME 3.0 kW Incremental encoder	116
	MDME 3.0 kW Incremental encoder	116
MDME304GCH	IVIDIVIL 3.0 KW IIICIEIIIEIILAI EIICOGEI	110

MDME (Middle in	ertia)	
Part No.	Title	Page
MDME304S1D	MDME 3.0 kW Absolute encoder	116
MDME304S1G	MDME 3.0 kW Absolute encoder	116
MDME304S1H	MDME 3.0 kW Absolute encoder	116
MDME304SCC	MDME 3.0 kW Absolute encoder	116
MDME304SCD	MDME 3.0 kW Absolute encoder	116
MDME304SCG	MDME 3.0 kW Absolute encoder	116
MDME304SCH MDME402G1C	MDME 3.0 kW Absolute encoder  MDME 4.0 kW Incremental encoder	116 ler 84
MDME402G1C	MDME 4.0 kW Incremental encode	
MDME402G1G	MDME 4.0 kW Incremental encode	
MDME402G1H	MDME 4.0 kW Incremental encode	
MDME402GCC	MDME 4.0 kW Incremental encode	
MDME402GCCM	MDME 4.0 kW Incremental encode	ler 168
MDME402GCD	MDME 4.0 kW Incremental encode	ler 84
MDME402GCDM	MDME 4.0 kW Incremental encode	ler 168
MDME402GCG	MDME 4.0 kW Incremental encode	ler 84
MDME402GCGM	MDME 4.0 kW Incremental encode	ler 168
MDME402GCH	MDME 4.0 kW Incremental encode	ler 84
MDME402GCHM	MDME 4.0 kW Incremental encode	ler 168
MDME402S1C	MDME 4.0 kW Absolute encoder	84
MDME402S1D	MDME 4.0 kW Absolute encoder	84
MDME402S1G	MDME 4.0 kW Absolute encoder	84
MDME402S1H	MDME 4.0 kW Absolute encoder	84
MDME402SCC	MDME 4.0 kW Absolute encoder MDME 4.0 kW Absolute encoder	84
MDME402SCCM MDME402SCD	MDME 4.0 kW Absolute encoder	168 84
MDME402SCDM	MDME 4.0 kW Absolute encoder	168
MDME402SCDIM	MDME 4.0 kW Absolute encoder	84
MDME402SCGM	MDME 4.0 kW Absolute encoder	168
MDME402SCH	MDME 4.0 kW Absolute encoder	84
MDME402SCHM	MDME 4.0 kW Absolute encoder	168
MDME404G1C	MDME 4.0 kW Incremental encode	ler 117
MDME404G1D	MDME 4.0 kW Incremental encode	ler 117
MDME404G1G	MDME 4.0 kW Incremental encode	ler 117
MDME404G1H	MDME 4.0 kW Incremental encode	ler 117
MDME404GCC	MDME 4.0 kW Incremental encode	-
MDME404GCD	MDME 4.0 kW Incremental encode	
MDME404GCG	MDME 4.0 kW Incremental encod	
MDME404GCH	MDME 4.0 kW Incremental encod	
MDME404S1C MDME404S1D	MDME 4.0 kW Absolute encoder MDME 4.0 kW Absolute encoder	117
MDME404S1D	MDME 4.0 kW Absolute encoder	117
MDME404S1H	MDME 4.0 kW Absolute encoder	117
MDME404SCC	MDME 4.0 kW Absolute encoder	117
MDME404SCD	MDME 4.0 kW Absolute encoder	117
MDME404SCG	MDME 4.0 kW Absolute encoder	117
MDME404SCH	MDME 4.0 kW Absolute encoder	117
MDME502G1C	MDME 5.0 kW Incremental encode	ler 85
MDME502G1D	MDME 5.0 kW Incremental encode	ler 85
MDME502G1G	MDME 5.0 kW Incremental encode	ler 85
MDME502G1H	MDME 5.0 kW Incremental encode	
MDME502GCC	MDME 5.0 kW Incremental encode	
MDME502GCCM	MDME 5.0 kW Incremental encod	
MDME502GCD	MDME 5.0 kW Incremental encode	
MDME502GCDM	MDME 5.0 kW Incremental encod	
MDME502GCG	MDME 5.0 kW Incremental encode	
MDME502GCGM MDME502GCH	MDME 5.0 kW Incremental encode MDME 5.0 kW Incremental encode	
MDME502GCHM	MDME 5.0 kW Incremental encode	
MDME502S1C	MDME 5.0 kW Absolute encoder	85
MDME502S1D	MDME 5.0 kW Absolute encoder	85
MDME502S1G	MDME 5.0 kW Absolute encoder	85
MDME502S1H	MDME 5.0 kW Absolute encoder	85
MDME502SCC	MDME 5.0 kW Absolute encoder	85
MDME502SCCM	MDME 5.0 kW Absolute encoder	169
MDME502SCD	MDME 5.0 kW Absolute encoder	85
MDME502SCDM	MDME 5.0 kW Absolute encoder	169
MDME502SCG	MDME 5.0 kW Absolute encoder	85
MDME502SCGM	MDME 5.0 kW Absolute encoder	169
MOMETOCOCII	MDME 5.0 kW Absolute encoder	85
MDME502SCH MDME502SCHM	MDME 5.0 kW Absolute encoder	169

(Alphabetical Order)

MDME (Middle in	nertia)	
Part No.	Title	Page
MDME504G1D	MDME 5.0 kW Incremental encoder	118
MDME504G1G	MDME 5.0 kW Incremental encoder	118
MDME504G1H	MDME 5.0 kW Incremental encoder	118
MDME504GCC	MDME 5.0 kW Incremental encoder	118
MDME504GCD	MDME 5.0 kW Incremental encoder	118
MDME504GCG	MDME 5.0 kW Incremental encoder	118
MDME504GCH	MDME 5.0 kW Incremental encoder	118
MDME504S1C	MDME 5.0 kW Absolute encoder	118
MDME504S1D	MDME 5.0 kW Absolute encoder	118
MDME504S1G	MDME 5.0 kW Absolute encoder	118
MDME504S1H	MDME 5.0 kW Absolute encoder	118
MDME504SCC	MDME 5.0 kW Absolute encoder	118
MDME504SCD	MDME 5.0 kW Absolute encoder	118
MDME504SCG	MDME 5.0 kW Absolute encoder	118
MDME504SCH	MDME 5.0 kW Absolute encoder	118
MDME752G1C	MDME 7.5 kW Incremental encoder	86
MDME752G1D	MDME 7.5 kW Incremental encoder	86
MDME752G1G	MDME 7.5 kW Incremental encoder	86
MDME752G1H	MDME 7.5 kW Incremental encoder  MDME 7.5 kW Absolute encoder	86
MDME752S1C MDME752S1D	MDME 7.5 kW Absolute encoder	86
MDME752S1D	MDME 7.5 kW Absolute encoder	86 86
MDME752S1G MDME752S1H	MDME 7.5 kW Absolute encoder	_
MDME75231H	MDME 7.5 kW Absolute encoder  MDME 7.5 kW Incremental encoder	86 119
MDME754G1D	MDME 7.5 kW Incremental encoder	119
MDME754G1G	MDME 7.5 kW Incremental encoder	119
MDME754G1H	MDME 7.5 kW Incremental encoder	119
MDME754S1C	MDME 7.5 kW Absolute encoder	119
MDME754S1D	MDME 7.5 kW Absolute encoder	119
MDME754S1G	MDME 7.5 kW Absolute encoder	119
MDME754S1H	MDME 7.5 kW Absolute encoder	119
MDMEC12G1C	MDME 11.0 kW Incremental encoder	87
MDMEC12G1D	MDME 11.0 kW Incremental encoder	87
MDMEC12G1G	MDME 11.0 kW Incremental encoder	87
MDMEC12G1H	MDME 11.0 kW Incremental encoder	87
MDMEC12S1C	MDME 11.0 kW Absolute encoder	87
MDMEC12S1D	MDME 11.0 kW Absolute encoder	87
MDMEC12S1G	MDME 11.0 kW Absolute encoder	87
MDMEC12S1H	MDME 11.0 kW Absolute encoder	87
MDMEC14G1C	MDME 11.0 kW Incremental encoder	120
MDMEC14G1D	MDME 11.0 kW Incremental encoder	120
MDMEC14G1G	MDME 11.0 kW Incremental encoder	120
MDMEC14G1H	MDME 11.0 kW Incremental encoder	120
MDMEC14S1C	MDME 11.0 kW Absolute encoder	120
MDMEC14S1D	MDME 11.0 kW Absolute encoder	120
MDMEC14S1G	MDME 11.0 kW Absolute encoder	120
MDMEC14S1H	MDME 11.0 kW Absolute encoder	120
MDMEC52G1C	MDME 15.0 kW Incremental encoder	88
MDMEC52G1D	MDME 15.0 kW Incremental encoder	88
MDMEC52G1G	MDME 15.0 kW Incremental encoder	88
MDMEC52G1H	MDME 15.0 kW Incremental encoder	88
MDMEC52S1C	MDME 15.0 kW Absolute encoder	88
MDMEC52S1D	MDME 15.0 kW Absolute encoder	88
MDMEC52S1G MDMEC52S1H	MDME 15.0 kW Absolute encoder  MDME 15.0 kW Absolute encoder	88
MDMEC52STH	MDME 15.0 kW Incremental encoder	121
MDMEC54G1D	MDME 15.0 kW Incremental encoder	
MDMEC54G1D	MDME 15.0 kW Incremental encoder	121
MDMEC54G1H	MDME 15.0 kW Incremental encoder	121
MDMEC54S1C	MDME 15.0 kW Absolute encoder	121
MDMEC54S1D	MDME 15.0 kW Absolute encoder	121
MDMEC54S1B	MDME 15.0 kW Absolute encoder	121
MDMEC54S1H	MDME 15.0 kW Absolute encoder	121
200.0111		,

MEDHT		
Part No.	Title	Page
MEDHT4430	A5 series Driver: E-frame	29,45
MEDHT4430E	A5E series Driver: E-frame	31,45
MEDHT7364	A5 series Driver: E-frame	29,44
MEDHT7364E	A5E series Driver: E-frame	31,44

MEDKT		
Part No.	Title	Page
MEDKT4430	A5II series Driver: E-frame	29,45
MEDKT4430E	A5IE series Driver: E-frame	31,45
MEDKT7364	A5  I series Driver: E-frame	29,44
MEDKT7364E	A5IIE series Driver: E-frame	31,44

MFDHT		
Part No.	Title	Page
MFDHT5440	A5 series Driver: F-frame	29,45
MFDHT5440E	A5E series Driver: F-frame	31,45
MFDHTA390	A5 series Driver: F-frame	29,45
MFDHTA390E	A5E series Driver: F-frame	31,45
MFDHTA464	A5 series Driver: F-frame	29,45
MFDHTA464E	A5E series Driver: F-frame	31,45
MFDHTB3A2	A5 series Driver: F-frame	29,45
MFDHTB3A2E	A5E series Driver: F-frame	31,45

MFDKT		
Part No.	Title	Page
MFDKT5440	A5II series Driver: F-frame	29,45
MFDKT5440E	A5IIE series Driver: F-frame	31,45
MFDKTA390	A5II series Driver: F-frame	29,45
MFDKTA390E	A5IIE series Driver: F-frame	31,45
MFDKTA464	A5∏ series Driver: F-frame	29,45
MFDKTA464E	A5IIE series Driver: F-frame	31,45
MFDKTB3A2	A5II series Driver: F-frame	29,45
MFDKTB3A2E	A5IE series Driver: F-frame	31,45

MEECA Part No.	Title	Dogo
		Page
MFECA0030EAD	Encoder Cable (without Battery Box)	188
MFECA0030EAE	Encoder Cable (with Battery Box)	188
MFECA0030EAM	Encoder Cable (without Battery Box)	188,238
MFECA0030ESD	Encoder Cable (without Battery Box)	189
MFECA0030ESE	Encoder Cable (with Battery Box)	190
MFECA0030ETD	Encoder Cable (without Battery Box)	190
MFECA0030ETE	Encoder Cable (with Battery Box)	190
MFECA0030MJD	Encoder Cable (without Battery Box)	189
MFECA0030MJE	Encoder Cable (with Battery Box)	189
MFECA0030MKD	Encoder Cable (without Battery Box)	189
MFECA0030MKE	Encoder Cable (with Battery Box)	189
MFECA0030TJD	Encoder Cable (without Battery Box)	189
MFECA0030TJE	Encoder Cable (with Battery Box)	189
MFECA0030TKD	Encoder Cable (without Battery Box)	189
MFECA0030TKE	Encoder Cable (with Battery Box)	189
MFECA0050EAD	Encoder Cable (without Battery Box)	188
MFECA0050EAE	Encoder Cable (with Battery Box)	188
MFECA0050EAM	Encoder Cable (without Battery Box)	188,238
MFECA0050ESD	Encoder Cable (without Battery Box)	189
MFECA0050ESE	Encoder Cable (with Battery Box)	190
MFECA0050ETD	Encoder Cable (without Battery Box)	190
MFECA0050ETE	Encoder Cable (with Battery Box)	190
MFECA0050MJD	Encoder Cable (without Battery Box)	189
MFECA0050MJE	Encoder Cable (with Battery Box)	189
MFECA0050MKD	Encoder Cable (without Battery Box)	189
MFECA0050MKE	Encoder Cable (with Battery Box)	189
MFECA0050TJD	Encoder Cable (without Battery Box)	189
MFECA0050TJE	Encoder Cable (with Battery Box)	189
MFECA0050TKD	Encoder Cable (without Battery Box)	189
MFECA0050TKE	Encoder Cable (with Battery Box)	189
MFECA0100EAD	Encoder Cable (with Battery Box)  Encoder Cable (without Battery Box)	188
MFECA0100EAE	Encoder Cable (with Battery Box)	188
MFECA0100EAM	Encoder Cable (with Battery Box)  Encoder Cable (without Battery Box)	188,238
MFECA0100EAW	Encoder Cable (without Battery Box)  Encoder Cable (without Battery Box)	189
MFECA0100ESE	Encoder Cable (with Battery Box)	190
MFECA0100ESE	Encoder Cable (with Battery Box)  Encoder Cable (without Battery Box)	190
MFECA0100ETD	, , ,	190
	Encoder Cable (with Battery Box)	
MFECA0100MJD	Encoder Cable (without Battery Box)	189
MFECA0100MJE	Encoder Cable (with Battery Box)	189
MFECA0100MKD	Encoder Cable (without Battery Box)	189
MFECA0100MKE	Encoder Cable (with Battery Box)	189
MFECA0100TJD	Encoder Cable (without Battery Box)	189
MFECA0100TJE	Encoder Cable (with Battery Box)	189

Part No.	Title	Page
MFECA0100TKD	Encoder Cable (without Battery Box)	189
MFECA0100TKE	Encoder Cable (with Battery Box)	189
MFECA0200EAD	Encoder Cable (without Battery Box)	188
MFECA0200EAE	Encoder Cable (with Battery Box)	188
MFECA0200EAM	Encoder Cable (without Battery Box)	188,238
MFECA0200ESD	Encoder Cable (without Battery Box)	189
MFECA0200ESE	Encoder Cable (with Battery Box)	190
MFECA0200ETD	Encoder Cable (without Battery Box)	190
MFECA0200ETE	Encoder Cable (with Battery Box)	190
MFECA0200MJD	Encoder Cable (without Battery Box)	189
MFECA0200MJE	Encoder Cable (with Battery Box)	189
MFECA0200MKD	Encoder Cable (without Battery Box)	189
MFECA0200MKE	Encoder Cable (with Battery Box)	189
MFECA0200TJD	Encoder Cable (without Battery Box)	189
MFECA0200TJE	Encoder Cable (with Battery Box)	189
MFECA0200TKD	Encoder Cable (without Battery Box)	189
MFECA0200TKE	Encoder Cable (with Battery Box)	189

MFMCA		
Part No.	Title	Page
MFMCA0030AEB	Motor Cable	238
MFMCA0030EED	Motor Cable (without Brake)	191
MFMCA0030NJD	Motor Cable (without Brake)	191
MFMCA0030NKD	Motor Cable (without Brake)	191
MFMCA0030RJD	Motor Cable (without Brake)	191
MFMCA0030RKD	Motor Cable (without Brake)	191
MFMCA0032ECD	Motor Cable (without Brake)	191
MFMCA0032FCD	Motor Cable (with Brake)	194
MFMCA0033ECT	Motor Cable (without Brake)	193
MFMCA0033FCT	Motor Cable (with Brake)	195
MFMCA0050AEB	Motor Cable	238
MFMCA0050EED	Motor Cable (without Brake)	191
MFMCA0050NJD	Motor Cable (without Brake)	191
MFMCA0050NKD	Motor Cable (without Brake)	191
MFMCA0050RJD	Motor Cable (without Brake)	191
MFMCA0050RKD	Motor Cable (without Brake)	191
MFMCA0052ECD	Motor Cable (without Brake)	191
MFMCA0052FCD	Motor Cable (with Brake)	194
MFMCA0053ECT	Motor Cable (without Brake)	193
MFMCA0053FCT	Motor Cable (with Brake)	195
MFMCA0100AEB	Motor Cable	238
MFMCA0100EED	Motor Cable (without Brake)	191
MFMCA0100NJD	Motor Cable (without Brake)	191
MFMCA0100NKD	Motor Cable (without Brake)	191
MFMCA0100RJD	Motor Cable (without Brake)	191
MFMCA0100RKD	Motor Cable (without Brake)	191
MFMCA0102ECD	Motor Cable (without Brake)	191
MFMCA0102FCD	Motor Cable (with Brake)	194
MFMCA0103ECT	Motor Cable (without Brake)	193
MFMCA0103FCT	Motor Cable (with Brake)	195
MFMCA0200AEB	Motor Cable	238
MFMCA0200EED	Motor Cable (without Brake)	191
MFMCA0200NJD	Motor Cable (without Brake)	191
MFMCA0200NKD	Motor Cable (without Brake)	191
MFMCA0200RJD	Motor Cable (without Brake)	191
MFMCA0200RKD	Motor Cable (without Brake)	191
MFMCA0202ECD	Motor Cable (without Brake)	191
MFMCA0202FCD	Motor Cable (with Brake)	194
MFMCA0203ECT	Motor Cable (without Brake)	193
MFMCA0203FCT	Motor Cable (with Brake)	195

Title	Page
Brake Cable	196,238
Brake Cable	196
Brake Cable	196,238
Brake Cable	196
Brake Cable	196
Brake Cable	196
	Brake Cable

MFMCB		
Part No.	Title	Page
MFMCB0050SKT	Brake Cable	196
MFMCB0100GET	Brake Cable	196,238
MFMCB0100PJT	Brake Cable	196
MFMCB0100PKT	Brake Cable	196
MFMCB0100SJT	Brake Cable	196
MFMCB0100SKT	Brake Cable	196
MFMCB0200GET	Brake Cable	196,238
MFMCB0200PJT	Brake Cable	196
MFMCB0200PKT	Brake Cable	196
MFMCB0200SJT	Brake Cable	196
MFMCB0200SKT	Brake Cable	196

MFMCD		
Part No.	Title	Page
MFMCD0032ECD	Motor Cable (without Brake)	192
MFMCD0033ECT	Motor Cable (without Brake)	193
MFMCD0052ECD	Motor Cable (without Brake)	192
MFMCD0053ECT	Motor Cable (without Brake)	193
MFMCD0102ECD	Motor Cable (without Brake)	192
MFMCD0103ECT	Motor Cable (without Brake)	193
MFMCD0202ECD	Motor Cable (without Brake)	192
MFMCD0203ECT	Motor Cable (without Brake)	193

MFMCE		
Part No.	Title	Page
MFMCE0032ECD	Motor Cable (without Brake)	192
MFMCE0032FCD	Motor Cable (with Brake)	194
MFMCE0052ECD	Motor Cable (without Brake)	192
MFMCE0052FCD	Motor Cable (with Brake)	194
MFMCE0102ECD	Motor Cable (without Brake)	192
MFMCE0102FCD	Motor Cable (with Brake)	194
MFMCE0202ECD	Motor Cable (without Brake)	192
MFMCE0202FCD	Motor Cable (with Brake)	194

Title	Page
Motor Cable (without Brake)	192
	Motor Cable (without Brake) Motor Cable (without Brake) Motor Cable (without Brake)

MFME (Middle inertia)		
Part No.	Title	Page
MFME152G1C	MFME 1.5 kW Incremental encoder	89
MFME152G1D	MFME 1.5 kW Incremental encoder	89
MFME152G1G	MFME 1.5 kW Incremental encoder	89
MFME152G1H	MFME 1.5 kW Incremental encoder	89
MFME152S1C	MFME 1.5 kW Absolute encoder	89
MFME152S1D	MFME 1.5 kW Absolute encoder	89
MFME152S1G	MFME 1.5 kW Absolute encoder	89
MFME152S1H	MFME 1.5 kW Absolute encoder	89
MFME154G1C	MFME 1.5 kW Incremental encoder	122
MFME154G1D	MFME 1.5 kW Incremental encoder	122
MFME154G1G	MFME 1.5 kW Incremental encoder	122
MFME154G1H	MFME 1.5 kW Incremental encoder	122
MFME154S1C	MFME 1.5 kW Absolute encoder	122
MFME154S1D	MFME 1.5 kW Absolute encoder	122
MFME154S1G	MFME 1.5 kW Absolute encoder	122
MFME154S1H	MFME 1.5 kW Absolute encoder	122
MFME252G1C	MFME 2.5 kW Incremental encoder	90
MFME252G1D	MFME 2.5 kW Incremental encoder	90
MFME252G1G	MFME 2.5 kW Incremental encoder	90
MFME252G1H	MFME 2.5 kW Incremental encoder	90
MFME252S1C	MFME 2.5 kW Absolute encoder	90
MFME252S1D	MFME 2.5 kW Absolute encoder	90
MFME252S1G	MFME 2.5 kW Absolute encoder	90
MFME252S1H	MFME 2.5 kW Absolute encoder	90
MFME254G1C	MFME 2.5 kW Incremental encoder	123
MFME254G1D	MFME 2.5 kW Incremental encoder	123
MFME254G1G	MFME 2.5 kW Incremental encoder	123
MFME254G1H	MFME 2.5 kW Incremental encoder	123
MFME254S1C	MFME 2.5 kW Absolute encoder	123

(Alphabetical Order)

MFME (Middle in	ertia)	
Part No.	Title	Page
MFME254S1D	MFME 2.5 kW Absolute encoder	123
MFME254S1G	MFME 2.5 kW Absolute encoder	123
MFME254S1H	MFME 2.5 kW Absolute encoder	123
MFME452G1C	MFME 4.5 kW Incremental encoder	91
MFME452G1D	MFME 4.5 kW Incremental encoder	91
MFME452G1G	MFME 4.5 kW Incremental encoder	91
MFME452G1H	MFME 4.5 kW Incremental encoder	91
MFME452S1C	MFME 4.5 kW Absolute encoder	91
MFME452S1D	MFME 4.5 kW Absolute encoder	91
MFME452S1G	MFME 4.5 kW Absolute encoder	91
MFME452S1H	MFME 4.5 kW Absolute encoder	91
MFME454G1C	MFME 4.5 kW Incremental encoder	124
MFME454G1D	MFME 4.5 kW Incremental encoder	124
MFME454G1G	MFME 4.5 kW Incremental encoder	124
MFME454G1H	MFME 4.5 kW Incremental encoder	124
MFME454S1C	MFME 4.5 kW Absolute encoder	124
MFME454S1D	MFME 4.5 kW Absolute encoder	124
MFME454S1G	MFME 4.5 kW Absolute encoder	124
MFME454S1H	MFME 4.5 kW Absolute encoder	124

MGDHT		
Part No.	Title	Page
MGDHTB4A2	A5 series Driver: G-frame	29,46
MGDHTC3B4	A5 series Driver: G-frame	29,46

MGDKT		
Part No.	Title	Page
MGDKTB4A2	A5II series Driver: G-frame	29,46
MGDKTC3B4	A5 <b>I</b> series Driver: G-frame	29,46

Part No.	ertia) Title	Page
MGME092G1C	MGME 0.9 kW Incremental encoder	92
MGME092G1D	MGME 0.9 kW Incremental encoder	92
MGME092G1G	MGME 0.9 kW Incremental encoder	92
MGME092G1H	MGME 0.9 kW Incremental encoder	92
MGME092GCC	MGME 0.9 kW Incremental encoder	92
MGME092GCCM	MGME 0.9 kW Incremental encoder	170
MGME092GCD	MGME 0.9 kW Incremental encoder	92
MGME092GCDM	MGME 0.9 kW Incremental encoder	170
MGME092GCG	MGME 0.9 kW Incremental encoder	92
MGME092GCGM	MGME 0.9 kW Incremental encoder	170
MGME092GCH	MGME 0.9 kW Incremental encoder	92
MGME092GCHM	MGME 0.9 kW Incremental encoder	170
MGME092S1C	MGME 0.9 kW Absolute encoder	92
MGME092S1D	MGME 0.9 kW Absolute encoder	92
MGME092S1G	MGME 0.9 kW Absolute encoder	92
MGME092S1H	MGME 0.9 kW Absolute encoder	92
MGME092SCC	MGME 0.9 kW Absolute encoder	92
MGME092SCCM	MGME 0.9 kW Absolute encoder	170
MGME092SCD	MGME 0.9 kW Absolute encoder	92
MGME092SCDM	MGME 0.9 kW Absolute encoder	170
MGME092SCG	MGME 0.9 kW Absolute encoder	92
MGME092SCGM	MGME 0.9 kW Absolute encoder	170
MGME092SCH	MGME 0.9 kW Absolute encoder	92
MGME092SCHM	MGME 0.9 kW Absolute encoder	170
MGME094G1C	MGME 0.9 kW Incremental encoder	125
MGME094G1D	MGME 0.9 kW Incremental encoder	125
MGME094G1G	MGME 0.9 kW Incremental encoder	125
MGME094G1H	MGME 0.9 kW Incremental encoder	125
MGME094GCC	MGME 0.9 kW Incremental encoder	125
MGME094GCD	MGME 0.9 kW Incremental encoder	125
MGME094GCG	MGME 0.9 kW Incremental encoder	125
MGME094GCH	MGME 0.9 kW Incremental encoder	125
MGME094S1C	MGME 0.9 kW Absolute encoder	125
MGME094S1D	MGME 0.9 kW Absolute encoder	125
MGME094S1G	MGME 0.9 kW Absolute encoder	125
MGME094S1H	MGME 0.9 kW Absolute encoder	125
MGME094SCC	MGME 0.9 kW Absolute encoder	125
MGME094SCD	MGME 0.9 kW Absolute encoder	125
MGME094SCG	MGME 0.9 kW Absolute encoder	125
MGME094SCH	MGME 0.9 kW Absolute encoder	125

MGME (Middle in	ertia)	
Part No.	Title	Page
MGME202G1C	MGME 2.0 kW Incremental encoder	93
MGME202G1D	MGME 2.0 kW Incremental encoder	93
MGME202G1G	MGME 2.0 kW Incremental encoder	93
MGME202G1H	MGME 2.0 kW Incremental encoder	93
MGME202GCC	MGME 2.0 kW Incremental encoder	93
MGME202GCCM	MGME 2.0 kW Incremental encoder	171
MGME202GCD MGME202GCDM	MGME 2.0 kW Incremental encoder MGME 2.0 kW Incremental encoder	93
MGME202GCDM	MGME 2.0 kW Incremental encoder	93
MGME202GCGM	MGME 2.0 kW Incremental encoder	171
MGME202GCH	MGME 2.0 kW Incremental encoder	93
MGME202GCHM	MGME 2.0 kW Incremental encoder	171
MGME202S1C	MGME 2.0 kW Absolute encoder	93
MGME202S1D	MGME 2.0 kW Absolute encoder	93
MGME202S1G	MGME 2.0 kW Absolute encoder	93
MGME202S1H	MGME 2.0 kW Absolute encoder	93
MGME202SCC	MGME 2.0 kW Absolute encoder	93
MGME202SCCM	MGME 2.0 kW Absolute encoder MGME 2.0 kW Absolute encoder	171
MGME202SCD MGME202SCDM	MGME 2.0 kW Absolute encoder	93
MGME202SCG	MGME 2.0 kW Absolute encoder	93
MGME202SCGM	MGME 2.0 kW Absolute encoder	171
MGME202SCH	MGME 2.0 kW Absolute encoder	93
MGME202SCHM	MGME 2.0 kW Absolute encoder	171
MGME204G1C	MGME 2.0 kW Incremental encoder	126
MGME204G1D	MGME 2.0 kW Incremental encoder	126
MGME204G1G	MGME 2.0 kW Incremental encoder	126
MGME204G1H	MGME 2.0 kW Incremental encoder	126
MGME204GCC	MGME 2.0 kW Incremental encoder	126
MGME204GCD	MGME 2.0 kW Incremental encoder	126
MGME204GCG	MGME 2.0 kW Incremental encoder  MGME 2.0 kW Incremental encoder	126
MGME204GCH MGME204S1C	MGME 2.0 kW Absolute encoder	126 126
MGME204S1D	MGME 2.0 kW Absolute encoder	126
MGME204S1G	MGME 2.0 kW Absolute encoder	126
MGME204S1H	MGME 2.0 kW Absolute encoder	126
MGME204SCC	MGME 2.0 kW Absolute encoder	126
MGME204SCD	MGME 2.0 kW Absolute encoder	126
MGME204SCG	MGME 2.0 kW Absolute encoder	126
MGME204SCH	MGME 2.0 kW Absolute encoder	126
MGME302G1C	MGME 3.0 kW Incremental encoder	94
MGME302G1D	MGME 3.0 kW Incremental encoder	94
MGME302G1G	MGME 3.0 kW Incremental encoder	94
MGME302G1H MGME302GCC	MGME 3.0 kW Incremental encoder MGME 3.0 kW Incremental encoder	94
MGME302GCCM	MGME 3.0 kW Incremental encoder	172
MGME302GCD	MGME 3.0 kW Incremental encoder	94
MGME302GCDM	MGME 3.0 kW Incremental encoder	172
MGME302GCG	MGME 3.0 kW Incremental encoder	94
MGME302GCGM	MGME 3.0 kW Incremental encoder	172
MGME302GCH	MGME 3.0 kW Incremental encoder	94
MGME302GCHM	MGME 3.0 kW Incremental encoder	172
MGME302S1C	MGME 3.0 kW Absolute encoder	94
MGME302S1D	MGME 3.0 kW Absolute encoder	94
MGME302S1G	MGME 3.0 kW Absolute encoder	94
MGME302S1H	MGME 3.0 kW Absolute encoder	94
MGME302SCC MGME302SCCM	MGME 3.0 kW Absolute encoder MGME 3.0 kW Absolute encoder	94 172
MGME302SCCM	MGME 3.0 kW Absolute encoder	94
MGME302SCDM	MGME 3.0 kW Absolute encoder	172
MGME302SCG	MGME 3.0 kW Absolute encoder	94
MGME302SCGM	MGME 3.0 kW Absolute encoder	172
MGME302SCH	MGME 3.0 kW Absolute encoder	94
MGME302SCHM	MGME 3.0 kW Absolute encoder	172
MGME304G1C	MGME 3.0 kW Incremental encoder	127
MGME304G1D	MGME 3.0 kW Incremental encoder	127
MGME304G1G	MGME 3.0 kW Incremental encoder	127
MGME304G1H	MGME 3.0 kW Incremental encoder	127
MGME304GCC	MGME 3.0 kW Incremental encoder	127
MGME304GCD	MGME 3.0 kW Incremental encoder	127
MGME304GCH	MGME 3.0 kW Incremental encoder	127
MGME304GCH	MGME 3.0 kW Incremental encoder	127

MGME (Middle i	nertia)	
Part No.	Title	Page
MGME304S1C	MGME 3.0 kW Absolute encoder	127
MGME304S1D	MGME 3.0 kW Absolute encoder	127
MGME304S1G	MGME 3.0 kW Absolute encoder	127
MGME304S1H	MGME 3.0 kW Absolute encoder	127
MGME304SCC	MGME 3.0 kW Absolute encoder	127
MGME304SCD	MGME 3.0 kW Absolute encoder	127
MGME304SCG	MGME 3.0 kW Absolute encoder	127
MGME304SCH	MGME 3.0 kW Absolute encoder	127
MGME452G1C	MGME 4.5 kW Incremental encoder	95
MGME452G1D	MGME 4.5 kW Incremental encoder	95
MGME452G1G	MGME 4.5 kW Incremental encoder	95
MGME452G1H	MGME 4.5 kW Incremental encoder	95
MGME452S1C	MGME 4.5 kW Absolute encoder	95
MGME452S1D	MGME 4.5 kW Absolute encoder	95
MGME452S1G	MGME 4.5 kW Absolute encoder	95
MGME452S1H	MGME 4.5 kW Absolute encoder	95
MGME454G1C	MGME 4.5 kW Incremental encoder	128
MGME454G1D	MGME 4.5 kW Incremental encoder	128
MGME454G1G	MGME 4.5 kW Incremental encoder	128
MGME454G1H	MGME 4.5 kW Incremental encoder	128
MGME454S1C	MGME 4.5 kW Absolute encoder	128
MGME454S1D	MGME 4.5 kW Absolute encoder	128
MGME454S1G	MGME 4.5 kW Absolute encoder	128
MGME454S1H	MGME 4.5 kW Absolute encoder	128
MGME602G1C	MGME 6.0 kW Incremental encoder	96
MGME602G1D	MGME 6.0 kW Incremental encoder	96
MGME602G1G	MGME 6.0 kW Incremental encoder	96
MGME602G1H	MGME 6.0 kW Incremental encoder	96
MGME602S1C	MGME 6.0 kW Absolute encoder	96
MGME602S1D	MGME 6.0 kW Absolute encoder	96
MGME602S1G	MGME 6.0 kW Absolute encoder	96
MGME602S1H	MGME 6.0 kW Absolute encoder	96
MGME604G1C	MGME 6.0 kW Incremental encoder	129
MGME604G1D	MGME 6.0 kW Incremental encoder	129
MGME604G1G	MGME 6.0 kW Incremental encoder	129
MGME604G1H	MGME 6.0 kW Incremental encoder	129
MGME604S1C	MGME 6.0 kW Absolute encoder	129
MGME604S1D	MGME 6.0 kW Absolute encoder	129
MGME604S1G	MGME 6.0 kW Absolute encoder	129
MGME604S1H	MGME 6.0 kW Absolute encoder	129

MHDHT		
Part No.	Title	Page
MHDHTB4A2	A5 series Driver: H-frame	29,47
MHDHTC3B4	A5 series Driver: H-frame	29.47

MHDKT		
Part No.	Title	Page
MHDKTB4A2	A5II series Driver: H-frame	29,47
MHDKTC3B4	A5  ■ series Driver: H-frame	29,47

MHMD (High ine	rtia)	
Part No.	Title	Page
MHMD021G1A	MHMD 200 W Incremental encoder	59
MHMD021G1B	MHMD 200 W Incremental encoder	59
MHMD021G1C	MHMD 200 W Incremental encoder	59
MHMD021G1D	MHMD 200 W Incremental encoder	59
MHMD021G1N	MHMD 200 W Incremental encoder	59
MHMD021G1P	MHMD 200 W Incremental encoder	59
MHMD021G1Q	MHMD 200 W Incremental encoder	59
MHMD021G1R	MHMD 200 W Incremental encoder	59
MHMD021G1S	MHMD 200 W Incremental encoder	59
MHMD021G1T	MHMD 200 W Incremental encoder	59
MHMD021G1U	MHMD 200 W Incremental encoder	59
MHMD021G1V	MHMD 200 W Incremental encoder	59
MHMD021S1A	MHMD 200 W Absolute encoder	59
MHMD021S1B	MHMD 200 W Absolute encoder	59
MHMD021S1C	MHMD 200 W Absolute encoder	59
MHMD021S1D	MHMD 200 W Absolute encoder	59
MHMD021S1N	MHMD 200 W Absolute encoder	59
MHMD021S1P	MHMD 200 W Absolute encoder	59
MHMD021S1Q	MHMD 200 W Absolute encoder	59

MHMD (High ine		
Part No.	Title	Page
MHMD021S1R	MHMD 200 W Absolute encoder	59
MHMD021S1S	MHMD 200 W Absolute encoder	59
MHMD021S1T	MHMD 200 W Absolute encoder	59
MHMD021S1U	MHMD 200 W Absolute encoder	59
MHMD021S1V	MHMD 200 W Absolute encoder	59
MHMD022G1A	MHMD 200 W Incremental encoder	60
MHMD022G1B MHMD022G1C	MHMD 200 W Incremental encoder  MHMD 200 W Incremental encoder	60
MHMD022G1C	MHMD 200 W Incremental encoder	60
MHMD022G1D	MHMD 200 W Incremental encoder	60
MHMD022G1N	MHMD 200 W Incremental encoder	60
MHMD022G1P	MHMD 200 W Incremental encoder	60
MHMD022G1R	MHMD 200 W Incremental encoder	60
MHMD022G1S	MHMD 200 W Incremental encoder	60
MHMD022G1T	MHMD 200 W Incremental encoder	60
MHMD022G1U	MHMD 200 W Incremental encoder	60
MHMD022G1V	MHMD 200 W Incremental encoder	60
MHMD022S1A	MHMD 200 W Absolute encoder	60
MHMD022S1B	MHMD 200 W Absolute encoder	60
MHMD022S1C	MHMD 200 W Absolute encoder	60
MHMD022S1D	MHMD 200 W Absolute encoder	60
MHMD022S1N	MHMD 200 W Absolute encoder	60
MHMD022S1P	MHMD 200 W Absolute encoder	60
MHMD022S1Q	MHMD 200 W Absolute encoder	60
MHMD022S1R	MHMD 200 W Absolute encoder	60
MHMD022S1S	MHMD 200 W Absolute encoder	60
MHMD022S1T	MHMD 200 W Absolute encoder	60
MHMD022S1U	MHMD 200 W Absolute encoder	60
MHMD022S1V	MHMD 200 W Absolute encoder	60
MHMD041G1A	MHMD 400 W Incremental encoder	61
MHMD041G1B	MHMD 400 W Incremental encoder	61
MHMD041G1C	MHMD 400 W Incremental encoder	61
MHMD041G1D	MHMD 400 W Incremental encoder	61
MHMD041G1N	MHMD 400 W Incremental encoder	61
MHMD041G1P	MHMD 400 W Incremental encoder	61
MHMD041G1Q	MHMD 400 W Incremental encoder	61
MHMD041G1R	MHMD 400 W Incremental encoder	61
MHMD041G1S	MHMD 400 W Incremental encoder	61
MHMD041G1T	MHMD 400 W Incremental encoder	61
MHMD041G1U	MHMD 400 W Incremental encoder	61
MHMD041G1V	MHMD 400 W Incremental encoder  MHMD 400 W Absolute encoder	61
MHMD041S1A MHMD041S1B	MHMD 400 W Absolute encoder  MHMD 400 W Absolute encoder	61
		61
MHMD041S1C MHMD041S1D	MHMD 400 W Absolute encoder  MHMD 400 W Absolute encoder	61
MHMD041S1D	MHMD 400 W Absolute encoder	61
MHMD041S1R	MHMD 400 W Absolute encoder	61
MHMD041S1Q	MHMD 400 W Absolute encoder	61
MHMD041S1R	MHMD 400 W Absolute encoder	61
MHMD041S1S	MHMD 400 W Absolute encoder	61
MHMD041S1T	MHMD 400 W Absolute encoder	61
MHMD041S1U	MHMD 400 W Absolute encoder	61
MHMD041S1V	MHMD 400 W Absolute encoder	61
MHMD042G1A	MHMD 400 W Incremental encoder	62
MHMD042G1B	MHMD 400 W Incremental encoder	62
MHMD042G1C	MHMD 400 W Incremental encoder	62
MHMD042G1D	MHMD 400 W Incremental encoder	62
MHMD042G1N	MHMD 400 W Incremental encoder	62
MHMD042G1P	MHMD 400 W Incremental encoder	62
MHMD042G1Q	MHMD 400 W Incremental encoder	62
MHMD042G1R	MHMD 400 W Incremental encoder	62
MHMD042G1S	MHMD 400 W Incremental encoder	62
MHMD042G1T	MHMD 400 W Incremental encoder	62
MHMD042G1U	MHMD 400 W Incremental encoder	62
MHMD042G1V	MHMD 400 W Incremental encoder	62
MHMD042S1A	MHMD 400 W Absolute encoder	62
MHMD042S1B	MHMD 400 W Absolute encoder	62
MHMD042S1C	MHMD 400 W Absolute encoder	62
MHMD042S1D	MHMD 400 W Absolute encoder	62
MHMD042S1N	MHMD 400 W Absolute encoder	62
MHMD042S1P	MHMD 400 W Absolute encoder	62
MHMD042S1Q	MHMD 400 W Absolute encoder	62

# Index (Alphabetical Order)

MHMD (High ine	Title	Page
MHMD042S1B	MHMD 400 W Absolute encoder	62
MHMD042S1S	MHMD 400 W Absolute encoder	62
MHMD042S1T	MHMD 400 W Absolute encoder	62
MHMD042S1U	MHMD 400 W Absolute encoder	62
MHMD042S1V	MHMD 400 W Absolute encoder	62
MHMD082G1A	MHMD 750 W Incremental encoder	63
MHMD082G1B	MHMD 750 W Incremental encoder	63
MHMD082G1C	MHMD 750 W Incremental encoder	63
MHMD082G1D	MHMD 750 W Incremental encoder	63
MHMD082G1N	MHMD 750 W Incremental encoder	63
MHMD082G1P	MHMD 750 W Incremental encoder	63
MHMD082G1Q	MHMD 750 W Incremental encoder	63
MHMD082G1R	MHMD 750 W Incremental encoder	63
MHMD082G1S	MHMD 750 W Incremental encoder	63
MHMD082G1T	MHMD 750 W Incremental encoder	63
MHMD082G1U	MHMD 750 W Incremental encoder	63
MHMD082G1V	MHMD 750 W Incremental encoder	63
MHMD082S1A	MHMD 750 W Absolute encoder	63
MHMD082S1B	MHMD 750 W Absolute encoder	63
MHMD082S1C	MHMD 750 W Absolute encoder	63
MHMD082S1D	MHMD 750 W Absolute encoder	63
MHMD082S1N	MHMD 750 W Absolute encoder	63
MHMD082S1P	MHMD 750 W Absolute encoder	63
MHMD082S1Q	MHMD 750 W Absolute encoder	63
MHMD082S1R	MHMD 750 W Absolute encoder	63
MHMD082S1S	MHMD 750 W Absolute encoder	63
MHMD082S1T	MHMD 750 W Absolute encoder	63
MHMD082S1U	MHMD 750 W Absolute encoder	63
MHMD082S1V	MHMD 750 W Absolute encoder	63

MHMD with Gear	Reducer (High inertia)	
Part No.	Title	Page
MHMD021G31N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD021G32N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD021G33N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD021G34N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD021G41N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD021G42N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD021G43N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD021G44N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD021S31N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD021S32N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD021S33N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD021S34N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD021S41N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD021S42N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD021S43N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD021S44N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD022G31N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD022G32N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD022G33N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD022G34N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD022G41N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD022G42N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD022G43N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD022G44N	MHMD with reduction gear 200 W Incremental encoder	141,149
MHMD022S31N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD022S32N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD022S33N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD022S34N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD022S41N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD022S42N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD022S43N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD022S44N	MHMD with reduction gear 200 W Absolute encoder	141,149
MHMD041G31N	MHMD with reduction gear 400 W Incremental encoder	141,149
MHMD041G32N	MHMD with reduction gear 400 W Incremental encoder	141,149
MHMD041G33N	MHMD with reduction gear 400 W Incremental encoder	141,149
MHMD041G34N	MHMD with reduction gear 400 W Incremental encoder	141,149
MHMD041G41N	MHMD with reduction gear 400 W Incremental encoder	141,149
MHMD041G42N	MHMD with reduction gear 400 W Incremental encoder	141,149
MHMD041G43N	MHMD with reduction gear 400 W Incremental encoder	141,149
MHMD041G44N	MHMD with reduction gear 400 W Incremental encoder	141,149

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MHMD082G31N MHMD with reduction gear 400 W Absolute encoder 141,149 MHMD082G31N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G32N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G33N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G34N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G41N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G42N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G43N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G44N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S31N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S32N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S33N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149	MHMD042S42N	MHMD with reduction gear 400 W Absolute encoder	141,149
MHMD082G31N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G32N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G33N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G34N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G41N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G42N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G43N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G44N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S31N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S32N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S33N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149	MHMD042S43N	MHMD with reduction gear 400 W Absolute encoder	141,149
MHMD082G32N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G33N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G34N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G41N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G42N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G43N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G44N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S31N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S32N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S33N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149	MHMD042S44N	MHMD with reduction gear 400 W Absolute encoder	141,149
MHMD082G33N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G34N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G41N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G42N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G43N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G44N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S31N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S32N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S33N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149	MHMD082G31N	MHMD with reduction gear 750 W Incremental encoder	141,149
MHMD082G33N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G34N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G41N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G42N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G43N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G44N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S31N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S32N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S33N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149	MHMD082G32N	MHMD with reduction gear 750 W Incremental encoder	141,149
MHMD082G34N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G41N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G42N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G43N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G44N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S31N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S32N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S33N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149	MHMD082G33N	Š	141,149
MHMD082G41N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G42N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G43N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G44N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S31N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S32N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S33N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149	MHMD082G34N	-	141.149
MHMD082G42N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G43N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082G44N MHMD with reduction gear 750 W Incremental encoder 141,149 MHMD082S31N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S32N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S33N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149	MHMD082G41N	Ţ Ţ	
MHMD082G43N         MHMD with reduction gear 750 W Incremental encoder         141,149           MHMD082G44N         MHMD with reduction gear 750 W Incremental encoder         141,149           MHMD082S31N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S32N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S33N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S34N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S41N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S42N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S43N         MHMD with reduction gear 750 W Absolute encoder         141,149	MHMD082G42N	Š	_
MHMD082G44N         MHMD with reduction gear 750 W Incremental encoder         141,149           MHMD082S31N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S32N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S33N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S34N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S41N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S42N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S43N         MHMD with reduction gear 750 W Absolute encoder         141,149	MHMD082G43N	Š	
MHMD082S31N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S32N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S33N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S34N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S41N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S42N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S43N         MHMD with reduction gear 750 W Absolute encoder         141,149	MHMD082G44N		
MHMD082S32N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S33N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S34N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S41N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S42N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S43N         MHMD with reduction gear 750 W Absolute encoder         141,149		9	
MHMD082S33N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S34N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S41N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S42N         MHMD with reduction gear 750 W Absolute encoder         141,149           MHMD082S43N         MHMD with reduction gear 750 W Absolute encoder         141,149		9	, .
MHMD082S34N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149		Š .	
MHMD082S41N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S42N MHMD with reduction gear 750 W Absolute encoder 141,149 MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149			- 1
MHMD082S42N MHMD with reduction gear 750 W Absolute encoder MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149			_
MHMD082S43N MHMD with reduction gear 750 W Absolute encoder 141,149		ů .	, -
The state of the s		5	
		<u> </u>	

Part No.	Title	Page
MHME102G1C	MHME 1.0 kW Incremental encoder	97
MHME102G1D	MHME 1.0 kW Incremental encoder	97
MHME102G1G	MHME 1.0 kW Incremental encoder	97
MHME102G1H	MHME 1.0 kW Incremental encoder	97
MHME102GCC	MHME 1.0 kW Incremental encoder	97
MHME102GCCM	MHME 1.0 kW Incremental encoder	176
MHME102GCD	MHME 1.0 kW Incremental encoder	97
MHME102GCDM	MHME 1.0 kW Incremental encoder	176
MHME102GCG	MHME 1.0 kW Incremental encoder	97
MHME102GCGM	MHME 1.0 kW Incremental encoder	176
MHME102GCH	MHME 1.0 kW Incremental encoder	97
MHME102GCHM	MHME 1.0 kW Incremental encoder	176
MHME102S1C	MHME 1.0 kW Absolute encoder	97
MHME102S1D	MHME 1.0 kW Absolute encoder	97
MHME102S1G	MHME 1.0 kW Absolute encoder	97
MHME102S1H	MHME 1.0 kW Absolute encoder	97
MHME102SCC	MHME 1.0 kW Absolute encoder	97
MHME102SCCM	MHME 1.0 kW Absolute encoder	176
MHME102SCD	MHME 1.0 kW Absolute encoder	97
MHME102SCDM	MHME 1.0 kW Absolute encoder	176
MHME102SCG	MHME 1.0 kW Absolute encoder	97
MHME102SCGM	MHME 1.0 kW Absolute encoder	176
MHME102SCH	MHME 1.0 kW Absolute encoder	97
MHME102SCHM	MHME 1.0 kW Absolute encoder	176
MHME104G1C	MHME 1.0 kW Incremental encoder	130
MHME104G1D	MHME 1.0 kW Incremental encoder	130
MHME104G1G	MHME 1.0 kW Incremental encoder	130
MHME104G1H	MHME 1.0 kW Incremental encoder	130
MHME104GCC	MHME 1.0 kW Incremental encoder	130

MHME (High iner Part No.	Title	Page
MHME104GCD	MHME 1.0 kW Incremental encoder	130
MHME104GCG	MHME 1.0 kW Incremental encoder	130
MHME104GCH	MHME 1.0 kW Incremental encoder	130
MHME104S1C	MHME 1.0 kW Absolute encoder	130
MHME104S1D	MHME 1.0 kW Absolute encoder	130
MHME104S1G	MHME 1.0 kW Absolute encoder	130
MHME104S1H	MHME 1.0 kW Absolute encoder	130
MHME104SCC	MHME 1.0 kW Absolute encoder	130
MHME104SCD	MHME 1.0 kW Absolute encoder	130
MHME104SCG	MHME 1.0 kW Absolute encoder	130
MHME104SCH	MHME 1.0 kW Absolute encoder	130
MHME152G1C	MHME 1.5 kW Incremental encoder	98
MHME152G1D	MHME 1.5 kW Incremental encoder	98
MHME152G1G	MHME 1.5 kW Incremental encoder	98
MHME152G1H	MHME 1.5 kW Incremental encoder	98
MHME152GCC	MHME 1.5 kW Incremental encoder	98
MHME152GCCM	MHME 1.5 kW Incremental encoder	177
MHME152GCD	MHME 1.5 kW Incremental encoder	98
MHME152GCDM	MHME 1.5 kW Incremental encoder	177
MHME152GCG MHME152GCGM	MHME 1.5 kW Incremental encoder  MHME 1.5 kW Incremental encoder	98
MHME152GCGM MHME152GCH	MHME 1.5 kW Incremental encoder  MHME 1.5 kW Incremental encoder	98
MHME152GCHM	MHME 1.5 kW Incremental encoder	177
MHME152GCHM MHME152S1C	MHME 1.5 kW Incremental encoder  MHME 1.5 kW Absolute encoder	98
MHME152S1D	MHME 1.5 kW Absolute encoder	98
MHME152S1G	MHME 1.5 kW Absolute encoder	98
MHME152S1H	MHME 1.5 kW Absolute encoder	98
MHME152SCC	MHME 1.5 kW Absolute encoder	98
MHME152SCCM	MHME 1.5 kW Absolute encoder	177
MHME152SCD	MHME 1.5 kW Absolute encoder	98
MHME152SCDM	MHME 1.5 kW Absolute encoder	177
MHME152SCG	MHME 1.5 kW Absolute encoder	98
MHME152SCGM	MHME 1.5 kW Absolute encoder	177
MHME152SCH	MHME 1.5 kW Absolute encoder	98
MHME152SCHM	MHME 1.5 kW Absolute encoder	177
MHME154G1C	MHME 1.5 kW Incremental encoder	131
MHME154G1D	MHME 1.5 kW Incremental encoder	131
MHME154G1G	MHME 1.5 kW Incremental encoder	131
MHME154G1H	MHME 1.5 kW Incremental encoder	131
MHME154GCC	MHME 1.5 kW Incremental encoder	131
MHME154GCD	MHME 1.5 kW Incremental encoder	131
MHME154GCG	MHME 1.5 kW Incremental encoder	131
MHME154GCH	MHME 1.5 kW Incremental encoder	131
MHME154S1C	MHME 1.5 kW Absolute encoder	131
MHME154S1D	MHME 1.5 kW Absolute encoder	131
MHME154S1G	MHME 1.5 kW Absolute encoder	131
MHME154S1H	MHME 1.5 kW Absolute encoder	131
MHME154SCC	MHME 1.5 kW Absolute encoder	131
MHME154SCD	MHME 1.5 kW Absolute encoder	131
MHME154SCG	MHME 1.5 kW Absolute encoder	131
MHME154SCH	MHME 1.5 kW Absolute encoder	131
MHME202G1C	MHME 2.0 kW Incremental encoder	99
MHME202G1D MHME202G1G	MHME 2.0 kW Incremental encoder  MHME 2.0 kW Incremental encoder	99
MHME202G1G MHME202G1H	MHME 2.0 kW Incremental encoder  MHME 2.0 kW Incremental encoder	99
MHME202GTH	MHME 2.0 kW Incremental encoder  MHME 2.0 kW Incremental encoder	99
MHME202GCCM	MHME 2.0 kW Incremental encoder	178
MHME202GCCM	MHME 2.0 kW Incremental encoder	99
MHME202GCDM	MHME 2.0 kW Incremental encoder	178
MHME202GCG	MHME 2.0 kW Incremental encoder	99
MHME202GCGM	MHME 2.0 kW Incremental encoder	178
MHME202GCH	MHME 2.0 kW Incremental encoder	99
MHME202GCHM	MHME 2.0 kW Incremental encoder	178
MHME202S1C	MHME 2.0 kW Absolute encoder	99
MHME202S1D	MHME 2.0 kW Absolute encoder	99
MHME202S1G	MHME 2.0 kW Absolute encoder	99
MHME202S1H	MHME 2.0 kW Absolute encoder	99
MHME202SCC	MHME 2.0 kW Absolute encoder	99
MHME202SCCM	MHME 2.0 kW Absolute encoder	178
MHME202SCD	MHME 2.0 kW Absolute encoder	99
MHME202SCDM	MHME 2.0 kW Absolute encoder	178
MHME202SCG	MHME 2.0 kW Absolute encoder	99

MHME (High iner		Dogo
Part No. MHME202SCGM	Title  MHME 2.0 kW Absolute encoder	178
MHME202SCH	MHME 2.0 kW Absolute encoder	99
MHME202SCHM	MHME 2.0 kW Absolute encoder	178
MHME204G1C	MHME 2.0 kW Incremental encoder	132
MHME204G1D	MHME 2.0 kW Incremental encoder	132
MHME204G1G	MHME 2.0 kW Incremental encoder	132
MHME204G1H	MHME 2.0 kW Incremental encoder	132
MHME204GCC MHME204GCD	MHME 2.0 kW Incremental encoder	132
MHME204GCD	MHME 2.0 kW Incremental encoder  MHME 2.0 kW Incremental encoder	132
MHME204GCH	MHME 2.0 kW Incremental encoder	132
MHME204S1C	MHME 2.0 kW Absolute encoder	132
MHME204S1D	MHME 2.0 kW Absolute encoder	132
MHME204S1G	MHME 2.0 kW Absolute encoder	132
MHME204S1H	MHME 2.0 kW Absolute encoder	132
MHME204SCC	MHME 2.0 kW Absolute encoder	132
MHME204SCD	MHME 2.0 kW Absolute encoder	132
MHME204SCG MHME204SCH	MHME 2.0 kW Absolute encoder  MHME 2.0 kW Absolute encoder	132
MHME302G1C	MHME 3.0 kW Incremental encoder	100
MHME302G1D	MHME 3.0 kW Incremental encoder	100
MHME302G1G	MHME 3.0 kW Incremental encoder	100
MHME302G1H	MHME 3.0 kW Incremental encoder	100
MHME302GCC	MHME 3.0 kW Incremental encoder	100
MHME302GCCM	MHME 3.0 kW Incremental encoder	179
MHME302GCD	MHME 3.0 kW Incremental encoder	100
MHME302GCDM	MHME 3.0 kW Incremental encoder	179
MHME302GCG MHME302GCGM	MHME 3.0 kW Incremental encoder  MHME 3.0 kW Incremental encoder	100
MHME302GCH	MHME 3.0 kW Incremental encoder	100
MHME302GCHM	MHME 3.0 kW Incremental encoder	179
MHME302S1C	MHME 3.0 kW Absolute encoder	100
MHME302S1D	MHME 3.0 kW Absolute encoder	100
MHME302S1G	MHME 3.0 kW Absolute encoder	100
MHME302S1H	MHME 3.0 kW Absolute encoder	100
MHME302SCC	MHME 3.0 kW Absolute encoder  MHME 3.0 kW Absolute encoder	100
MHME302SCCM MHME302SCD	MHME 3.0 kW Absolute encoder  MHME 3.0 kW Absolute encoder	179
MHME302SCDM	MHME 3.0 kW Absolute encoder	179
MHME302SCG	MHME 3.0 kW Absolute encoder	100
MHME302SCGM	MHME 3.0 kW Absolute encoder	179
MHME302SCH	MHME 3.0 kW Absolute encoder	100
MHME302SCHM	MHME 3.0 kW Absolute encoder	179
MHME304G1C	MHME 3.0 kW Incremental encoder	133
MHME304G1D	MHME 3.0 kW Incremental encoder	133
MHME304G1G MHME304G1H	MHME 3.0 kW Incremental encoder  MHME 3.0 kW Incremental encoder	133
MHME304GCC	MHME 3.0 kW Incremental encoder	133
MHME304GCD	MHME 3.0 kW Incremental encoder	133
MHME304GCG	MHME 3.0 kW Incremental encoder	133
MHME304GCH	MHME 3.0 kW Incremental encoder	133
MHME304S1C	MHME 3.0 kW Absolute encoder	133
MHME304S1D	MHME 3.0 kW Absolute encoder	133
MHME304S1G	MHME 3.0 kW Absolute encoder	133
MHME304S1H MHME304SCC	MHME 3.0 kW Absolute encoder  MHME 3.0 kW Absolute encoder	133
MHME304SCD	MHME 3.0 kW Absolute encoder	133
MHME304SCG	MHME 3.0 kW Absolute encoder	133
MHME304SCH	MHME 3.0 kW Absolute encoder	133
MHME402G1C	MHME 4.0 kW Incremental encoder	101
MHME402G1D	MHME 4.0 kW Incremental encoder	101
MHME402G1G	MHME 4.0 kW Incremental encoder	101
MHME402G1H	MHME 4.0 kW Incremental encoder	101
MHME402GCC	MHME 4.0 kW Incremental encoder	101
MHME402GCCM MHME402GCD	MHME 4.0 kW Incremental encoder  MHME 4.0 kW Incremental encoder	180
MHME402GCDM	MHME 4.0 kW Incremental encoder	101
MHME402GCG	MHME 4.0 kW Incremental encoder	101
MHME402GCGM	MHME 4.0 kW Incremental encoder	180
MHME402GCH	MHME 4.0 kW Incremental encoder	101
MHME402GCHM	MHME 4.0 kW Incremental encoder	180
MHME402S1C	MHME 4.0 kW Absolute encoder	101

(Alphabetical Orde	er)

Part No.         Title         Page           MHME402S1D         MHME 4.0 kW Absolute encoder         101           MHME402S1G         MHME 4.0 kW Absolute encoder         101           MHME402SCC         MHME 4.0 kW Absolute encoder         101           MHME402SCD         MHME 4.0 kW Absolute encoder         180           MHME402SCD         MHME 4.0 kW Absolute encoder         180           MHME402SCD         MHME 4.0 kW Absolute encoder         180           MHME402SCGM         MHME 4.0 kW Absolute encoder         191           MHME402SCHM         MHME 4.0 kW Absolute encoder         190           MHME402SCHM         MHME 4.0 kW Absolute encoder         190           MHME402SCHM         MHME 4.0 kW Absolute encoder         190           MHME402SCHM         MHME 4.0 kW brighter encoder         194           MHME402SCHM         MHME 4.0 kW Incremental encoder         134           MHME404G1C         MHME 4.0 kW Incremental encoder         134           MHME404G1D         MHME 4.0 kW Incremental encoder         134           MHME404GCD         MHME 4.0 kW Incremental encoder         134           MHME404GCD         MHME 4.0 kW Absolute encoder         134           MHME404GCG         MHME 4.0 kW Absolute encoder         134 <th>MHME (High iner</th> <th>tia)</th> <th></th>	MHME (High iner	tia)	
MHME402S1G			Page
MHME402SCC   MHME 4.0 kW Absolute encoder   101   MHME402SCG   MHME 4.0 kW Absolute encoder   101   MHME402SCH   MHME 4.0 kW Absolute encoder   101   MHME402SCH   MHME 4.0 kW Absolute encoder   101   MHME403SCH   MHME 4.0 kW Incremental encoder   134   MHME404GI   MHME 4.0 kW Incremental encoder   134   MHME404GI   MHME 4.0 kW Incremental encoder   134   MHME404GI   MHME 4.0 kW Incremental encoder   134   MHME404GIC   MHME 4.0 kW Absolute encoder   134   MHME404GIC   MHME 4.0 kW Absolute encoder   134   MHME404GIC   MHME 4.0 kW Absolute encoder   134   MHME404SIC   MHME 5.0 kW Incremental encoder   102   MHME502GIC   MHME 5.0 kW Absolute encoder   102   MHME502GIC   MHME 5.0 kW Absolute encoder			
MHME402SCC		1 111 111 1 1111	_
MHME402SCCM         MHME 4.0 kW Absolute encoder         180           MHME402SCDM         MHME 4.0 kW Absolute encoder         180           MHME402SCGM         MHME 4.0 kW Absolute encoder         101           MHME402SCGM         MHME 4.0 kW Absolute encoder         101           MHME402SCGM         MHME 4.0 kW Absolute encoder         101           MHME402SCHM         MHME 4.0 kW hosolute encoder         180           MHME402SCHM         MHME 4.0 kW Incremental encoder         134           MHME404GC         MHME 4.0 kW Incremental encoder         134           MHME404GT         MHME 4.0 kW Incremental encoder         134           MHME404GC         MHME 4.0 kW Absolute encoder         134           MHME404STD         MHME 4.0 kW Absolute encoder         134           MHME404STI         MHME 4.0 kW Absolute encoder         134           MHME404SCC         MHME 4.0 kW Absolute encoder         134           MHME404SCC         MHME 4.0 kW Absolute encoder			
MHME402SCD			_
MHME402SCG			-
MHME402SCGM         MHME 4.0 kW Absolute encoder         180           MHME402SCHM         MHME 4.0 kW Absolute encoder         101           MHME404GC         MHME 4.0 kW Absolute encoder         134           MHME404G1D         MHME 4.0 kW Incremental encoder         134           MHME404G1G         MHME 4.0 kW Incremental encoder         134           MHME404G1         MHME 4.0 kW Incremental encoder         134           MHME404GC         MHME 4.0 kW Incremental encoder         134           MHME404CH         MHME 4.0 kW Absolute encoder         134           MHME404CH         MHME 4.0 kW Absolute encoder         134           MHME404SID         MHME 5.0 kW Absolute encoder         134           MHME505C         MHME 5.0 kW Absolute encoder <t< td=""><td>MHME402SCDM</td><td>MHME 4.0 kW Absolute encoder</td><td>180</td></t<>	MHME402SCDM	MHME 4.0 kW Absolute encoder	180
MHME402SCH         MHME 4.0 kW Absolute encoder         101           MHME402SCHM         MHME 4.0 kW Incremental encoder         134           MHME404G1D         MHME 4.0 kW Incremental encoder         134           MHME404G1D         MHME 4.0 kW Incremental encoder         134           MHME404G1M         MHME 4.0 kW Incremental encoder         134           MHME404G1M         MHME 4.0 kW Incremental encoder         134           MHME404GCD         MHME 4.0 kW Incremental encoder         134           MHME404GCG         MHME 4.0 kW Incremental encoder         134           MHME404GCG         MHME 4.0 kW Incremental encoder         134           MHME404GC         MHME 4.0 kW Absolute encoder         134           MHME404GC         MHME 4.0 kW Absolute encoder         134           MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404S1H         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCG         MHME 4.0 kW Absolute encoder         134           MHME502GC         MHME 5.0 kW Absolute encoder         134           MHME502GC         MHME 5.0 kW Absolute encoder	MHME402SCG	MHME 4.0 kW Absolute encoder	101
MHME402SCHM         MHME 4.0 kW Absolute encoder         180           MHME404G1D         MHME 4.0 kW Incremental encoder         134           MHME404G1D         MHME 4.0 kW Incremental encoder         134           MHME404G1G         MHME 4.0 kW Incremental encoder         134           MHME404GC         MHME 4.0 kW Absolute encoder         134           MHME404GC         MHME 4.0 kW Absolute encoder         134           MHME404SC         MHME 4.0 kW Absolute encoder         134           MHME404SC         MHME 4.0 kW Absolute encoder         134           MHME404STI         MHME 4.0 kW Absolute encoder         134           MHME404SC         MHME 4.0 kW Absolute encoder         134           MHME405CD         MHME 4.0 kW Absolute encoder         134           MHME502CI         MHME 5.0 kW Absolute encoder         132           MHME502CI         MHME 5.0 kW Absolute encoder <td< td=""><td></td><td></td><td></td></td<>			
MHME404G1C         MHME 4.0 kW Incremental encoder         134           MHME404G1B         MHME 4.0 kW Incremental encoder         134           MHME404G1G         MHME 4.0 kW Incremental encoder         134           MHME404G1H         MHME 4.0 kW Incremental encoder         134           MHME404GC         MHME 4.0 kW Incremental encoder         134           MHME404GC         MHME 4.0 kW Incremental encoder         134           MHME404GCH         MHME 4.0 kW Incremental encoder         134           MHME404GCH         MHME 4.0 kW Incremental encoder         134           MHME404S1C         MHME 4.0 kW Absolute encoder         134           MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1         MHME 5.0 kW Incremental encoder         102           MHME502C1         MHME 5.0 kW Incremental encoder         102           MHME502C2         MHME 5.0 kW Incremental encod			
MHME404G1D         MHME 4.0 kW Incremental encoder         134           MHME404G1G         MHME 4.0 kW Incremental encoder         134           MHME404G1H         MHME 4.0 kW Incremental encoder         134           MHME404GCD         MHME 4.0 kW Incremental encoder         134           MHME404GCD         MHME 4.0 kW Incremental encoder         134           MHME404GCB         MHME 4.0 kW Incremental encoder         134           MHME404S1C         MHME 4.0 kW Absolute encoder         134           MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404SC         MHME 4.0 kW Absolute encoder         134           MHME404SC         MHME 4.0 kW Absolute encoder         134           MHME405CD         MHME 4.0 kW Absolute encoder         134           MHME405CD         MHME 5.0 kW Nortemental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1M         MHME 5.0 kW Incremental encoder <td></td> <td></td> <td></td>			
MHME404G1G         MHME 4.0 kW Incremental encoder         134           MHME404G1H         MHME 4.0 kW Incremental encoder         134           MHME404GC         MHME 4.0 kW Incremental encoder         134           MHME404GCD         MHME 4.0 kW Incremental encoder         134           MHME404GCB         MHME 4.0 kW Incremental encoder         134           MHME404GCH         MHME 4.0 kW Absolute encoder         134           MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1G         MHME 5.0 kW Incremental encoder         102           MHME502G1H         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder			
MHME404GCC         MHME 4.0 kW Incremental encoder         134           MHME404GCD         MHME 4.0 kW Incremental encoder         134           MHME404GCD         MHME 4.0 kW Incremental encoder         134           MHME404GCH         MHME 4.0 kW Incremental encoder         134           MHME404GCH         MHME 4.0 kW Absolute encoder         134           MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 5.0 kW Absolute encoder         134           MHME502G1         MHME 5.0 kW Incremental encoder         102           MHME502G1         MHME 5.0 kW Incremental encoder         102           MHME502G1         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder </td <td></td> <td></td> <td></td>			
MHME404GCD         MHME 4.0 kW Incremental encoder         134           MHME404GCD         MHME 4.0 kW Incremental encoder         134           MHME404GCH         MHME 4.0 kW Incremental encoder         134           MHME404GCH         MHME 4.0 kW Incremental encoder         134           MHME404S1C         MHME 4.0 kW Absolute encoder         134           MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404S1H         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1         MHME 5.0 kW Incremental encoder         102           MHME502G1         MHME 5.0 kW Incremental encoder         102           MHME502G1         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCW         MHME 5.0 kW Incremental encode			_
MHME404GCG         MHME 4.0 kW Incremental encoder         134           MHME404GCH         MHME 4.0 kW Absolute encoder         134           MHME404S1C         MHME 4.0 kW Absolute encoder         134           MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404S1B         MHME 4.0 kW Absolute encoder         134           MHME404SCC         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCB         MHME 4.0 kW Absolute encoder         134           MHME404SCG         MHME 5.0 kW Incremental encoder         102           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder <td></td> <td>MHME 4.0 kW Incremental encoder</td> <td>134</td>		MHME 4.0 kW Incremental encoder	134
MHME404GCH         MHME 4.0 kW Absolute encoder         134           MHME404S1C         MHME 4.0 kW Absolute encoder         134           MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404S1H         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCB         MHME 4.0 kW Absolute encoder         134           MHME404SCG         MHME 4.0 kW Absolute encoder         134           MHME502GT         MHME 5.0 kW Incremental encoder         102           MHME502GC         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         181           MHME502GCDM         MHME 5.0 kW Incremental encoder         181           MHME502GCM         MHME 5.0 kW Incremental encoder         181           MHME502GCM         MHME 5.0 kW Incremental encoder         181           MHME502GCW         MHME 5.0 kW Incremental encoder <td>MHME404GCD</td> <td>MHME 4.0 kW Incremental encoder</td> <td>134</td>	MHME404GCD	MHME 4.0 kW Incremental encoder	134
MHME404S1C         MHME 4.0 kW Absolute encoder         134           MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404S1H         MHME 4.0 kW Absolute encoder         134           MHME404SCC         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCB         MHME 4.0 kW Absolute encoder         134           MHME404SCB         MHME 4.0 kW Absolute encoder         134           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1B         MHME 5.0 kW Incremental encoder         102           MHME502G1H         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Absolute encoder </td <td>MHME404GCG</td> <td>MHME 4.0 kW Incremental encoder</td> <td>134</td>	MHME404GCG	MHME 4.0 kW Incremental encoder	134
MHME404S1D         MHME 4.0 kW Absolute encoder         134           MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404SCC         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCB         MHME 4.0 kW Absolute encoder         134           MHME404SCH         MHME 5.0 kW Incremental encoder         102           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1H         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Absolute enc	MHME404GCH		134
MHME404S1G         MHME 4.0 kW Absolute encoder         134           MHME404S1H         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCB         MHME 4.0 kW Absolute encoder         134           MHME404SCH         MHME 5.0 kW Incremental encoder         102           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1B         MHME 5.0 kW Incremental encoder         102           MHME502G1B         MHME 5.0 kW Incremental encoder         102           MHME502G1B         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502SC1         MHME 5.0 kW Absolute			_
MHME404S1H         MHME 4.0 kW Absolute encoder         134           MHME404SCC         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCG         MHME 4.0 kW Absolute encoder         134           MHME404SCH         MHME 5.0 kW Incremental encoder         102           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1G         MHME 5.0 kW Incremental encoder         102           MHME502G1G         MHME 5.0 kW Incremental encoder         102           MHME502G1H         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCGM         MHME 5.0 kW Incremental encoder         102           MHME502GCGM         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502SCG         MHME 5.0 kW Abso			
MHME404SCC         MHME 4.0 kW Absolute encoder         134           MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCH         MHME 4.0 kW Absolute encoder         134           MHME404SCH         MHME 4.0 kW Absolute encoder         134           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1B         MHME 5.0 kW Incremental encoder         102           MHME502G1H         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCCM         MHME 5.0 kW Incremental encoder         102           MHME502GCDM         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Absolute encoder         102           MHME502SCI         MHME 5.0 kW Absolute encoder         102           MHME502SCI         MHME 5.0 kW Absolute e			_
MHME404SCD         MHME 4.0 kW Absolute encoder         134           MHME404SCG         MHME 4.0 kW Absolute encoder         134           MHME404SCH         MHME 5.0 kW Incremental encoder         102           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1B         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCM         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GC         MHME 5.0 kW Absolute encoder         102           MHME502BCH         MHME 5.0 kW Absolute encoder         102           MHME502SCD         MHME 5.0 kW Absolut			
MHME404SCG         MHME 4.0 kW Absolute encoder         134           MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1B         MHME 5.0 kW Incremental encoder         102           MHME502G1G         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCGM         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Absolute encoder         102           MHME502GCH         MHME 5.0 kW Absolute encoder         102           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCM         MHME 5.0 kW Absolute encoder         102           MHME502SCM         MHME 5.0 kW Absolute			_
MHME502G1C         MHME 5.0 kW Incremental encoder         102           MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1G         MHME 5.0 kW Incremental encoder         102           MHME502G1H         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         181           MHME502GCD         MHME 5.0 kW Incremental encoder         181           MHME502GCG         MHME 5.0 kW Incremental encoder         181           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Absolute encoder         102           MHME502SCID         MHME 5.0 kW Absolute encoder         102           MHME502SCID         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute e			
MHME502G1D         MHME 5.0 kW Incremental encoder         102           MHME502G1G         MHME 5.0 kW Incremental encoder         102           MHME502G1H         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         181           MHME502GCD         MHME 5.0 kW Incremental encoder         181           MHME502GCGM         MHME 5.0 kW Incremental encoder         102           MHME502GCGM         MHME 5.0 kW Incremental encoder         102           MHME502GCHM         MHME 5.0 kW Incremental encoder         102           MHME502GCHM         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Absolute encoder         102           MHME502GCH         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCI         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCG         MHME 5.0 kW Absolute en	MHME404SCH	MHME 4.0 kW Absolute encoder	134
MHME502G1G         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCCM         MHME 5.0 kW Incremental encoder         181           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCI         MHME 5.0 kW Absolute encoder         102           MHME502SCI         MHME 5.0 kW Absolute encoder         102           MHME502SCI         MHME 5.0 kW Absolute encoder         102           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         181           MHME502SCD         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encod	MHME502G1C	MHME 5.0 kW Incremental encoder	102
MHME502G1H         MHME 5.0 kW Incremental encoder         102           MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCCM         MHME 5.0 kW Incremental encoder         181           MHME502GCD         MHME 5.0 kW Incremental encoder         182           MHME502GCD         MHME 5.0 kW Incremental encoder         181           MHME502GCG         MHME 5.0 kW Incremental encoder         181           MHME502GCH         MHME 5.0 kW Incremental encoder         181           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCHM         MHME 5.0 kW Incremental encoder         102           MHME502GCHM         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Absolute encoder         102           MHME502GCD         MHME 5.0 kW Absolute encoder         102           MHME502SCI         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute en	MHME502G1D	MHME 5.0 kW Incremental encoder	102
MHME502GCC         MHME 5.0 kW Incremental encoder         102           MHME502GCCM         MHME 5.0 kW Incremental encoder         181           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCDM         MHME 5.0 kW Incremental encoder         181           MHME502GCG         MHME 5.0 kW Incremental encoder         181           MHME502GCH         MHME 5.0 kW Incremental encoder         181           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Absolute encoder         102           MHME502S1C         MHME 5.0 kW Absolute encoder         102           MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCDM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder<			
MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCDM         MHME 5.0 kW Incremental encoder         181           MHME502GCG         MHME 5.0 kW Incremental encoder         181           MHME502GCGM         MHME 5.0 kW Incremental encoder         181           MHME502GCHM         MHME 5.0 kW Incremental encoder         102           MHME502GCHM         MHME 5.0 kW Absolute encoder         102           MHME502S1C         MHME 5.0 kW Absolute encoder         102           MHME502S1D         MHME 5.0 kW Absolute encoder         102           MHME502S1B         MHME 5.0 kW Absolute encoder         102           MHME502S1H         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         181           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME504GC         MHME 5.0 kW Absolute encoder <td></td> <td></td> <td>_</td>			_
MHME502GCD         MHME 5.0 kW Incremental encoder         102           MHME502GCDM         MHME 5.0 kW Incremental encoder         181           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         181           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502S1C         MHME 5.0 kW Absolute encoder         102           MHME502S1D         MHME 5.0 kW Absolute encoder         102           MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502S1H         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         102           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         131           MHME502SCH         MHME 5.0 kW Absolute encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder <td></td> <td></td> <td></td>			
MHME502GCDM         MHME 5.0 kW Incremental encoder         181           MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCGM         MHME 5.0 kW Incremental encoder         181           MHME502GCHM         MHME 5.0 kW Incremental encoder         102           MHME502GCHM         MHME 5.0 kW Incremental encoder         102           MHME502S1C         MHME 5.0 kW Absolute encoder         102           MHME502S1B         MHME 5.0 kW Absolute encoder         102           MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         102           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         102           MHME502SCH         MHME 5.0 kW Absolute encoder         131           MHME502SCH         MHME 5.0 kW Absolute encoder         135           MHME504G1C         MHME 5.0 kW Incremental encoder <td></td> <td></td> <td>_</td>			_
MHME502GCG         MHME 5.0 kW Incremental encoder         102           MHME502GCGM         MHME 5.0 kW Incremental encoder         181           MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCHM         MHME 5.0 kW Absolute encoder         181           MHME502S1C         MHME 5.0 kW Absolute encoder         102           MHME502S1D         MHME 5.0 kW Absolute encoder         102           MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502S1H         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCG         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCG         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Incremental encoder         135           MHME504G1C         MHME 5.0 kW Incremental encoder			
MHME502GCH         MHME 5.0 kW Incremental encoder         102           MHME502GCHM         MHME 5.0 kW Incremental encoder         181           MHME502S1C         MHME 5.0 kW Absolute encoder         102           MHME502S1D         MHME 5.0 kW Absolute encoder         102           MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502S1H         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCDM         MHME 5.0 kW Absolute encoder         102           MHME502SCDM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         181           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Incremental encoder		MHME 5.0 kW Incremental encoder	102
MHME502GCHM         MHME 5.0 kW Incremental encoder         181           MHME502S1C         MHME 5.0 kW Absolute encoder         102           MHME502S1D         MHME 5.0 kW Absolute encoder         102           MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502S1H         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCD         MHME 5.0 kW Absolute encoder         181           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCDM         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         102           MHME502SCH         MHME 5.0 kW Absolute encoder         102           MHME502SCH         MHME 5.0 kW Absolute encoder         135           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Incremental encoder	MHME502GCGM	MHME 5.0 kW Incremental encoder	181
MHME502S1C         MHME 5.0 kW Absolute encoder         102           MHME502S1D         MHME 5.0 kW Absolute encoder         102           MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502S1H         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCD         MHME 5.0 kW Absolute encoder         181           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCDM         MHME 5.0 kW Absolute encoder         181           MHME502SCGM         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCHM         MHME 5.0 kW Absolute encoder         181           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1B         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCB         MHME 5.0 kW Absolute encoder	MHME502GCH	MHME 5.0 kW Incremental encoder	102
MHME502S1D         MHME 5.0 kW Absolute encoder         102           MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502S1H         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCDM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         102           MHME502SCH         MHME 5.0 kW Absolute encoder         102           MHME502SCH         MHME 5.0 kW Absolute encoder         135           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1B         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Incremental encoder			181
MHME502S1G         MHME 5.0 kW Absolute encoder         102           MHME502S1H         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCDM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         102           MHME502SCH         MHME 5.0 kW Absolute encoder         135           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1B         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder			
MHME502S1H         MHME 5.0 kW Absolute encoder         102           MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCDM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         102           MHME502SCHM         MHME 5.0 kW Absolute encoder         181           MHME502SCHM         MHME 5.0 kW Absolute encoder         135           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCM         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Absolute encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder			
MHME502SCC         MHME 5.0 kW Absolute encoder         102           MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCDM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         181           MHME502SCHM         MHME 5.0 kW Absolute encoder         181           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1B         MHME 5.0 kW Incremental encoder         135           MHME504G1W         MHME 5.0 kW Incremental encoder         135           MHME504GC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1         MHME 5.0 kW Absolute encoder			_
MHME502SCCM         MHME 5.0 kW Absolute encoder         181           MHME502SCD         MHME 5.0 kW Absolute encoder         102           MHME502SCDM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         102           MHME502SCHM         MHME 5.0 kW Absolute encoder         181           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder<			
MHME502SCDM         MHME 5.0 kW Absolute encoder         181           MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         182           MHME502SCHM         MHME 5.0 kW Absolute encoder         181           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder </td <td></td> <td></td> <td></td>			
MHME502SCG         MHME 5.0 kW Absolute encoder         102           MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         102           MHME502SCHM         MHME 5.0 kW Absolute encoder         181           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Absolute encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1B         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder		MHME 5.0 kW Absolute encoder	102
MHME502SCGM         MHME 5.0 kW Absolute encoder         181           MHME502SCH         MHME 5.0 kW Absolute encoder         102           MHME502SCHM         MHME 5.0 kW Absolute encoder         181           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1B         MHME 5.0 kW Absolute encoder         135           MHME504SC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder <td>MHME502SCDM</td> <td>MHME 5.0 kW Absolute encoder</td> <td>181</td>	MHME502SCDM	MHME 5.0 kW Absolute encoder	181
MHME502SCH         MHME 5.0 kW Absolute encoder         102           MHME502SCHM         MHME 5.0 kW Absolute encoder         181           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Absolute encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1B         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder	MHME502SCG	MHME 5.0 kW Absolute encoder	102
MHME502SCHM         MHME 5.0 kW Absolute encoder         181           MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Absolute encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504SC         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder			
MHME504G1C         MHME 5.0 kW Incremental encoder         135           MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Absolute encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder			
MHME504G1D         MHME 5.0 kW Incremental encoder         135           MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder </td <td></td> <td></td> <td></td>			
MHME504G1G         MHME 5.0 kW Incremental encoder         135           MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder </td <td></td> <td></td> <td></td>			
MHME504G1H         MHME 5.0 kW Incremental encoder         135           MHME504GCC         MHME 5.0 kW Incremental encoder         135           MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			_
MHME504GCD         MHME 5.0 kW Incremental encoder         135           MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			
MHME504GCG         MHME 5.0 kW Incremental encoder         135           MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103	MHME504GCC	MHME 5.0 kW Incremental encoder	135
MHME504GCH         MHME 5.0 kW Incremental encoder         135           MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103	MHME504GCD	MHME 5.0 kW Incremental encoder	135
MHME504S1C         MHME 5.0 kW Absolute encoder         135           MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			
MHME504S1D         MHME 5.0 kW Absolute encoder         135           MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			
MHME504S1G         MHME 5.0 kW Absolute encoder         135           MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1G         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			
MHME504S1H         MHME 5.0 kW Absolute encoder         135           MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1G         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			
MHME504SCC         MHME 5.0 kW Absolute encoder         135           MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1G         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			_
MHME504SCD         MHME 5.0 kW Absolute encoder         135           MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1G         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			
MHME504SCG         MHME 5.0 kW Absolute encoder         135           MHME504SCH         MHME 5.0 kW Absolute encoder         135           MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1G         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			
MHME752G1C         MHME 7.5 kW Incremental encoder         103           MHME752G1D         MHME 7.5 kW Incremental encoder         103           MHME752G1G         MHME 7.5 kW Incremental encoder         103           MHME752G1H         MHME 7.5 kW Incremental encoder         103			
MHME752G1DMHME 7.5 kW Incremental encoder103MHME752G1GMHME 7.5 kW Incremental encoder103MHME752G1HMHME 7.5 kW Incremental encoder103	MHME504SCH	MHME 5.0 kW Absolute encoder	_
MHME752G1G MHME 7.5 kW Incremental encoder 103 MHME752G1H MHME 7.5 kW Incremental encoder 103		MHME 7.5 kW Incremental encoder	103
MHME752G1H MHME 7.5 kW Incremental encoder 103			
			_
IVII IIVIL 732310   IVI⊓IVI⊏ 7.3 KVV ADSOIULE eficoder   103			<u> </u>
	IVII IIVIE/323 IU	INIT IN THE 1.3 KAN ADSOLUTE ELICORET	103

MHME (High iner	tia)	
Part No.	Title	Page
MHME752S1D	MHME 7.5 kW Absolute encoder	103
MHME752S1G	MHME 7.5 kW Absolute encoder	103
MHME752S1H	MHME 7.5 kW Absolute encoder	103
MHME754G1C	MHME 7.5 kW Incremental encoder	136
MHME754G1D	MHME 7.5 kW Incremental encoder	136
MHME754G1G	MHME 7.5 kW Incremental encoder	136
MHME754G1H	MHME 7.5 kW Incremental encoder	136
MHME754S1C	MHME 7.5 kW Absolute encoder	136
MHME754S1D	MHME 7.5 kW Absolute encoder	136
MHME754S1G	MHME 7.5 kW Absolute encoder	136
MHME754S1H	MHME 7.5 kW Absolute encoder	136

MHMJ (High ine	ertia)	
Part No.	Title	Page
MHMJ022G1A	MHMJ 200 W Incremental encoder	173
MHMJ022G1B	MHMJ 200 W Incremental encoder	173
MHMJ022G1C	MHMJ 200 W Incremental encoder	173
MHMJ022G1D	MHMJ 200 W Incremental encoder	173
MHMJ022G1S	MHMJ 200 W Incremental encoder	173
MHMJ022G1T	MHMJ 200 W Incremental encoder	173
MHMJ022G1U	MHMJ 200 W Incremental encoder	173
MHMJ022G1V	MHMJ 200 W Incremental encoder	173
MHMJ022S1A	MHMJ 200 W Absolute encoder	173
MHMJ022S1B	MHMJ 200 W Absolute encoder	173
MHMJ022S1C	MHMJ 200 W Absolute encoder	173
MHMJ022S1D	MHMJ 200 W Absolute encoder	173
MHMJ022S1S	MHMJ 200 W Absolute encoder	173
MHMJ022S1T	MHMJ 200 W Absolute encoder	173
MHMJ022S1U	MHMJ 200 W Absolute encoder	173
MHMJ022S1V	MHMJ 200 W Absolute encoder	173
MHMJ042G1A	MHMJ 400 W Incremental encoder	174
MHMJ042G1B	MHMJ 400 W Incremental encoder	174
MHMJ042G1C	MHMJ 400 W Incremental encoder	174
MHMJ042G1D	MHMJ 400 W Incremental encoder	174
MHMJ042G1S	MHMJ 400 W Incremental encoder	174
MHMJ042G1T	MHMJ 400 W Incremental encoder	174
MHMJ042G1U	MHMJ 400 W Incremental encoder	174
MHMJ042G1V	MHMJ 400 W Incremental encoder	174
MHMJ042S1A	MHMJ 400 W Absolute encoder	174
MHMJ042S1B	MHMJ 400 W Absolute encoder	174
MHMJ042S1C	MHMJ 400 W Absolute encoder	174
MHMJ042S1D	MHMJ 400 W Absolute encoder	174
MHMJ042S1S	MHMJ 400 W Absolute encoder	174
MHMJ042S1T	MHMJ 400 W Absolute encoder	174
MHMJ042S1U	MHMJ 400 W Absolute encoder	174
MHMJ042S1V	MHMJ 400 W Absolute encoder	174
MHMJ082G1A	MHMJ 750 W Incremental encoder	175
MHMJ082G1B	MHMJ 750 W Incremental encoder	175
MHMJ082G1C	MHMJ 750 W Incremental encoder	175
MHMJ082G1D	MHMJ 750 W Incremental encoder	175
MHMJ082G1S	MHMJ 750 W Incremental encoder	175
MHMJ082G1T	MHMJ 750 W Incremental encoder	175
MHMJ082G1U	MHMJ 750 W Incremental encoder	175
MHMJ082G1V	MHMJ 750 W Incremental encoder	175
MHMJ082S1A	MHMJ 750 W Absolute encoder	175
MHMJ082S1A	MHMJ 750 W Absolute encoder	175
MHMJ082S1C	MHMJ 750 W Absolute encoder	175
MHMJ082S1D	MHMJ 750 W Absolute encoder	175
MHMJ082S1S	MHMJ 750 W Absolute encoder	175
MHMJ082S1T	MHMJ 750 W Absolute encoder	175
MHMJ082S1U	MHMJ 750 W Absolute encoder	175
MHMJ082S1V	MHMJ 750 W Absolute encoder	175

MKDET		
Part No.	Title	Page
MKDET1105P	E series Driver: K-frame	223,226
MKDET1110P	E series Driver: K-frame	223,226
MKDET1310P	E series Driver: K-frame	223,226
MKDET1505P	E series Driver: K-frame	223,226

MLDET		
Part No.	Title	Page
MLDET2110P	E series Driver: L-frame	223,226
MLDET2210P	E series Driver: L-frame	223,226
MLDET2310P	E series Driver: L-frame	223,226
MLDET2510P	E series Driver: L-frame	223,226

MSMD (Low ine Part No.	Title	Page
MSMD011G1A	MSMD 100 W Incremental encoder	51
MSMD011G1B	MSMD 100 W Incremental encoder	51
MSMD011G1C	MSMD 100 W Incremental encoder	51
MSMD011G1D	MSMD 100 W Incremental encoder	51
MSMD011G1N	MSMD 100 W Incremental encoder	51
MSMD011G1N	MSMD 100 W Incremental encoder	51
MSMD011G1Q	MSMD 100 W Incremental encoder  MSMD 100 W Incremental encoder	51
MSMD011G1R		51
MSMD011G1S	MSMD 100 W Incremental encoder	51
MSMD011G1T	MSMD 100 W Incremental encoder	51
MSMD011G1U	MSMD 100 W Incremental encoder	51
MSMD011G1V	MSMD 100 W Incremental encoder	51
MSMD011S1A	MSMD 100 W Absolute encoder	51
MSMD011S1B	MSMD 100 W Absolute encoder	51
MSMD011S1C	MSMD 100 W Absolute encoder	51
MSMD011S1D	MSMD 100 W Absolute encoder	51
MSMD011S1N	MSMD 100 W Absolute encoder	51
MSMD011S1P	MSMD 100 W Absolute encoder	51
MSMD011S1Q	MSMD 100 W Absolute encoder	51
MSMD011S1R	MSMD 100 W Absolute encoder	51
MSMD011S1S	MSMD 100 W Absolute encoder	51
MSMD011S1T	MSMD 100 W Absolute encoder	51
MSMD011S1U	MSMD 100 W Absolute encoder	51
MSMD011S1V	MSMD 100 W Absolute encoder	51
MSMD012G1A	MSMD 100 W Incremental encoder	52
MSMD012G1B	MSMD 100 W Incremental encoder	52
MSMD012G1C	MSMD 100 W Incremental encoder	52
MSMD012G1D	MSMD 100 W Incremental encoder	52
MSMD012G1N	MSMD 100 W Incremental encoder	52
MSMD012G1N MSMD012G1P	MSMD 100 W Incremental encoder	52
MSMD012G1Q	MSMD 100 W Incremental encoder	52
MSMD012G1R	MSMD 100 W Incremental encoder	52
MSMD012G1S	MSMD 100 W Incremental encoder	52
MSMD012G1T	MSMD 100 W Incremental encoder	52
MSMD012G1U	MSMD 100 W Incremental encoder	52
MSMD012G1V	MSMD 100 W Incremental encoder	52
MSMD012S1A	MSMD 100 W Absolute encoder	52
MSMD012S1B	MSMD 100 W Absolute encoder	52
MSMD012S1C	MSMD 100 W Absolute encoder	52
MSMD012S1D	MSMD 100 W Absolute encoder	52
MSMD012S1N	MSMD 100 W Absolute encoder	52
MSMD012S1P	MSMD 100 W Absolute encoder	52
MSMD012S1Q	MSMD 100 W Absolute encoder	52
MSMD012S1R	MSMD 100 W Absolute encoder	52
MSMD012S1S	MSMD 100 W Absolute encoder	52
MSMD012S1T	MSMD 100 W Absolute encoder	52
MSMD012S1U	MSMD 100 W Absolute encoder	52
MSMD012S1V	MSMD 100 W Absolute encoder	52
MSMD021G1A	MSMD 200 W Incremental encoder	53
MSMD021G1B	MSMD 200 W Incremental encoder	53
MSMD021G1C	MSMD 200 W Incremental encoder	53
MSMD021G1D	MSMD 200 W Incremental encoder	53
MSMD021G1D	MSMD 200 W Incremental encoder	53
MSMD021G1N	MSMD 200 W Incremental encoder	
		53
MSMD021G1Q	MSMD 200 W Incremental encoder	53
MSMD021G1R	MSMD 200 W Incremental encoder	53
MSMD021G1S	MSMD 200 W Incremental encoder	53
MSMD021G1T	MSMD 200 W Incremental encoder	53
MSMD021G1U	MSMD 200 W Incremental encoder	53
MSMD021G1V	MSMD 200 W Incremental encoder	53
MSMD021S1A	MSMD 200 W Absolute encoder	53
MSMD021S1B	MSMD 200 W Absolute encoder	53
MSMD021S1C	MSMD 200 W Absolute encoder	53
MSMD021S1D	MSMD 200 W Absolute encoder	53
MSMD021S1N	MSMD 200 W Absolute encoder	53

MSMD (Low iner		Dage
Part No. MSMD021S1P	Title  MSMD 200 W Absolute encoder	Page 53
	MSMD 200 W Absolute encoder  MSMD 200 W Absolute encoder	
MSMD021S1Q MSMD021S1R	MSMD 200 W Absolute encoder  MSMD 200 W Absolute encoder	53
MSMD021S1R MSMD021S1S	MSMD 200 W Absolute encoder  MSMD 200 W Absolute encoder	53
MSMD021S1T	MSMD 200 W Absolute encoder	53
MSMD021S1U	MSMD 200 W Absolute encoder	53
MSMD021S1V	MSMD 200 W Absolute encoder	53
MSMD022G1A	MSMD 200 W Incremental encoder	54
MSMD022G1B	MSMD 200 W Incremental encoder	54
MSMD022G1C	MSMD 200 W Incremental encoder	54
MSMD022G1D	MSMD 200 W Incremental encoder	54
MSMD022G1N	MSMD 200 W Incremental encoder	54
MSMD022G1P	MSMD 200 W Incremental encoder	54
MSMD022G1Q	MSMD 200 W Incremental encoder	54
MSMD022G1R	MSMD 200 W Incremental encoder	54
MSMD022G1S	MSMD 200 W Incremental encoder	54
MSMD022G1T	MSMD 200 W Incremental encoder	54
MSMD022G1U	MSMD 200 W Incremental encoder	54
MSMD022G1V	MSMD 200 W Incremental encoder	54
MSMD022S1A	MSMD 200 W Absolute encoder	54
MSMD022S1B	MSMD 200 W Absolute encoder	54
MSMD022S1C	MSMD 200 W Absolute encoder	54
MSMD022S1D	MSMD 200 W Absolute encoder	54
MSMD022S1N	MSMD 200 W Absolute encoder	54
MSMD022S1P	MSMD 200 W Absolute encoder	54
MSMD022S1Q	MSMD 200 W Absolute encoder	54
MSMD022S1R	MSMD 200 W Absolute encoder	54
MSMD022S1S	MSMD 200 W Absolute encoder	54
MSMD022S1T	MSMD 200 W Absolute encoder	54
MSMD022S1U	MSMD 200 W Absolute encoder	54
MSMD022S1V	MSMD 200 W Absolute encoder	54
MSMD041G1A	MSMD 400 W Incremental encoder	55
MSMD041G1B	MSMD 400 W Incremental encoder	55
MSMD041G1C	MSMD 400 W Incremental encoder	55
MSMD041G1D	MSMD 400 W Incremental encoder	55
MSMD041G1N	MSMD 400 W Incremental encoder	55
MSMD041G1P	MSMD 400 W Incremental encoder	55
MSMD041G1Q	MSMD 400 W Incremental encoder	55
MSMD041G1R	MSMD 400 W Incremental encoder	55
MSMD041G1S MSMD041G1T	MSMD 400 W Incremental encoder  MSMD 400 W Incremental encoder	55 55
MSMD041G1U	MSMD 400 W Incremental encoder	55
MSMD041G1V	MSMD 400 W Incremental encoder	55
MSMD041G1V	MSMD 400 W Incremental encoder	
MSMD041S1B	MSMD 400 W Absolute encoder	55 55
MSMD041S1C	MSMD 400 W Absolute encoder	55
MSMD041S1D	MSMD 400 W Absolute encoder	55
MSMD041S1N	MSMD 400 W Absolute encoder	55
MSMD041S1P	MSMD 400 W Absolute encoder	55
MSMD041S1P	MSMD 400 W Absolute encoder	55
MSMD041S1R	MSMD 400 W Absolute encoder	55
MSMD041S1S	MSMD 400 W Absolute encoder	55
MSMD041S1T	MSMD 400 W Absolute encoder	55
MSMD041S1U	MSMD 400 W Absolute encoder	55
MSMD041S1V	MSMD 400 W Absolute encoder	55
MSMD042G1A	MSMD 400 W Incremental encoder	56
MSMD042G1B	MSMD 400 W Incremental encoder	56
MSMD042G1C	MSMD 400 W Incremental encoder	56
MSMD042G1D	MSMD 400 W Incremental encoder	56
MSMD042G1N	MSMD 400 W Incremental encoder	56
MSMD042G1P	MSMD 400 W Incremental encoder	56
MSMD042G1Q	MSMD 400 W Incremental encoder	56
MSMD042G1R	MSMD 400 W Incremental encoder	56
MSMD042G1S	MSMD 400 W Incremental encoder	56
MSMD042G1T	MSMD 400 W Incremental encoder	56
MSMD042G1U	MSMD 400 W Incremental encoder	56
MSMD042G1V	MSMD 400 W Incremental encoder	56
MSMD042S1A	MSMD 400 W Absolute encoder	56
MSMD042S1B	MSMD 400 W Absolute encoder	56
MSMD042S1C	MSMD 400 W Absolute encoder	56
MSMD042S1D	MSMD 400 W Absolute encoder	56

(Alphabetical Order)

MSMD (Low inertia)		
Part No.	Title	Page
MSMD042S1P	MSMD 400 W Absolute encoder	56
MSMD042S1Q	MSMD 400 W Absolute encoder	56
MSMD042S1R	MSMD 400 W Absolute encoder	56
MSMD042S1S	MSMD 400 W Absolute encoder	56
MSMD042S1T	MSMD 400 W Absolute encoder	56
MSMD042S1U	MSMD 400 W Absolute encoder	56
MSMD042S1V	MSMD 400 W Absolute encoder	56
MSMD082G1A	MSMD 750 W Incremental encoder	57
MSMD082G1B	MSMD 750 W Incremental encoder	57
MSMD082G1C	MSMD 750 W Incremental encoder	57
MSMD082G1D	MSMD 750 W Incremental encoder	57
MSMD082G1N	MSMD 750 W Incremental encoder	57
MSMD082G1P	MSMD 750 W Incremental encoder	57
MSMD082G1P	MSMD 750 W Incremental encoder	57
MSMD082G1R	MSMD 750 W Incremental encoder	57
MSMD082G1S	MSMD 750 W Incremental encoder	57
MSMD082G1T	MSMD 750 W Incremental encoder	57
MSMD082G1U	MSMD 750 W Incremental encoder	57
MSMD082G1V	MSMD 750 W Incremental encoder	57
MSMD082S1A	MSMD 750 W Absolute encoder	57
MSMD082S1B	MSMD 750 W Absolute encoder	57
MSMD082S1C	MSMD 750 W Absolute encoder	57
MSMD082S1D	MSMD 750 W Absolute encoder	57
MSMD082S1N	MSMD 750 W Absolute encoder	57
MSMD082S1P	MSMD 750 W Absolute encoder	57
MSMD082S1Q	MSMD 750 W Absolute encoder	57
MSMD082S1R	MSMD 750 W Absolute encoder	57
MSMD082S1S	MSMD 750 W Absolute encoder	57
MSMD082S1T	MSMD 750 W Absolute encoder	57
MSMD082S1U	MSMD 750 W Absolute encoder	57
MSMD082S1V	MSMD 750 W Absolute encoder	57
MSMD5AZG1A	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1B	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1C	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1D	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1N	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1P	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1Q	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1R	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1S	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1T	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1U	MSMD 50 W Incremental encoder	49,50
MSMD5AZG1V	MSMD 50 W Incremental encoder	49,50
MSMD5AZS1A	MSMD 50 W Absolute encoder  MSMD 50 W Absolute encoder	49,50
MSMD5AZS1B		
MSMD5AZS1C	MSMD 50 W Absolute encoder	49,50
MSMD5AZS1D	MSMD 50 W Absolute encoder	49,50
MSMD5AZS1N	MSMD 50 W Absolute encoder	49,50
MSMD5AZS1P	MSMD 50 W Absolute encoder	49,50
MSMD5AZS1Q	MSMD 50 W Absolute encoder	49,50
MSMD5AZS1R	MSMD 50 W Absolute encoder	49,50
MSMD5AZS1S	MSMD 50 W Absolute encoder	49,50
MSMD5AZS1T	MSMD 50 W Absolute encoder	49,50
MSMD5AZS1U	MSMD 50 W Absolute encoder	49,50
MSMD5AZS1V	MSMD 50 W Absolute encoder	49,50

MSMD with Gear	Reducer (Low inertia)	
Part No.	Title	Page
MSMD011G31N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD011G32N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD011G33N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD011G34N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD011G41N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD011G42N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD011G43N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD011G44N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD011S31N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD011S32N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD011S33N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD011S34N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD011S41N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD011S42N	MSMD with reduction gear 100 W Absolute encoder	141 148

MSMD with Gear	Reducer (Low inertia)	
Part No.	Title	Page
MSMD011S43N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD011S44N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD012G31N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD012G32N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD012G33N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD012G34N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD012G41N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD012G42N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD012G43N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD012G44N	MSMD with reduction gear 100 W Incremental encoder	141,148
MSMD012S31N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD012S32N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD012S33N MSMD012S34N	MSMD with reduction gear 100 W Absolute encoder	141,148
	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD012S41N	MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD012S42N	MSMD with reduction gear 100 W Absolute encoder  MSMD with reduction gear 100 W Absolute encoder	141,148
MSMD012S43N MSMD012S44N	•	141,148
MSMD012344N MSMD021G31N	MSMD with reduction gear 100 W Absolute encoder  MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD021G31N	Ü	141,148
MSMD021G32N MSMD021G33N	MSMD with reduction gear 200 W Incremental encoder MSMD with reduction gear 200 W Incremental encoder	141,148 141,148
MSMD021G33N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD021G34N MSMD021G41N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD021G41N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD021G42N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD021G44N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD021G44N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD021S31N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD021S32N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD021S33N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD021S41N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD021S42N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD021S43N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD021S44N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD022G31N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD022G32N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD022G33N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD022G34N	ŭ	141.148
MSMD022G41N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD022G42N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD022G43N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD022G44N	MSMD with reduction gear 200 W Incremental encoder	141,148
MSMD022S31N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD022S32N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD022S33N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD022S34N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD022S41N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD022S42N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD022S43N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD022S44N	MSMD with reduction gear 200 W Absolute encoder	141,148
MSMD041G31N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD041G32N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD041G33N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD041G34N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD041G41N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD041G42N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD041G43N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD041G44N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD041S31N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD041S32N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD041S33N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD041S34N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD041S41N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD041S42N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD041S43N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD041S44N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD042G31N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD042G32N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD042G33N	MSMD with reduction gear 400 W Incremental encoder MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD042G34N MSMD042G41N	MSMD with reduction gear 400 W Incremental encoder	141,148 141,148
MSMD042G41N	MSMD with reduction goar 400 W Incremental encoder	

MSMD042G42N MSMD with reduction gear 400 W Incremental encoder 141,148

Part No.	Title	Page
MSMD042G43N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD042G44N	MSMD with reduction gear 400 W Incremental encoder	141,148
MSMD042S31N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD042S32N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD042S33N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD042S34N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD042S41N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD042S42N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD042S43N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD042S44N	MSMD with reduction gear 400 W Absolute encoder	141,148
MSMD082G31N	MSMD with reduction gear 750 W Incremental encoder	141,148
MSMD082G32N	MSMD with reduction gear 750 W Incremental encoder	141,148
MSMD082G33N	MSMD with reduction gear 750 W Incremental encoder	141,148
MSMD082G34N	MSMD with reduction gear 750 W Incremental encoder	141,148
MSMD082G41N	MSMD with reduction gear 750 W Incremental encoder	141,148
MSMD082G42N	MSMD with reduction gear 750 W Incremental encoder	141,148
MSMD082G43N	MSMD with reduction gear 750 W Incremental encoder	141,148
MSMD082G44N	MSMD with reduction gear 750 W Incremental encoder	141,148
MSMD082S31N	MSMD with reduction gear 750 W Absolute encoder	141,148
MSMD082S32N	MSMD with reduction gear 750 W Absolute encoder	141,148
MSMD082S33N	MSMD with reduction gear 750 W Absolute encoder	141,148
MSMD082S34N	MSMD with reduction gear 750 W Absolute encoder	141,148
MSMD082S41N	MSMD with reduction gear 750 W Absolute encoder	141,148
MSMD082S42N	MSMD with reduction gear 750 W Absolute encoder	141,148
MSMD082S43N	MSMD with reduction gear 750 W Absolute encoder	141,148
MSMD082S44N	MSMD with reduction gear 750 W Absolute encoder	141,148

Part No.	Title	Page
MSME011G1A	MSME 100 W Incremental encoder	67
MSME011G1B	MSME 100 W Incremental encoder	67
MSME011G1C	MSME 100 W Incremental encoder	67
MSME011G1D	MSME 100 W Incremental encoder	67
MSME011G1N	MSME 100 W Incremental encoder	67
MSME011G1P	MSME 100 W Incremental encoder	67
MSME011G1Q	MSME 100 W Incremental encoder	67
MSME011G1R	MSME 100 W Incremental encoder	67
MSME011G1S	MSME 100 W Incremental encoder	67
MSME011G1T	MSME 100 W Incremental encoder	67
MSME011G1U	MSME 100 W Incremental encoder	67
MSME011G1V	MSME 100 W Incremental encoder	67
MSME011S1A	MSME 100 W Absolute encoder	67
MSME011S1B	MSME 100 W Absolute encoder	67
MSME011S1C	MSME 100 W Absolute encoder	67
MSME011S1D	MSME 100 W Absolute encoder	67
MSME011S1N	MSME 100 W Absolute encoder	67
MSME011S1P	MSME 100 W Absolute encoder	67
MSME011S1Q	MSME 100 W Absolute encoder	67
MSME011S1R	MSME 100 W Absolute encoder	67
MSME011S1S	MSME 100 W Absolute encoder	67
MSME011S1T	MSME 100 W Absolute encoder	67
MSME011S1U	MSME 100 W Absolute encoder	67
MSME011S1V	MSME 100 W Absolute encoder	67
MSME012G1A	MSME 100 W Incremental encoder	68
MSME012G1B	MSME 100 W Incremental encoder	68
MSME012G1C	MSME 100 W Incremental encoder	68
MSME012G1D	MSME 100 W Incremental encoder	68
MSME012G1N	MSME 100 W Incremental encoder	68
MSME012G1P	MSME 100 W Incremental encoder	68
MSME012G1Q	MSME 100 W Incremental encoder	68
MSME012G1R	MSME 100 W Incremental encoder	68
MSME012G1S	MSME 100 W Incremental encoder	68
MSME012G1T	MSME 100 W Incremental encoder	68
MSME012G1U	MSME 100 W Incremental encoder	68
MSME012G1V	MSME 100 W Incremental encoder	68
MSME012S1A	MSME 100 W Absolute encoder	68
MSME012S1B	MSME 100 W Absolute encoder	68
MSME012S1C	MSME 100 W Absolute encoder	68
MSME012S1D	MSME 100 W Absolute encoder	68
MSME012S1N	MSME 100 W Absolute encoder	68
MSME012S1P	MSME 100 W Absolute encoder	68
MSME012S1Q	MSME 100 W Absolute encoder	68

MSME (Low iner	Title	Page
MSME012S1R	MSME 100 W Absolute encoder	68
MSME012S1S	MSME 100 W Absolute encoder	68
MSME012S1T	MSME 100 W Absolute encoder	68
MSME012S1U	MSME 100 W Absolute encoder	68
MSME012S1V	MSME 100 W Absolute encoder	68
MSME021G1A	MSME 200 W Incremental encoder	69
MSME021G1A	MSME 200 W Incremental encoder	69
MSME021G1C	MSME 200 W Incremental encoder	69
MSME021G1D	MSME 200 W Incremental encoder	69
MSME021G1D	MSME 200 W Incremental encoder	69
MSME021G1P	MSME 200 W Incremental encoder	69
MSME021G1Q	MSME 200 W Incremental encoder	69
MSME021G1Q MSME021G1R	MSME 200 W Incremental encoder	69
MSME021G1S	MSME 200 W Incremental encoder	69
MSME021G15 MSME021G1T	MSME 200 W Incremental encoder	69
MSME021G1U	MSME 200 W Incremental encoder	69
MSME021G1V	MSME 200 W Incremental encoder	69
MSME021S1A	MSME 200 W Absolute encoder	69
MSME021S1B	MSME 200 W Absolute encoder	69
MSME021S1C	MSME 200 W Absolute encoder	69
MSME021S1D	MSME 200 W Absolute encoder	69
MSME021S1N	MSME 200 W Absolute encoder	69
MSME021S1P	MSME 200 W Absolute encoder	69
MSME021S1Q	MSME 200 W Absolute encoder	69
MSME021S1R	MSME 200 W Absolute encoder	69
MSME021S1S	MSME 200 W Absolute encoder	69
MSME021S1T	MSME 200 W Absolute encoder	69
MSME021S1U	MSME 200 W Absolute encoder	69
MSME021S1V	MSME 200 W Absolute encoder	69
MSME022G1A	MSME 200 W Incremental encoder	70
MSME022G1B	MSME 200 W Incremental encoder	70
MSME022G1C	MSME 200 W Incremental encoder	70
MSME022G1D	MSME 200 W Incremental encoder	70
MSME022G1N	MSME 200 W Incremental encoder	70
MSME022G1P	MSME 200 W Incremental encoder	70
MSME022G1Q	MSME 200 W Incremental encoder	70
MSME022G1R	MSME 200 W Incremental encoder	70
MSME022G1S	MSME 200 W Incremental encoder	70
MSME022G1T	MSME 200 W Incremental encoder	70
MSME022G1U	MSME 200 W Incremental encoder	70
MSME022G1V	MSME 200 W Incremental encoder	70
MSME022S1A	MSME 200 W Absolute encoder	70
MSME022S1B	MSME 200 W Absolute encoder	70
MSME022S1C	MSME 200 W Absolute encoder	70
MSME022S1D	MSME 200 W Absolute encoder	70
MSME022S1N	MSME 200 W Absolute encoder	70
MSME022S1P	MSME 200 W Absolute encoder	70
MSME022S1Q	MSME 200 W Absolute encoder	70
MSME022S1R	MSME 200 W Absolute encoder	70
MSME022S1S	MSME 200 W Absolute encoder	70
MSME022S1T	MSME 200 W Absolute encoder	70
MSME022S1U	MSME 200 W Absolute encoder	70
MSME022S1V	MSME 200 W Absolute encoder	70
MSME041G1A	MSME 400 W Incremental encoder	71
MSME041G1B	MSME 400 W Incremental encoder	71
MSME041G1C	MSME 400 W Incremental encoder	71
MSME041G1D	MSME 400 W Incremental encoder	71
MSME041G1N	MSME 400 W Incremental encoder	71
MSME041G1P	MSME 400 W Incremental encoder	71
MSME041G1Q	MSME 400 W Incremental encoder	71
MSME041G1R	MSME 400 W Incremental encoder	71
MSME041G1S	MSME 400 W Incremental encoder	71
MSME041G1T	MSME 400 W Incremental encoder	71
MSME041G1U	MSME 400 W Incremental encoder	71
MSME041G1V	MSME 400 W Incremental encoder	71
MSME041S1A	MSME 400 W Absolute encoder	71
MSME041S1B	MSME 400 W Absolute encoder	71
MSME041S1C	MSME 400 W Absolute encoder	71
MSME041S1D	MSME 400 W Absolute encoder	71
MSME041S1D	MSME 400 W Absolute encoder	71
MSME041S1N	MSME 400 W Absolute encoder	71
	MSME 400 W Absolute encoder	71

# Index (Alphabetical Order)

MSME (Low iner		
Part No. MSME041S1R	Title MSME 400 W Absolute encoder	Page
MSME041S1S	MSME 400 W Absolute encoder	71
MSME041S1T	MSME 400 W Absolute encoder	71
MSME041S1U	MSME 400 W Absolute encoder	71
MSME041S1V	MSME 400 W Absolute encoder	71
MSME042G1A	MSME 400 W Incremental encoder	72
MSME042G1B	MSME 400 W Incremental encoder	72
MSME042G1C MSME042G1D	MSME 400 W Incremental encoder  MSME 400 W Incremental encoder	72
MSME042G1D	MSME 400 W Incremental encoder	72 72
MSME042G1P	MSME 400 W Incremental encoder	72
MSME042G1Q	MSME 400 W Incremental encoder	72
MSME042G1R	MSME 400 W Incremental encoder	72
MSME042G1S	MSME 400 W Incremental encoder	72
MSME042G1T	MSME 400 W Incremental encoder	72
MSME042G1U	MSME 400 W Incremental encoder	72
MSME042G1V MSME042S1A	MSME 400 W Incremental encoder  MSME 400 W Absolute encoder	72 72
MSME042S1B	MSME 400 W Absolute encoder	72
MSME042S1C	MSME 400 W Absolute encoder	72
MSME042S1D	MSME 400 W Absolute encoder	72
MSME042S1N	MSME 400 W Absolute encoder	72
MSME042S1P	MSME 400 W Absolute encoder	72
MSME042S1Q	MSME 400 W Absolute encoder	72
MSME042S1R	MSME 400 W Absolute encoder	72
MSME042S1S MSME042S1T	MSME 400 W Absolute encoder  MSME 400 W Absolute encoder	72 72
MSME042S1U	MSME 400 W Absolute encoder	72
MSME042S1V	MSME 400 W Absolute encoder	72
MSME082G1A	MSME 750 W Incremental encoder	73
MSME082G1B	MSME 750 W Incremental encoder	73
MSME082G1C	MSME 750 W Incremental encoder	73
MSME082G1D	MSME 750 W Incremental encoder	73
MSME082G1N MSME082G1P	MSME 750 W Incremental encoder  MSME 750 W Incremental encoder	73
MSME082G1Q	MSME 750 W Incremental encoder	73
MSME082G1R	MSME 750 W Incremental encoder	73
MSME082G1S	MSME 750 W Incremental encoder	73
MSME082G1T	MSME 750 W Incremental encoder	73
MSME082G1U	MSME 750 W Incremental encoder	73
MSME082G1V	MSME 750 W Incremental encoder	73
MSME082S1A MSME082S1B	MSME 750 W Absolute encoder  MSME 750 W Absolute encoder	73
MSME082S1C	MSME 750 W Absolute encoder	73
MSME082S1D	MSME 750 W Absolute encoder	73
MSME082S1N	MSME 750 W Absolute encoder	73
MSME082S1P	MSME 750 W Absolute encoder	73
MSME082S1Q	MSME 750 W Absolute encoder	73
MSME082S1R	MSME 750 W Absolute encoder	73
MSME082S1S MSME082S1T	MSME 750 W Absolute encoder	73
MSME082S1U	MSME 750 W Absolute encoder  MSME 750 W Absolute encoder	73
MSME082S1V	MSME 750 W Absolute encoder	73
MSME084G1C	MSME 750 W Incremental encoder	104
MSME084G1D	MSME 750 W Incremental encoder	104
MSME084G1G	MSME 750 W Incremental encoder	104
MSME084G1H	MSME 750 W Incremental encoder	104
MSME084GCC	MSME 750 W Incremental encoder	104
MSME084GCD MSME084GCG	MSME 750 W Incremental encoder  MSME 750 W Incremental encoder	104
MSME084GCH	MSME 750 W Incremental encoder	104
MSME084S1C	MSME 750 W Absolute encoder	104
MSME084S1D	MSME 750 W Absolute encoder	104
MSME084S1G	MSME 750 W Absolute encoder	104
MSME084S1H	MSME 750 W Absolute encoder	104
MSME084SCC	MSME 750 W Absolute encoder	104
MSME084SCD	MSME 750 W Absolute encoder	104
MSME084SCG MSME084SCH	MSME 750 W Absolute encoder  MSME 750 W Absolute encoder	104
MSME102G1C	MSME 1.0 kW Incremental encoder	74
MSME102G1D	MSME 1.0 kW Incremental encoder	74
MSME102G1G	MSME 1.0 kW Incremental encoder	74

MSME (Low iner		D
Part No. MSME102G1H	Title  MSME 1.0 kW Incremental encoder	Page 74
MSME102GTTT	MSME 1.0 kW Incremental encoder	74
MSME102GCCM	MSME 1.0 kW Incremental encoder	158
MSME102GCD	MSME 1.0 kW Incremental encoder	74
MSME102GCDM	MSME 1.0 kW Incremental encoder	158
MSME102GCG	MSME 1.0 kW Incremental encoder	74
MSME102GCGM	MSME 1.0 kW Incremental encoder	158
MSME102GCH	MSME 1.0 kW Incremental encoder	74
MSME102GCHM	MSME 1.0 kW Incremental encoder  MSME 1.0 kW Absolute encoder	158
MSME102S1C MSME102S1D	MSME 1.0 kW Absolute encoder  MSME 1.0 kW Absolute encoder	74
MSME102S1G	MSME 1.0 kW Absolute encoder	74
MSME102S1H	MSME 1.0 kW Absolute encoder	74
MSME102SCC	MSME 1.0 kW Absolute encoder	74
MSME102SCCM	MSME 1.0 kW Absolute encoder	158
MSME102SCD	MSME 1.0 kW Absolute encoder	74
MSME102SCDM	MSME 1.0 kW Absolute encoder	158
MSME102SCG	MSME 1.0 kW Absolute encoder	74
MSME102SCGM	MSME 1.0 kW Absolute encoder	158
MSME102SCH	MSME 1.0 kW Absolute encoder	74
MSME102SCHM	MSME 1.0 kW Absolute encoder	158
MSME104G1C	MSME 1.0 kW Incremental encoder	105
MSME104G1D MSME104G1G	MSME 1.0 kW Incremental encoder  MSME 1.0 kW Incremental encoder	105
MSME104G1H	MSME 1.0 kW Incremental encoder	105
MSME104GCC	MSME 1.0 kW Incremental encoder	105
MSME104GCD	MSME 1.0 kW Incremental encoder	105
MSME104GCG	MSME 1.0 kW Incremental encoder	105
MSME104GCH	MSME 1.0 kW Incremental encoder	105
MSME104S1C	MSME 1.0 kW Absolute encoder	105
MSME104S1D	MSME 1.0 kW Absolute encoder	105
MSME104S1G	MSME 1.0 kW Absolute encoder	105
MSME104S1H	MSME 1.0 kW Absolute encoder	105
MSME104SCC	MSME 1.0 kW Absolute encoder	105
MSME104SCD	MSME 1.0 kW Absolute encoder	105
MSME104SCG MSME104SCH	MSME 1.0 kW Absolute encoder  MSME 1.0 kW Absolute encoder	105
MSME152G1C	MSME 1.5 kW Incremental encoder	105 75
MSME152G1D	MSME 1.5 kW Incremental encoder	75
MSME152G1G	MSME 1.5 kW Incremental encoder	75
MSME152G1H	MSME 1.5 kW Incremental encoder	75
MSME152GCC	MSME 1.5 kW Incremental encoder	75
MSME152GCCM	MSME 1.5 kW Incremental encoder	159
MSME152GCD	MSME 1.5 kW Incremental encoder	75
MSME152GCDM	MSME 1.5 kW Incremental encoder	159
MSME152GCG	MSME 1.5 kW Incremental encoder	75
MSME152GCGM	MSME 1.5 kW Incremental encoder	159
MSME152GCH	MSME 1.5 kW Incremental encoder	75
MSME152GCHM	MSME 1.5 kW Incremental encoder	159
MSME152S1C MSME152S1D	MSME 1.5 kW Absolute encoder  MSME 1.5 kW Absolute encoder	75 75
MSME152S1G	MSME 1.5 kW Absolute encoder	75
MSME152S1H	MSME 1.5 kW Absolute encoder	75
MSME152SCC	MSME 1.5 kW Absolute encoder	75
MSME152SCCM	MSME 1.5 kW Absolute encoder	159
MSME152SCD	MSME 1.5 kW Absolute encoder	75
MSME152SCDM	MSME 1.5 kW Absolute encoder	159
MSME152SCG	MSME 1.5 kW Absolute encoder	75
MSME152SCGM	MSME 1.5 kW Absolute encoder	159
MSME152SCH	MSME 1.5 kW Absolute encoder	75
MSME152SCHM	MSME 1.5 kW Absolute encoder	159
MSME154G1C	MSME 1.5 kW Incremental encoder	106
MSME154G1D MSME154G1G	MSME 1.5 kW Incremental encoder  MSME 1.5 kW Incremental encoder	106
MSME154G1G MSME154G1H	MSME 1.5 kW Incremental encoder  MSME 1.5 kW Incremental encoder	106
MSME154GCC	MSME 1.5 kW Incremental encoder	106
MSME154GCD	MSME 1.5 kW Incremental encoder	106
MSME154GCG	MSME 1.5 kW Incremental encoder	106
MSME154GCH	MSME 1.5 kW Incremental encoder	106
MSME154S1C	MSME 1.5 kW Absolute encoder	106
MSME154S1D	MSME 1.5 kW Absolute encoder	106
	MSME 1.5 kW Absolute encoder	106

MSME154S1G MSME 1.5 kW Absolute encoder

MSME (Low iner Part No.	Title	Page
MSME154S1H	MSME 1.5 kW Absolute encoder	106
MSME154SCC	MSME 1.5 kW Absolute encoder	106
MSME154SCD	MSME 1.5 kW Absolute encoder	106
MSME154SCG	MSME 1.5 kW Absolute encoder	106
MSME154SCH	MSME 1.5 kW Absolute encoder	106
MSME202G1C	MSME 2.0 kW Incremental encoder	76
MSME202G1D	MSME 2.0 kW Incremental encoder	76
MSME202G1G	MSME 2.0 kW Incremental encoder	76
MSME202G1H	MSME 2.0 kW Incremental encoder	76
MSME202GTTT	MSME 2.0 kW Incremental encoder	76
MSME202GCCM	MSME 2.0 kW Incremental encoder	160
	MSME 2.0 kW Incremental encoder	
MSME202GCD		76
MSME202GCDM	MSME 2.0 kW Incremental encoder	160
MSME202GCG	MSME 2.0 kW Incremental encoder	76
MSME202GCGM	MSME 2.0 kW Incremental encoder	160
MSME202GCH	MSME 2.0 kW Incremental encoder	76
MSME202GCHM	MSME 2.0 kW Incremental encoder	160
MSME202S1C	MSME 2.0 kW Absolute encoder	76
MSME202S1D	MSME 2.0 kW Absolute encoder	76
MSME202S1G	MSME 2.0 kW Absolute encoder	76
MSME202S1H	MSME 2.0 kW Absolute encoder	76
MSME202SCC	MSME 2.0 kW Absolute encoder	76
MSME202SCCM	MSME 2.0 kW Absolute encoder	160
MSME202SCD	MSME 2.0 kW Absolute encoder	76
MSME202SCDM	MSME 2.0 kW Absolute encoder	160
MSME202SCG	MSME 2.0 kW Absolute encoder	76
MSME202SCGM	MSME 2.0 kW Absolute encoder	160
MSME202SCH	MSME 2.0 kW Absolute encoder	76
MSME202SCHM	MSME 2.0 kW Absolute encoder	160
MSME204G1C	MSME 2.0 kW Incremental encoder	107
MSME204G1D	MSME 2.0 kW Incremental encoder	107
MSME204G1G	MSME 2.0 kW Incremental encoder	107
MSME204G1H	MSME 2.0 kW Incremental encoder	107
MSME204GCC	MSME 2.0 kW Incremental encoder	107
MSME204GCD	MSME 2.0 kW Incremental encoder	107
MSME204GCD	MSME 2.0 kW Incremental encoder	
		107
MSME204GCH	MSME 2.0 kW Incremental encoder	107
MSME204S1C	MSME 2.0 kW Absolute encoder	107
MSME204S1D	MSME 2.0 kW Absolute encoder	107
MSME204S1G	MSME 2.0 kW Absolute encoder	107
MSME204S1H	MSME 2.0 kW Absolute encoder	107
MSME204SCC	MSME 2.0 kW Absolute encoder	107
MSME204SCD	MSME 2.0 kW Absolute encoder	107
MSME204SCG	MSME 2.0 kW Absolute encoder	107
MSME204SCH	MSME 2.0 kW Absolute encoder	107
MSME302G1C	MSME 3.0 kW Incremental encoder	77
MSME302G1D	MSME 3.0 kW Incremental encoder	77
MSME302G1G	MSME 3.0 kW Incremental encoder	77
MSME302G1H	MSME 3.0 kW Incremental encoder	77
MSME302GCC	MSME 3.0 kW Incremental encoder	77
MSME302GCCM	MSME 3.0 kW Incremental encoder	161
MSME302GCD	MSME 3.0 kW Incremental encoder	77
MSME302GCDM	MSME 3.0 kW Incremental encoder	161
MSME302GCG	MSME 3.0 kW Incremental encoder	77
MSME302GCGM	MSME 3.0 kW Incremental encoder	161
MSME302GCH	MSME 3.0 kW Incremental encoder	77
MSME302GCHM	MSME 3.0 kW Incremental encoder	161
MSME302S1C	MSME 3.0 kW Absolute encoder	77
MSME302S1D	MSME 3.0 kW Absolute encoder	77
MSME302S1G	MSME 3.0 kW Absolute encoder	77
	MSME 3.0 kW Absolute encoder	
MSME302S1H	MSME 3.0 kW Absolute encoder  MSME 3.0 kW Absolute encoder	77
MSME302SCC		161
MSME302SCCM	MSME 3.0 kW Absolute encoder	161
MSME302SCD	MSME 3.0 kW Absolute encoder	77
MSME302SCDM	MSME 3.0 kW Absolute encoder	161
MSME302SCG	MSME 3.0 kW Absolute encoder	77
MSME302SCGM	MSME 3.0 kW Absolute encoder	161
MSME302SCH	MSME 3.0 kW Absolute encoder	77
MSME302SCHM	MSME 3.0 kW Absolute encoder	161
MSME304G1C	MSME 3.0 kW Incremental encoder	108
MSME304G1D	MSME 3.0 kW Incremental encoder	108
MSME304G1G		

MSME (Low inertine Part No.  MSME304G1H  MSME304GCC  MSME304GCD  MSME304GCD  MSME304GCG	Title  MSME 3.0 kW Incremental encoder  MSME 3.0 kW Incremental encoder	Page 108
MSME304GCC MSME304GCD MSME304GCG		
MSME304GCD MSME304GCG	MSME 3.0 kW Incremental ancodor	1
MSME304GCG		108
	MSME 3.0 kW Incremental encoder	108
	MSME 3.0 kW Incremental encoder	108
MSME304GCH	MSME 3.0 kW Incremental encoder  MSME 3.0 kW Absolute encoder	108
MSME304S1C MSME304S1D	MSME 3.0 kW Absolute encoder	108
MSME304S1G	MSME 3.0 kW Absolute encoder	108
MSME304S1H	MSME 3.0 kW Absolute encoder	108
MSME304SCC	MSME 3.0 kW Absolute encoder	108
MSME304SCD	MSME 3.0 kW Absolute encoder	108
MSME304SCG	MSME 3.0 kW Absolute encoder	108
MSME304SCH	MSME 3.0 kW Absolute encoder	108
MSME402G1C MSME402G1D	MSME 4.0 kW Incremental encoder  MSME 4.0 kW Incremental encoder	78 78
MSME402G1G	MSME 4.0 kW Incremental encoder	78
MSME402G1H	MSME 4.0 kW Incremental encoder	78
MSME402GCC	MSME 4.0 kW Incremental encoder	78
MSME402GCCM	MSME 4.0 kW Incremental encoder	162
MSME402GCD	MSME 4.0 kW Incremental encoder	78
MSME402GCDM	MSME 4.0 kW Incremental encoder	162
MSME402GCG	MSME 4.0 kW Incremental encoder	78
MSME402GCGM MSME402GCH	MSME 4.0 kW Incremental encoder  MSME 4.0 kW Incremental encoder	162
MSME402GCHM	MSME 4.0 kW Incremental encoder	78 162
MSME402S1C	MSME 4.0 kW Absolute encoder	78
MSME402S1D	MSME 4.0 kW Absolute encoder	78
MSME402S1G	MSME 4.0 kW Absolute encoder	78
MSME402S1H	MSME 4.0 kW Absolute encoder	78
MSME402SCC	MSME 4.0 kW Absolute encoder	78
MSME402SCCM	MSME 4.0 kW Absolute encoder	162
MSME402SCD MSME402SCDM	MSME 4.0 kW Absolute encoder  MSME 4.0 kW Absolute encoder	78 162
MSME402SCDM MSME402SCG	MSME 4.0 kW Absolute encoder	78
MSME402SCGM	MSME 4.0 kW Absolute encoder	162
MSME402SCH	MSME 4.0 kW Absolute encoder	78
MSME402SCHM	MSME 4.0 kW Absolute encoder	162
MSME404G1C	MSME 4.0 kW Incremental encoder	109
MSME404G1D	MSME 4.0 kW Incremental encoder	109
MSME404G1G MSME404G1H	MSME 4.0 kW Incremental encoder  MSME 4.0 kW Incremental encoder	109
MSME404GTH	MSME 4.0 kW Incremental encoder	109
MSME404GCD	MSME 4.0 kW Incremental encoder	109
MSME404GCG	MSME 4.0 kW Incremental encoder	109
MSME404GCH	MSME 4.0 kW Incremental encoder	109
MSME404S1C	MSME 4.0 kW Absolute encoder	109
MSME404S1D	MSME 4.0 kW Absolute encoder	109
MSME404S1G	MSME 4.0 kW Absolute encoder	109
MSME404S1H MSME404SCC	MSME 4.0 kW Absolute encoder  MSME 4.0 kW Absolute encoder	109
MSME404SCD	MSME 4.0 kW Absolute encoder	109
MSME404SCG	MSME 4.0 kW Absolute encoder	109
MSME404SCH	MSME 4.0 kW Absolute encoder	109
MSME502G1C	MSME 5.0 kW Incremental encoder	79
MSME502G1D	MSME 5.0 kW Incremental encoder	79
MSME502G1G	MSME 5.0 kW Incremental encoder	79
MSME502G1H	MSME 5.0 kW Incremental encoder	79
MSME502GCC MSME502GCCM	MSME 5.0 kW Incremental encoder  MSME 5.0 kW Incremental encoder	79 163
MSME502GCD	MSME 5.0 kW Incremental encoder	79
MSME502GCDM	MSME 5.0 kW Incremental encoder	163
MSME502GCG	MSME 5.0 kW Incremental encoder	79
MSME502GCGM	MSME 5.0 kW Incremental encoder	163
MSME502GCH	MSME 5.0 kW Incremental encoder	79
MSME502GCHM	MSME 5.0 kW Incremental encoder	163
MSME502S1C	MSME 5.0 kW Absolute encoder	79
MSME502S1D MSME502S1G	MSME 5.0 kW Absolute encoder  MSME 5.0 kW Absolute encoder	79 79
MSME502S1H	MSME 5.0 kW Absolute encoder	79
MSME502SCC	MSME 5.0 kW Absolute encoder	79
MSME502SCCM	MSME 5.0 kW Absolute encoder	163
MSME502SCD	MSME 5.0 kW Absolute encoder	79

301

Part No.	Title	Page
MSME502SCDM	MSME 5.0 kW Absolute encoder	163
MSME502SCG	MSME 5.0 kW Absolute encoder	79
MSME502SCGM	MSME 5.0 kW Absolute encoder	163
MSME502SCH	MSME 5.0 kW Absolute encoder	79
MSME502SCHM	MSME 5.0 kW Absolute encoder	163
MSME504G1C	MSME 5.0 kW Incremental encoder	110
MSME504G1D	MSME 5.0 kW Incremental encoder	110
MSME504G1G	MSME 5.0 kW Incremental encoder	110
MSME504G1H	MSME 5.0 kW Incremental encoder	110
MSME504GCC	MSME 5.0 kW Incremental encoder	110
MSME504GCD	MSME 5.0 kW Incremental encoder	110
MSME504GCG	MSME 5.0 kW Incremental encoder	110
MSME504GCH	MSME 5.0 kW Incremental encoder	110
MSME504S1C	MSME 5.0 kW Absolute encoder	110
MSME504S1D	MSME 5.0 kW Absolute encoder	110
MSME504S1G	MSME 5.0 kW Absolute encoder	110
MSME504S1H	MSME 5.0 kW Absolute encoder	110
MSME504SCC	MSME 5.0 kW Absolute encoder	110
MSME504SCD	MSME 5.0 kW Absolute encoder	110
MSME504SCG	MSME 5.0 kW Absolute encoder	110
MSME504SCH	MSME 5.0 kW Absolute encoder	110
MSME5AZG1A	MSME 50 W Incremental encoder	65,66
MSME5AZG1B MSME5AZG1C	MSME 50 W Incremental encoder  MSME 50 W Incremental encoder	65,66
MSME5AZG1C MSME5AZG1D	MSME 50 W Incremental encoder	65,66
MSME5AZG1D MSME5AZG1N	MSME 50 W Incremental encoder	65,66 65,66
MSME5AZG1N MSME5AZG1P	MSME 50 W Incremental encoder	65.6
MSME5AZG1Q	MSME 50 W Incremental encoder	65,6
MSME5AZG1R	MSME 50 W Incremental encoder	65,6
MSME5AZG1S	MSME 50 W Incremental encoder	65,6
MSME5AZG1T	MSME 50 W Incremental encoder	65,6
MSME5AZG1U	MSME 50 W Incremental encoder	65,66
MSME5AZG1V	MSME 50 W Incremental encoder	65,66
MSME5AZS1A	MSME 50 W Absolute encoder	65,66
MSME5AZS1B	MSME 50 W Absolute encoder	65,66
MSME5AZS1C	MSME 50 W Absolute encoder	65,6
MSME5AZS1D	MSME 50 W Absolute encoder	65,66
MSME5AZS1N	MSME 50 W Absolute encoder	65,6
MSME5AZS1P	MSME 50 W Absolute encoder	65,66
MSME5AZS1Q	MSME 50 W Absolute encoder	65,66
MSME5AZS1R	MSME 50 W Absolute encoder	65,66
MSME5AZS1S	MSME 50 W Absolute encoder	65,66
MSME5AZS1T	MSME 50 W Absolute encoder	65,66
MSME5AZS1U	MSME 50 W Absolute encoder	65,66
MSME5AZS1V	MSME 50 W Absolute encoder	65,66

Part No.	Title	Page
MSME011G31N	MSME with reduction gear 100 W Incremental encoder	141,147
MSME011G32N	MSME with reduction gear 100 W Incremental encoder	141,147
MSME011G33N	MSME with reduction gear 100 W Incremental encoder	141,147
MSME011G34N	MSME with reduction gear 100 W Incremental encoder	141,147
MSME011G41N	MSME with reduction gear 100 W Incremental encoder	141,147
MSME011G42N	MSME with reduction gear 100 W Incremental encoder	141,147
MSME011G43N	MSME with reduction gear 100 W Incremental encoder	141,14
MSME011G44N	MSME with reduction gear 100 W Incremental encoder	141,14
MSME011S31N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME011S32N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME011S33N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME011S34N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME011S41N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME011S42N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME011S43N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME011S44N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME012G31N	MSME with reduction gear 100 W Incremental encoder	141,14
MSME012G32N	MSME with reduction gear 100 W Incremental encoder	141,14
MSME012G33N	MSME with reduction gear 100 W Incremental encoder	141,14
MSME012G34N	MSME with reduction gear 100 W Incremental encoder	141,14
MSME012G41N	MSME with reduction gear 100 W Incremental encoder	141,14
MSME012G42N	MSME with reduction gear 100 W Incremental encoder	141,14
MSME012G43N	MSME with reduction gear 100 W Incremental encoder	141,14
MSME012G44N	MSME with reduction gear 100 W Incremental encoder	141,14

MSME with Gear	Reducer (Low inertia)	
Part No.	Title	Page
MSME012S31N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME012S32N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME012S33N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME012S34N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME012S41N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME012S42N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME012S43N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME012S44N	MSME with reduction gear 100 W Absolute encoder	141,14
MSME021G31N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME021G32N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME021G33N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME021G34N	ļ — — — — — — — — — — — — — — — — — — —	_
	MSME with reduction gear 200 W Incremental encoder	141,14
MSME021G41N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME021G42N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME021G43N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME021G44N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME021S31N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME021S32N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME021S33N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME021S34N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME021S41N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME021S42N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME021S43N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME021S44N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME022G31N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME022G32N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME022G33N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME022G34N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME022G41N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME022G42N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME022G43N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME022G44N	MSME with reduction gear 200 W Incremental encoder	141,14
MSME022S31N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME022S32N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME022S33N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME022S34N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME022S41N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME022S42N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME022S43N	MSME with reduction gear 200 W Absolute encoder	141,14
MSME022S44N	MSME with reduction gear 200 W Absolute encoder	
		141,14
MSME041G31N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME041G32N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME041G33N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME041G34N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME041G41N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME041G42N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME041G43N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME041G44N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME041S31N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME041S32N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME041S33N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME041S34N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME041S41N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME041S42N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME041S43N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME041S44N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME042G31N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME042G32N	MSME with reduction gear 400 W Incremental encoder	
MSME042G33N	MSME with reduction gear 400 W Incremental encoder	
MSME042G34N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME042G41N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME042G42N	MSME with reduction gear 400 W Incremental encoder	141,14
MSME042G43N	MSME with reduction gear 400 W Incremental encoder	
	MSME with reduction gear 400 W Incremental encoder	_
MSME042G44N		141,14
MSME042S31N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME042S32N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME042S33N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME042S34N	MSME with reduction gear 400 W Absolute encoder	141,14
MSME042S41N	MSME with reduction gear 400 W Absolute encoder	141,14
	MSME with reduction gear 400 W Absolute encoder	141,14
	· ·	171,17
MSME042S42N MSME042S43N	MSME with reduction gear 400 W Absolute encoder  MSME with reduction gear 400 W Absolute encoder  MSME with reduction gear 400 W Absolute encoder	141,14

Part No.	Title	Page
MSME082G31N	MSME with reduction gear 750 W Incremental encoder	141,147
MSME082G32N	MSME with reduction gear 750 W Incremental encoder	141,147
MSME082G33N	MSME with reduction gear 750 W Incremental encoder	141,147
MSME082G34N	MSME with reduction gear 750 W Incremental encoder	141,147
MSME082G41N	MSME with reduction gear 750 W Incremental encoder	141,147
MSME082G42N	MSME with reduction gear 750 W Incremental encoder	141,147
MSME082G43N	MSME with reduction gear 750 W Incremental encoder	141,147
MSME082G44N	MSME with reduction gear 750 W Incremental encoder	141,147
MSME082S31N	MSME with reduction gear 750 W Absolute encoder	141,147
MSME082S32N	MSME with reduction gear 750 W Absolute encoder	141,147
MSME082S33N	MSME with reduction gear 750 W Absolute encoder	141,147
MSME082S34N	MSME with reduction gear 750 W Absolute encoder	141,147
MSME082S41N	MSME with reduction gear 750 W Absolute encoder	141,147
MSME082S42N	MSME with reduction gear 750 W Absolute encoder	141,147
MSME082S43N	MSME with reduction gear 750 W Absolute encoder	141,147
MSME082S44N	MSME with reduction gear 750 W Absolute encoder	141,147

Part No.	Title	Page
MSMJ022G1A	MSMJ 200 W Incremental encoder	155
MSMJ022G1B	MSMJ 200 W Incremental encoder	155
MSMJ022G1C	MSMJ 200 W Incremental encoder	155
MSMJ022G1D	MSMJ 200 W Incremental encoder	155
MSMJ022G1S	MSMJ 200 W Incremental encoder	155
MSMJ022G1T	MSMJ 200 W Incremental encoder	155
MSMJ022G1U	MSMJ 200 W Incremental encoder	155
MSMJ022G1V	MSMJ 200 W Incremental encoder	155
MSMJ022S1A	MSMJ 200 W Absolute encoder	155
MSMJ022S1B	MSMJ 200 W Absolute encoder	155
MSMJ022S1C	MSMJ 200 W Absolute encoder	155
MSMJ022S1D	MSMJ 200 W Absolute encoder	155
MSMJ022S1S	MSMJ 200 W Absolute encoder	155
MSMJ022S1T	MSMJ 200 W Absolute encoder	155
MSMJ022S1U	MSMJ 200 W Absolute encoder	155
MSMJ022S1V	MSMJ 200 W Absolute encoder	155
MSMJ042G1A	MSMJ 400 W Incremental encoder	156
MSMJ042G1B	MSMJ 400 W Incremental encoder	156
MSMJ042G1C	MSMJ 400 W Incremental encoder	156
MSMJ042G1D	MSMJ 400 W Incremental encoder	156
MSMJ042G1S	MSMJ 400 W Incremental encoder	156
MSMJ042G1T	MSMJ 400 W Incremental encoder	156
MSMJ042G1U	MSMJ 400 W Incremental encoder	156
MSMJ042G1V	MSMJ 400 W Incremental encoder	156
MSMJ042S1A	MSMJ 400 W Absolute encoder	156
MSMJ042S1B	MSMJ 400 W Absolute encoder	156
MSMJ042S1C	MSMJ 400 W Absolute encoder	156
MSMJ042S1D	MSMJ 400 W Absolute encoder	156
MSMJ042S1S	MSMJ 400 W Absolute encoder	156
MSMJ042S1T	MSMJ 400 W Absolute encoder	156
MSMJ042S1U	MSMJ 400 W Absolute encoder	156
MSMJ042S1V	MSMJ 400 W Absolute encoder	156
MSMJ082G1A	MSMJ 750 W Incremental encoder	157
MSMJ082G1B	MSMJ 750 W Incremental encoder	157
MSMJ082G1C	MSMJ 750 W Incremental encoder	157
MSMJ082G1D	MSMJ 750 W Incremental encoder	157
MSMJ082G1S	MSMJ 750 W Incremental encoder	157
MSMJ082G1T	MSMJ 750 W Incremental encoder	157
MSMJ082G1U	MSMJ 750 W Incremental encoder	157
MSMJ082G1V	MSMJ 750 W Incremental encoder	157
MSMJ082S1A	MSMJ 750 W Absolute encoder	157
MSMJ082S1B	MSMJ 750 W Absolute encoder	157
MSMJ082S1C	MSMJ 750 W Absolute encoder	157
MSMJ082S1D	MSMJ 750 W Absolute encoder	157
MSMJ082S1S	MSMJ 750 W Absolute encoder	157
MSMJ082S1T	MSMJ 750 W Absolute encoder	157
MSMJ082S1U	MSMJ 750 W Absolute encoder	157
MSMJ082S1V	MSMJ 750 W Absolute encoder	157

MUMA (Low inertia)				
Part No.	Title	Page		
MUMA011P1S	MUMA 100 W Incremental encoder	227,231		
MUMA011P1T	MUMA 100 W Incremental encoder	227,231		

MUMA (Low inertia)				
Part No.	Title	Page		
MUMA012P1S	MUMA 100 W Incremental encoder	229,231		
MUMA012P1T	MUMA 100 W Incremental encoder	229,231		
MUMA021P1S	MUMA 200 W Incremental encoder	227,231		
MUMA021P1T	MUMA 200 W Incremental encoder	227,231		
MUMA022P1S	MUMA 200 W Incremental encoder	229,231		
MUMA022P1T	MUMA 200 W Incremental encoder	229,231		
MUMA042P1S	MUMA 400 W Incremental encoder	229,231		
MUMA042P1T	MUMA 400 W Incremental encoder	229,231		
MUMA5AZP1S	MUMA 50 W Incremental encoder	227,229,231		
MUMA5AZP1T	MUMA 50 W Incremental encoder	227,229,231		

Part No.	Title	Page
MUMA011P31N	MUMA with reduction gear 100 W Incremental encoder	
MUMA011P32N	MUMA with reduction gear 100 W Incremental encoder	232,235
MUMA011P34N	MUMA with reduction gear 100 W Incremental encoder	232,235
MUMA011P41N	MUMA with reduction gear 100 W Incremental encoder	232,23
MUMA011P42N	MUMA with reduction gear 100 W Incremental encoder	232,23
MUMA011P44N	MUMA with reduction gear 100 W Incremental encoder	232,235
MUMA012P31N	MUMA with reduction gear 100 W Incremental encoder	232,23
MUMA012P32N	MUMA with reduction gear 100 W Incremental encoder	232,23
MUMA012P34N	MUMA with reduction gear 100 W Incremental encoder	232,23
MUMA012P41N	MUMA with reduction gear 100 W Incremental encoder	232,23
MUMA012P42N	MUMA with reduction gear 100 W Incremental encoder	232,23
MUMA012P44N	MUMA with reduction gear 100 W Incremental encoder	232,23
MUMA021P31N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA021P32N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA021P34N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA021P41N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA021P42N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA021P44N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA022P31N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA022P32N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA022P34N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA022P41N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA022P42N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA022P44N	MUMA with reduction gear 200 W Incremental encoder	232,23
MUMA042P31N	MUMA with reduction gear 400 W Incremental encoder	232,23
MUMA042P32N	MUMA with reduction gear 400 W Incremental encoder	232,23
MUMA042P34N	MUMA with reduction gear 400 W Incremental encoder	232,23
MUMA042P41N	MUMA with reduction gear 400 W Incremental encoder	232,23
MUMA042P42N	MUMA with reduction gear 400 W Incremental encoder	232,23
MUMA042P44N	MUMA with reduction gear 400 W Incremental encoder	232,23

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305

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		(Hong Kong) Co.,Ltd. (PIDSHK) [Sales office]	Hong kong	Plaza, 77 Mody Road, S.T.S. East, Kowloon, HongKong	+852-2598-9743
		Panasonic Industrial Devices Sales		Floor 6, China Insurance Building, 166	+86-21-3855-2442
China		(China) Co.,Ltd. (PIDSCN) [Sales office]	Shanghai	East Road LuJiaZui PuDong New District, Shanghai, China	+86-21-3855-2375
		Panasonic Industrial Devices Sales (China) Co.,Ltd. (PIDSCN) [Sales office]	Shenzhen	8/F, Tower Three, Kerry Plaza, 1-1 Zhongxinsi Road, Futian District, Shenzhen, China	+86-755-8255-8791
		[case since]		12th Floor, Ambience Commercial,	+91-124-6670400
		Industrial Division, Panasonic India Pvt Ltd.	Gurgaon,	Behind Ambience Mall, Gurgaon - 122002, Haryana, India	+91-124-6670338
		[Sales office]	Haryana	Web site http://industrial.panasonic.com/sa/pro	ducts/motors-
		Lubi Electronics	Gandhinaga,	Sardar Patel Ring Road, Near Bright School, Nana Chiloda,	+91-79-39845300
		[Distributors]	Gujarat	Dist.: Gandhinagar - 382330, Gujarat, India	+91-79-39845599
	India			Web site http://www.lubielectronics.com	T
		Luna Bearings	Mumbai.	59, Bibijan Street, 2nd Floor, Moiz Manzil, Mumbai - 400003, Maharashtra, India	+91-22-23455052
		[Distributors]	Maharashtra		+91-22-23427773
				Web site http://www.lunabearings.com	
		Vashi Electricals Pvt. Ltd.	Mumbai,	A/6, Plot No.74, Shree Ganesh Complex, Behind Gupta Compound, Dapole Road, Mankoli Naka,	+91-2522-661600
		[Distributors]	Maharashtra	Bhiwandi - 421305, Maharashtra, India	+91-2322-001020
				Web site   http://www.vashielectricals.com	T
	Korea	Panasonic Industrial Devices Sales Korea Co., Ltd. (PIDSKR) [Sales office]  Panasonic Industrial Devices Sales Taiwan Co.,Ltd.	Seoul	6F DONG-IL Tower 38, Teheran-ro 114-gil,	+82-2-795-9600
			0004.	Gangnam-gu, Seoul, 135-851, Korea	+82-2-2052-1053
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		[Sales office]		R.O.C.	+886-2-2757-1977
		Panasonic Industrial Devices Sales Asia Pte.Ltd.	Singapore No.3 Bedok South Road Singapore 4692	No 3 Rodok South Road Singapore 460260	+65-6390-3718
		Pte.Ltd. [Sales office]		No.5 Bedok Godin Hoad Gillgapore 405205	+65-9435-6844
				2 Woodlands Sector 1 #03-25, Woodlands	+65-6751-5088
	Singapore	Intermech Machinery Pte.Ltd. [Distributors]	Singapore	Spectrum 1 Singapore 738068	+65-6759-2122
				Web site http://www.intermech.com.sg	T
		Panamech Machinery Sdn Bhd	Kuala Lumpur Penang	No.14, Lorong Sanggul 1C, Bandar Puteri, 41200 Klang, Selangor Darul Ehsan	+60-3-5161-7876
		[Distributors]		0. 0	+60-3-5161-7136
	Malaysia			Web site   http://panamech.com.my/	.00 4 040 0000
		Panamech (PG) Sdn Bhd		Sri Relau Komplex, Unit 1-3-11, Persiaran Bukit Jambul 1, 11900 Penang	+60-4-643-8266 +60-4-645-1639
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terr	<del>-</del>	[Distributors]	_	Web site http://www.premier-ac.co.th	Į.
AS L	Thailand			3 Soi Charoenrat 10, Charoenrat Road.,	+66-2291-9933
<u>a</u> .		Plenty Island (Thai) Co.,Ltd. [Distributors]	Bangkok	Bangkhlo, Bangkhorlaem, Bangkok 10120	+66-2291-2065
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		PT. Handal Yesindo Sejahtera	Surabaya	Jl. Raya Kutisari 8A, Surabaya, Indonesia	+62-31-843-8844 +62-31-841-4333
	Indone-!-	[Distributors]		Web site http://www.handalyesindo.com	
	Indonesia		Jakarta	Jl. Prof. Dr. Latumenten Grogol Permai blok	+62-21-564-9178
		PT.Riasarana Electrindo [Distributors]		D No. 8-15 Jakarta 11460, Indonesia	+62-21-566-7405
		[		Web site http://www.risacorps.com	
		Movefley Decigns Unlimited Inc.		136 Calbayog Street, Mandaluyong City,	+63-2-881-3636
	Philippines	Movaflex Designs Unlimited, Inc. [Distributors]	Manila	Metro Manila, Philippines.	+63-2-998-3881
				Web site http://www.movaflex.com/	